Appendix Focus Report Item 5.1: Wetlands along the Re-aligned Pipeline Route

As required by item 5.1 of the Terms of Reference (ToR) for the Focus Report (NSE 2019), a baseline wetland survey program was conducted along the proposed re-aligned effluent pipeline route to reflect the project that is described in Focus Report Project Description Section 2.1. The results of that survey program are presented in this section.

5.1.1 Wetland Survey Program Methodology

The wetlands were surveyed along the proposed re-aligned effluent pipeline route as an update to the existing environment as described in the Environmental Assessment Registration Document (EARD) (NPNS 2019) based on the revised project description. The regional setting with respect to wetlands as it relates to the proposed re-aligned effluent pipeline route has not changed compared to that which was described in the EARD for the previous pipeline route.

Changes that have occurred from the EARD

The following changes to the effluent pipeline route have occurred since the EARD was prepared:

- The re-aligned effluent pipeline route is within the Nova Scotia Transportation and Infrastructure Renewal (NSTIR) Right-of-Way (ROW) for Highway 106, at its eastern edge. Previously, the effluent pipeline was to be constructed in the road shoulder, on the western side of the road. Figure A5.1-1 below illustrates the proposed re-aligned effluent pipeline route.
- The Effluent Treatment Facility location has not changed from that presented in the EARD.

As the pipeline route has been refined and is now proposed to be installed parallel along the eastern side of Highway 106 but within the NSTIR Highway 106 ROW, a number of wetlands previously described in the EARD no longer fall along the pipeline route. These wetlands are: WL-4, WL-12 (A and B), WL-14, WL-15, WL-17, and WL-18. However, as recent wetland field programs conducted in 2019 were able to occur during the ‘growing season’ (i.e., the time of year when herbaceous plants are actively growing and can be more readily identified), several additional small wetlands were encountered along the re-aligned pipeline route that were previously not observed in prior surveys (i.e., WL13-B, WL5-E, WL-19, and WL-20). As a result, a total of 19 wetlands were documented in the following report for the re-aligned pipeline route.

Lastly, it should be noted that the limit of the NSTIR Highway 106 ROW on its eastern side ranges from approximately 20 m to 25 m from the highway centreline. Consequently, for many of the wetlands within the proposed re-aligned pipeline route, only a small fraction was available for ‘on-the-ground’ assessment due to property access restrictions. The wetland outside of the NSTIR ROW was examined from satellite imagery and mapping. To further compound this constraint, the influence of the immediately adjacent Highway 106, and associated ditching, served to hinder the description of a wetland’s more natural condition, often limiting observations to the disturbed conditions present along
the roadside. However, since the purpose of the field work was to describe the existing environmental conditions and function of the wetland environment (whether natural or previously affected by human activity), the conditions observed during the surveys (such as they are) represent the current condition and function of the wetlands prior to implementing the project.

5.1.1.1 Wetland Determination and Delineation

The methods for wetland determination and field delineation remained the same as were described in the EARD (Section 8.7) and are only briefly summarized in the following section.

Wetland determination and delineation was based on the methods described in the United States Army Corps of Engineers Wetland Delineation Manual (USACE 1987) and the National Wetlands Working Group (1997) and focused on establishing a wetland-upland edge. The wetland-upland edge is based upon the presence of positive indicators for three parameters:

1. Hydric soils;
2. Hydrophytic vegetation, and
3. Wetland hydrology.

Once an area was determined to be a wetland (i.e., positive indicators identified for soils, hydrology, and vegetation), a wetland edge condition was established based on those indicators identified. This edge condition was then used to navigate around the perimeter of the wetland, which was georeferenced using a handheld geographical positioning system (GPS) unit (with a 3 to 5 m accuracy).
The pipeline and working area will be routed in order to avoid WL3.
5.1.1.2 Functional Assessment: Wetland Ecosystem Services Protocol-Atlantic Canada (WESP-AC)

The WESP-AC functional assessment methodology had only previously been applied to two of the wetlands described in the EARD: WL-1 and WL-2. These wetlands were within the ETF property and had been previously visited and surveyed during the summer (i.e., during the ‘growing season’) of 2018 and therefore, a WESP-AC functional assessment was able to be conducted.

As the previous pipeline route had not yet been defined during the summer of 2018, WESP-AC functional assessments for wetlands falling within it could not be completed for the EARD as the growing season was over prior to a route being selected. However, following the refinement of the pipeline alignment in early 2019, WESP-AC functional assessments for those wetlands located within the proposed re-aligned effluent pipeline route were able to be completed during wetland surveys conducted in the summer of 2019.

WESP-AC represents a standardized approach to the way wetland functional assessment data are collected and interpreted, to indirectly yield relative estimates of a wide variety of important wetland functions and their associated benefits.

WESP-AC generates scores (0 to 10 scale) and ratings (“Lower”, “Moderate”, or “Higher”) for a variety of wetland functions using visual assessments of weighted ecological indicators. The number of indicators that were applied to estimate a particular wetland function depends on which function was being assessed. The indicators are then combined in a spreadsheet using logic-based, mathematical models to generate the score and rating for each wetland function and benefit (Adamus 2018a; 2018b). Together they provide a profile of “what a wetland does”.

For each function, the scores and ratings represent a particular wetland’s standing relative to those in a statistical sample of assessed ‘baseline’ wetlands within the province (i.e., 121 non-tidal and 34 tidal wetlands for Nova Scotia) (Adamus 2018a; 2018b). Table A5.1-1 provides a list of the various non-tidal wetland functions, their definitions, and potential benefits.

<table>
<thead>
<tr>
<th>Function</th>
<th>Definition</th>
<th>Potential Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hydrologic Functions:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Storage and Delay</td>
<td>The effectiveness for storing runoff or delaying the downslope movement of surface water for long or short periods.</td>
<td>Flood control, maintain ecological systems</td>
</tr>
<tr>
<td>Stream Flow Support</td>
<td>The effectiveness for contributing water to streams especially during the driest part of a growing season.</td>
<td>Support fish and other aquatic life</td>
</tr>
<tr>
<td><strong>Water Quality Maintenance Functions:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Cooling</td>
<td>The effectiveness for maintaining or reducing temperature of downslope waters.</td>
<td>Support cold water fish and other aquatic life</td>
</tr>
<tr>
<td>Sediment and Retention</td>
<td>The effectiveness for intercepting and filtering suspended inorganic sediments thus allowing their</td>
<td>Maintain quality of receiving waters. Protect shoreline structures from</td>
</tr>
</tbody>
</table>

Table A5.1-1  Benefits of Non-Tidal Wetland Functions Scored by WESP-AC
## Function

<table>
<thead>
<tr>
<th>Function</th>
<th>Definition</th>
<th>Potential Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stabilization</td>
<td>deposition, as well as reducing energy of waves and currents, resisting excessive erosion, and stabilizing underlying sediments or soil</td>
<td>erosion.</td>
</tr>
<tr>
<td>Phosphorous Retention</td>
<td>The effectiveness for retaining phosphorus for long periods (&gt;1 growing season)</td>
<td>Maintain quality of receiving waters.</td>
</tr>
<tr>
<td>Nitrate Removal and Retention</td>
<td>The effectiveness for retaining particulate nitrate and converting soluble nitrate and ammonium to nitrogen gas while generating little or no N₂O (a potent GHG).</td>
<td>Maintain quality of receiving waters.</td>
</tr>
<tr>
<td>Organic Nutrient Transport</td>
<td>The effectiveness for producing and subsequently exporting organic nutrients (mainly carbon), either particulate or dissolved.</td>
<td>Support food chains in receiving waters.</td>
</tr>
</tbody>
</table>

### Ecological (Habitat) Functions:

<table>
<thead>
<tr>
<th>Habitat</th>
<th>Definition</th>
<th>Potential Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish Habitat</td>
<td>The capacity to support an abundance and diversity of native fish (both anadromous and resident species)</td>
<td>Support recreational and ecological values.</td>
</tr>
<tr>
<td>Aquatic Invertebrate Habitat</td>
<td>The capacity to support or contribute to an abundance or diversity of invertebrate animals which spend all or part of their life cycle underwater or in moist soil. Includes dragonflies, midges, clams, snails, water beetles, shrimp, aquatic worms, and others.</td>
<td>Support salmon and other aquatic life. Maintain regional biodiversity.</td>
</tr>
<tr>
<td>Amphibian and Reptile Habitat</td>
<td>The capacity to support or contribute to an abundance or diversity of native frogs, toads, salamanders, and turtles.</td>
<td>Maintain regional biodiversity</td>
</tr>
<tr>
<td>Waterbird Feeding Habitat</td>
<td>The capacity to support or contribute to an abundance or diversity of waterbirds that migrate or winter but do not breed in the region.</td>
<td>Support hunting and ecological values. Maintain regional biodiversity.</td>
</tr>
<tr>
<td>Waterbird Nesting Habitat</td>
<td>The capacity to support or contribute to an abundance or diversity of waterbirds that nest in the region.</td>
<td>Maintain regional biodiversity</td>
</tr>
<tr>
<td>Songbird, Raptor, and Mammal Habitat</td>
<td>The capacity to support or contribute to an abundance or diversity of native songbird, raptor, and mammal species and functional groups, especially those that are most dependent on wetlands or water</td>
<td>Maintain regional biodiversity</td>
</tr>
<tr>
<td>Native Plant Habitat and Pollinator Habitat</td>
<td>The capacity to support or contribute to a diversity of native, hydrophytic, vascular plant species, communities, and/or functional groups, as well as the pollinating insects linked to them</td>
<td>Maintain regional biodiversity and food chains.</td>
</tr>
<tr>
<td>Public Use and Recognition*</td>
<td>Prior designation of the wetland, by a natural resource or environmental agency, as some type of special protected area. Also, the potential and actual use of a wetland for low-intensity outdoor recreation, education, or research.</td>
<td>Commercial and social benefits of recreation. Protection of public investments.</td>
</tr>
</tbody>
</table>

*Considered a benefit rather than a function of wetlands

Source: Adamus (2018a)
Table A5.1-2 provides a list of the various tidal wetland functions, their definitions, and potential benefits.

<table>
<thead>
<tr>
<th>Function</th>
<th>Definition</th>
<th>Potential Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storm Surge Reduction</td>
<td>The effectiveness for buffering surges of tidal water for short periods before they reach vulnerable uplands.</td>
<td>Flood control, protect shoreline structures from erosion.</td>
</tr>
<tr>
<td>Water Purification</td>
<td>The effectiveness for intercepting and filtering suspended inorganic sediments thus allowing their deposition, as well as reducing energy of waves and currents, resisting excessive erosion, and stabilising underlying sediments or soil.</td>
<td>Maintain quality of coastal waters, protect shoreline structures from erosion.</td>
</tr>
<tr>
<td>Organic Nutrient Export</td>
<td>The effectiveness for producing and subsequently exporting organic nutrients (mainly carbon), either particulate or dissolved.</td>
<td>Supports food chains in coastal waters.</td>
</tr>
<tr>
<td>Fish Habitat</td>
<td>The capacity to support an abundance and diversity of native fish (both anadromous and resident species).</td>
<td>Supports recreational opportunities and ecological values.</td>
</tr>
<tr>
<td>Waterbird Habitat</td>
<td>The capacity to support or contribute to an abundance or diversity of waterbirds, mainly those that migrate or winter in the region.</td>
<td>Supports hunting opportunities and ecological values.</td>
</tr>
<tr>
<td>Songbird, Raptor, and Mammal Habitat</td>
<td>The capacity to support or contribute to an abundance or diversity of native songbird, raptor, and mammal species and functional groups, especially those that are most dependent on tidal wetlands or water.</td>
<td>Maintain regional biodiversity and food webs.</td>
</tr>
<tr>
<td>Biodiversity Support</td>
<td>The capacity to support or contribute to a diversity of native plant and animal species, communities, and/or functional groups.</td>
<td>Maintain food webs and ecosystem stability.</td>
</tr>
<tr>
<td>Stability*</td>
<td>The potential for long term persistence of a tidal wetland in the face of direct or indirect effects of sea level rise.</td>
<td>Protection of the above functions and benefits.</td>
</tr>
<tr>
<td>Public Use and Recognition*</td>
<td>Prior designation of the wetland, by a natural resource or environmental agency, as some type of special protected area. Also, the potential and actual use of a wetland for low- intensity outdoor recreation, sustainable consumptive uses, education, or research.</td>
<td>Commercial and social benefits of recreation. Protection of prior public investments.</td>
</tr>
</tbody>
</table>

* A tidal wetland attribute that is not considered a function

Source: Adamus (2018b)
5.1.2 Results of Spring/Summer 2019 Field Assessment of Wetlands along the Re-aligned Effluent Pipeline Route

Wetland field surveys along the proposed re-aligned effluent pipeline route were conducted on May 28th, June 4th, June 5th, June 18th and July 30th, 2019. Following the surveys, wetland functions were evaluated upon return to the office using the WESP-AC methods described above.

Wetlands located along the proposed re-aligned effluent pipeline route are identified in Table A5.1-3, below and above in Figure A5.1-1. A list of identified plants for each assessed wetland in 2019 is provided in Table A5.1-4. Wetland delineation data sheets and wetland photos are provided in Appendix A5.1-A and Photo Plate A5.1-1, respectively. The results of the WESP-AC functional assessment are summarized below in Table A5.1-5.

Brief descriptions of each wetland assessed within the project area are provided below, noting that results for WL-1 and WL-2 were presented in the EARD. For scientific plant names and conservation rankings, refer to Table A5.1-4

**Wetland 3 (WL-3)**

Wetland #3 (WL-3) is located east of Highway 106 and immediately south of the Jitney Trail and borders the Pictou Harbour shoreline. The boundaries of this wetland were delineated in their entirety and the wetland area within the NSTIR ROW is 0.299 ha. WL-3 is a relatively small salt marsh with shrub-swamp characteristics.

WL-3 appears to have been partially filled in from the past construction of adjacent roadways and the Pictou causeway. Most of the wetland area is tidally influenced and dominated by hardstem bulrush (*Schoenoplectus acutus*), reed canary grass (*Phalaris arundinacea*), and both broad-leaved and narrow-leaved cattail (*Typha latifolia* and *Typha angustifolia*, respectively). However, at the landward side of the wetland, furthest from a tidal influence, the land slopes steeply upwards and transitions into a dense thicket dominated by roses, hawthorn and speckled alder (*Alnus incana*). No federally or provincially listed priority species were identified in WL-3; however, two rare (according to the AC CDC) lichens were identified in June 2019. *Leptogium imbricatum* is ranked by the Atlantic Canada Conservation Data Centre (AC CDC) as S2? (rare within Nova Scotia with a degree of uncertainty), and *Leptogium tenuissimum* is ranked as S2S3 (rare to uncommon within Nova Scotia). More information on priority flora species is presented in Annex 8.1 Section 8.1.3 of the Focus Report and in the EARD (Section 8.8).
### Table A5.1-3: Summary of Results of Field Assessment of Wetlands Assessed During the 2019 Wetland Field Program

<table>
<thead>
<tr>
<th>Wetland</th>
<th>Dominant Wetland Type</th>
<th>Relative Size</th>
<th>Landscape Position</th>
<th>Landform</th>
<th>Flow Path</th>
<th>Water Regime</th>
<th>Disturbance</th>
<th>Priority Plants</th>
<th>Total Delineated Area (ha) within NSTIR ROW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland #3 (WL-3)</td>
<td>Salt Marsh</td>
<td>Small</td>
<td>Estuarine</td>
<td>Fringe</td>
<td>Through Flow</td>
<td>Irregularly Flooded</td>
<td>Partially infilled by past construction of roads/causeway, freshwater input from ditch-fed culvert and exotic shrubs and herbs present within wetland.</td>
<td>Yes</td>
<td>0.299</td>
</tr>
<tr>
<td>Wetland #5A (WL-5A)</td>
<td>Shrub Swamp/ Wet Meadow</td>
<td>Medium</td>
<td>Terrene</td>
<td>Basin</td>
<td>Outflow</td>
<td>Seasonally Flooded</td>
<td>Salt and nutrient inputs from adjacent roads, moderate storm water inputs, regularly mowed vegetation close to the Roundabout, some fill material from road construction in wetland.</td>
<td>No</td>
<td>1.894</td>
</tr>
<tr>
<td>Wetland #5B (WL-5B)</td>
<td>Shrub Swamp/ Wet Meadow</td>
<td>Medium</td>
<td>Lotic</td>
<td>Basin</td>
<td>Through Flow</td>
<td>Seasonally Flooded</td>
<td>Salt and nutrient inputs from adjacent roads, edges are regularly mowed close to the Roundabout, some fill material from road construction in wetland, moderate storm water inputs.</td>
<td>No</td>
<td>1.524</td>
</tr>
<tr>
<td>Wetland #5C (WL-5C)</td>
<td>Shrub Swamp/ Flood Plain</td>
<td>Medium</td>
<td>Lotic</td>
<td>Basin/Fringe</td>
<td>Through flow</td>
<td>Seasonally Flooded</td>
<td>Salt and nutrient inputs from adjacent roads, strong storm water inputs from ditching and catchment, regularly mowed vegetation close to the Roundabout, some fill material from road construction in wetland, evidence of ATV use.</td>
<td>No</td>
<td>0.503</td>
</tr>
<tr>
<td>Wetland #5D (WL-5D)</td>
<td>Shrub Swamp/ Marsh</td>
<td>Large</td>
<td>Lotic</td>
<td>Basin/Fringe</td>
<td>Through flow</td>
<td>Semi-permanently flooded</td>
<td>Salt and nutrient inputs from adjacent roads, moderate storm water inputs, regularly mowed vegetation close to the Roundabout, some fill material from road/municipal building construction in wetland, evidence of ATV use.</td>
<td>No</td>
<td>4.341</td>
</tr>
<tr>
<td>Wetland #5E (WL-5E)</td>
<td>Shrub Swamp/</td>
<td>Small</td>
<td>Terrene</td>
<td>Basin</td>
<td>Outflow</td>
<td>Seasonally Flooded</td>
<td>Vegetation disturbed on edges of the Roundabout by regular mowing road</td>
<td>No</td>
<td>0.383</td>
</tr>
<tr>
<td>Wetland</td>
<td>Dominant Wetland Type</td>
<td>Relative Size</td>
<td>Landscape Position</td>
<td>Landform</td>
<td>Flow Path</td>
<td>Water Regime</td>
<td>Disturbance</td>
<td>Priority Plants</td>
<td>Total Delineated Area (ha) within NSTIR ROW</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------</td>
<td>---------------</td>
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<td>---------------------------------------------</td>
</tr>
<tr>
<td>Wet Meadow</td>
<td>Shrub Swamp</td>
<td>Small</td>
<td>Terrene</td>
<td>Basin</td>
<td>Outflow</td>
<td>Saturated</td>
<td>and other fill material observed within wetland, moderate storm water input through ditches and catchment, and salt and nutrient inputs from adjacent roads.</td>
<td>No</td>
<td>0.096</td>
</tr>
<tr>
<td>Wetland #6 (WL-6)</td>
<td>Shrub Swamp</td>
<td>Large</td>
<td>Lotic</td>
<td>Floodplain</td>
<td>Through flow</td>
<td>Saturated</td>
<td>Infringed by road fill and agricultural fields, salt and nutrient inputs from adjacent Highway 106, storm water influence via ditching.</td>
<td>No</td>
<td>0.010</td>
</tr>
<tr>
<td>Wetland #7 (WL-7)</td>
<td>Flood Plain</td>
<td>Large</td>
<td>Lotic</td>
<td>Floodplain</td>
<td>Through flow</td>
<td>Seasonally flooded</td>
<td>Salt and nutrient inputs from adjacent Highway 106 and storm water catchment.</td>
<td>No</td>
<td>0.071</td>
</tr>
<tr>
<td>Wetland #8 (WL-8)</td>
<td>Shrub Swamp</td>
<td>Large</td>
<td>Terrene</td>
<td>Basin</td>
<td>Outflow</td>
<td>Saturated</td>
<td>Partially impounded by Highway 106, ATV-rutting, salt and nutrient inputs from adjacent Highway 106 and storm water catchment.</td>
<td>No</td>
<td>0.035</td>
</tr>
<tr>
<td>Wetland #9 (WL-9)</td>
<td>Shrub Swamp</td>
<td>Medium</td>
<td>Lotic</td>
<td>Basin</td>
<td>Through flow</td>
<td>Seasonally flooded</td>
<td>Salt and nutrient inputs from adjacent Highway 106, soil disturbed from road fill infringes, impounded water along Highway 106 and storm water catchment.</td>
<td>No</td>
<td>0.179</td>
</tr>
<tr>
<td>Wetland #10 (WL-10)</td>
<td>Shrub Swamp/Marsh</td>
<td>Large</td>
<td>Lotic</td>
<td>Basin/Fringe</td>
<td>Through flow</td>
<td>Permanently flooded</td>
<td>Salt and nutrient inputs from adjacent Highway 106, deep water impounding along Highway 106, and soils are disturbed by road fill.</td>
<td>No</td>
<td>0.249</td>
</tr>
<tr>
<td>Wetland #11 (WL-11)</td>
<td>Shrub Swamp</td>
<td>Large</td>
<td>Lotic</td>
<td>Basin/Fringe</td>
<td>Through flow</td>
<td>Permanently flooded</td>
<td>Partially impounded by Highway 106; Salt and nutrient inputs from adjacent Highway 106, road fill materials present in wetland.</td>
<td>No</td>
<td>0.560</td>
</tr>
<tr>
<td>Wetland #13 (WL-13)</td>
<td>Fen/Marsh</td>
<td>Large</td>
<td>Lotic</td>
<td>Basin/Fringe</td>
<td>Through flow</td>
<td>Permanently flooded</td>
<td>Partially impounded by Highway 106; Salt and nutrient inputs from adjacent Highway 106, soil disturbed from road fill infringes.</td>
<td>No</td>
<td>0.560</td>
</tr>
<tr>
<td>Wetland</td>
<td>Dominant Wetland Type</td>
<td>Relative Size¹</td>
<td>Landscape Position</td>
<td>Landform</td>
<td>Flow Path</td>
<td>Water Regime</td>
<td>Disturbance</td>
<td>Priority Plants²</td>
<td>Total Delineated Area (ha) within NSTIR ROW³</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------</td>
<td>----------------</td>
<td>-------------------</td>
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<td>-----------</td>
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<td>------------------------------------------</td>
</tr>
<tr>
<td>Wetland #13B (WL-13B)</td>
<td>Shrub Swamp</td>
<td>Small</td>
<td>Terrene</td>
<td>Basin</td>
<td>Outflow</td>
<td>Saturated</td>
<td>Soil disturbed from agricultural field runoff which is sediment-laden as well as road fill. Hydrology is disturbed from storm water influence.</td>
<td>No</td>
<td>0.026</td>
</tr>
<tr>
<td>Wetland #16 (WL-16)</td>
<td>Treed Swamp</td>
<td>Small</td>
<td>Terrene</td>
<td>Basin</td>
<td>Through flow</td>
<td>Saturated</td>
<td>Partially impounded by Highway 106; Salt and nutrient inputs from adjacent Highway 106, road fill present in wetland.</td>
<td>No</td>
<td>0.107</td>
</tr>
<tr>
<td>Wetland #19 (WL-19)</td>
<td>Shrub Swamp/Marsh</td>
<td>Small</td>
<td>Terrene</td>
<td>Basin</td>
<td>Isolated</td>
<td>Saturated</td>
<td>Soil disturbed from road fill. Hydrology is disturbed from storm water influence.</td>
<td>No</td>
<td>0.007</td>
</tr>
<tr>
<td>Wetland #20 (WL-20)</td>
<td>Shrub Swamp</td>
<td>Small</td>
<td>Terrene</td>
<td>Basin</td>
<td>Isolated</td>
<td>Seasonally flooded</td>
<td>Soil disturbance from historic excavations and compaction. Excavated pits and storm water influences alter hydrology.</td>
<td>No</td>
<td>0.008</td>
</tr>
</tbody>
</table>

Notes:
1. Relative size of the wetland is based on the estimated total extent of each wetlands area. For wetlands that extend beyond the NSTIR ROW, total wetland size is estimated based on available aerial imagery and provincial mapping. Relative size classes are: small - less than 0.5 ha; medium - 0.5-2 ha and large - >2 ha.
2. Priority plants are plants listed under the federal Species at Risk Act (SARA), the Nova Scotia Endangered Species Act (NS ESA), or having ratings of S1 to S3 by the Atlantic Canada Conservation Data Centre (AC CDC). See Focus Report Appendix 8.1.
3. Total Delineated Area represents the assessment area for each wetland and is limited to the portion of any given wetland within the NSTIR ROW.
### Table A5.1-4: Plant Lists by Wetland

#### Wetland 3
<table>
<thead>
<tr>
<th>Species</th>
<th>Common Name</th>
<th>S-Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allisma triviale</td>
<td>Northern Water Plantain</td>
<td>S5</td>
</tr>
<tr>
<td>Alnus incana</td>
<td>Speckled Alder</td>
<td>S5</td>
</tr>
<tr>
<td>Angelica sylvestris</td>
<td>Woodland Angelica</td>
<td>SNA</td>
</tr>
<tr>
<td>Atriplex sp</td>
<td>&lt;Null&gt;</td>
<td>-</td>
</tr>
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### Table A5.1-4: Plant Lists by Wetland, Continued.

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Botanist: Tom Neily
S-rank - Ranking by the Conservation Data Centre and NatureServe. Status notes (as of August 2019): S1: Extremely rare in province; S2: Rare in the province; S3: Uncommon in province; S4: Widespread, common and apparently Secure in province; S5: Widespread, abundant and demonstrably secure in province; SNA: Not applicable. (ACCDC 2019).
**Wetland #5 (WL-5A to WL-5E)**

Wetlands #s 5A, 5B, 5C, 5D and 5E are all associated with the Pictou Roundabout. These wetlands are characterized, in part, by various levels of disturbance from the initial construction and ongoing maintenance of the neighbouring roadways (i.e., infill, road salt in runoff water, mowing, altered hydrology from storm water and culverts).

**WL-5A**

Wetland #5A (WL-5A) is located immediately northeast of the Pictou Roundabout and its boundaries are completely within the NSTIR Highway 106 ROW, as such it was delineated in its entirety and is 1.894 ha in size. WL-5A is a highly disturbed wetland complex consisting of wet meadow and shrub swamp elements. The shrub swamp areas tended to be drier overall and are likely only temporarily flooded during high flows (i.e., spring melt and heavy rain events). These areas tended to be dominated by a shrub overstory of speckled alder combined with two species of willow, Bebb’s willow (*Salix bebbiana*) and pussy willow (*Salix discolor*). A herbaceous understory was dominated by sensitive fern (*Onoclea sensibilis*) and fowl manna grass (*Glyceria striata*).

The wet meadow areas were wetter overall and are likely seasonally flooded, as well as temporarily inundated during high flow events. These areas tended to be dominated by near ubiquitous coverage of reed canary grass with only a handful of other herbaceous species such as field horsetail (*Equisetum arvense*), swamp yellow loosestrife (*Lysimachia terrestris*), and rough-stemmed goldenrod (*Solidago rugosa*) persisting in small quantities. No priority or sensitive species were identified in WL-5A during the wetland assessment nor the plant surveys conducted within the wetland.

The wetland has two channelized inlet flows: Watercourse 8 (WC08), and a short ditch located between Highway 106 and Pine Tree Road, but it also receives some storm water runoff from adjacent roadways (i.e., Pictou Roundabout). Watercourse 8 (WC08) is the wetland’s primary hydrological source and enters from the east via a culvert under Pine Tree Road north of the Tourist Office. The short ditch enters WL-5A from the north near the location Swanee Drive and was once connected to Pine Tree Road. The wetland’s outlet flow is via a concrete culvert under the Highway 106 Exit of the Pictou Roundabout and into Wetland WL-5B.

**WL-5B**

Wetland #5B (WL-5B) is located immediately north of the Pictou Roundabout and its boundaries are completely within the NSTIR Highway 106 ROW, as such it was delineated in its entirety and is 1.524 ha in size. Very similar to WL-5A, WL-5B is also a highly disturbed wetland complex consisting of wet meadow and shrub swamp elements. The shrub swamp areas tended to be drier overall and are likely only temporarily flooded during high flows (i.e., spring melt and heavy rain events). These areas tended to be dominated by a shrub overstory of speckled alder, Bebb’s willow, and pussy willow. The herbaceous understory dominated was by sensitive fern and field horsetail.
The wet meadow areas were wetter overall than WL-5A and are likely seasonally flooded, as well as temporarily inundated during high flow events. These areas tended to be dominated by near ubiquitous coverage of reed canary grass, with only a handful of other herbaceous species such as spotted jewel-weed \((Impatiens capensis)\), rough-stemmed goldenrod, and creeping butter-cup \((Ranunculus repens)\) persisting in small quantities. No priority or sensitive species were identified in WL-5B during the wetland assessment nor the plant surveys conducted within the wetland.

The wetland has two channelized inlet flows: Watercourse 8 (WC08), and a short ditch located on the west side of Highway 106, but it also receives some storm water runoff from adjacent roadways (i.e., Pictou Roundabout). Watercourse 8 (WC08) enters the wetland from the north and confluences with Watercourse 8 (WC08). The wetland’s outlet flow is via a concrete culvert under the Route 6 (Sunrise Trail) exit of the Pictou Roundabout and into Wetland WL-5C.

WL-5C

Wetland #5C (WL-5C) is located immediately west of the Route 6 Exit off of the Pictou Roundabout and its boundaries are completely within the NSTIR Highway 106 ROW, as such it was delineated in its entirety and is 0.503 ha in size. WL-5C is characterized as a treed swamp subject to seasonal flooding, as well as is likely temporarily inundated during high flow events.

This wetland tended to be dominated by a treed overstory of trembling aspen \((Populus tremuloides)\) and red maple \((Acer rubrum)\), but its northern edge is heavily populated by speckled alder. Dominant herbaceous species included spotted jewel-weed and arrow-leaved smartweed \((Polygonum sagittatum)\). No priority or sensitive species were identified in WL-5C during the wetland assessment nor the plant surveys conducted within the wetland.

The wetland has only one channelized inlet flow: Watercourse 8 (WC08), but it also receives some storm water runoff from adjacent roadways (i.e., Pictou Roundabout). As with WL-5A and WL-5B, Watercourse 8 (WC08) is WL-5C’s primary source of hydrology. Watercourse 8 (WC08) enters wetland WL-5C from the east via a concrete culvert under the Route 6 exit off the Pictou Roundabout from the outflow of WL-5B. The wetland’s outflow is a clearly channelized permanent watercourse that continues flowing westward before joining Haliburton Brook near the tidal reach.

WL-5D

Wetland #5D (WL-5D) is located immediately west of the Pictou Roundabout and its boundaries are largely contained within the NSTIR Highway 106 ROW, as such it was delineated in its entirety and is 4.341 ha in size. WL-5D is characterized as a highly disturbed wetland complex comprising of shrub swamp and shallow marsh elements.

The shrub swamp areas are likely seasonally saturated, but temporarily inundated during high flows (i.e., spring melt and heavy rain events). These areas tended to be dominated by a shrub overstory of
speckled alder and Bebb’s willow with a herbaceous understory dominated by spotted jewel-weed, cinnamon fern (*Osmunda cinnamomea*), and sensitive fern.

The shallow marsh areas are likely subject to seasonal or even permanent flooding, giving rise to a dominance of herbaceous species such as broad-leaved cattail as well as reed canary grass, sensitive fern, and harlequin blue flag (*Iris versicolor*).

Watercourse 7 (WC07) is the wetland’s only channelized inlet flow, but it also receives some amount of storm water runoff from adjacent roadways (i.e., Pictou Roundabout). Watercourse 7 (WC07) enters the wetland from the east via a concrete culvert under a section of the Pictou Roundabout between the Route 6 (Sunrise Trail) exit and the Highway 376 exit. Two outlet flows were noted for WL-5D: one is via a culvert under the drive to the Pictou Administration Building (Municipal Building); the other is a smaller, less channelized outflow located north of the aforementioned Pictou Administration Building. Both outflows continue flowing westward before joining Haliburton Brook near the tidal reach. No federally or provincially listed priority species were identified in WL-5D in 2019.

**WL-5E**

Wetland #5E (WL-5E) is located immediately southwest of the Pictou Roundabout and its boundaries are largely contained within the NSTIR Highway 106 ROW, as such it was delineated in its entirety and is 0.383 ha in size. WL-5E is characterized as a highly disturbed wetland complex comprising of a shrub swamp and shallow marsh elements.

Similar to other wetlands in and around the Pictou Roundabout, the shrub swamp areas are likely seasonally saturated, but temporarily inundated during high flows (i.e., spring melt and heavy rain events). These areas tended to be dominated by a shrub overstory of speckled alder and Bebb’s willow with a herbaceous understory dominated by sensitive fern and marsh forget-me-not (*Myosotis laxa*).

The shallow marsh area is likely subject to seasonal flooding giving rise to a dominance of herbaceous species including broad-leaved cattail, reed canary grass, and wild mint (*Mentha arvensis*).

No priority or sensitive species were identified in WL-5E during the wetland assessment nor the plant surveys conducted within the wetland.

The wetland has one channelized inlet: a short ditch located south of the wetland along the west side of Highway 106. However, it also receives storm water runoff from other adjacent roadways (i.e., Pictou Roundabout). The wetland’s outlet flow is via a concrete culvert under the Pictou Roundabout and into the central pond of the roundabout.

**Wetland #6 (WL-6)**

Wetland #6 (WL-6) is located on the west side of Highway 106, approximately 750 m by road from the Pictou Roundabout, immediately south of Division Road West. Only a portion of WL-6 (roughly 0.096 ha of an approximate total area of 0.200 ha) falls within the re-aligned effluent pipeline route, as much of the remaining wetland area is located on privately-owned land to the west. WL-6 is classified as a shrub
swamp that is subject to seasonal flooding, but likely also temporarily inundation during high flows (i.e., spring melt and heavy rain events).

The relatively small wetland area assessed within the re-aligned pipeline route was dominated by a shrubby overstory comprised of mostly of speckled alder, but also some black elderberry (*Sambucus nigra* spp. *canadensis*). A low shrub layer comprising of white meadowsweet (*Spiraea alba*) and pussy willow was also present. Dominant herbaceous species included reed canary grass and yellow swamp loosestrife. No priority or sensitive species were identified in WL-6 during the wetland assessment nor the plant surveys conducted within the wetland.

There are two channelized input that provide WL-6 with most of its hydrology and both are ditches that convey storm water. The first ditch runs along the south edge of Division Road west, and the second is the Highway 106 ditching located on its west side. WL-6 does not appear to have a channelized output; instead, it seems that storm water simply is impounded against the roadbeds of Division Road West and Highway 106.

**Wetland #7 (WL-7)**

Wetland #7 (WL-7) is located on the east side of Highway 106, approximately 1,350 m by road from the Pictou Roundabout. Only a very small portion of WL-7 falls within the re-aligned pipeline route (0.010 ha of an approximate total area of 2.8 ha), as much of the wetland area borders Haliburton Brook, which approaches the highway from private land to the east. Accordingly, WL-7 is classified as a flood plain wetland that is subject to seasonal flooding.

The small wetland area assessed within the re-aligned pipeline route was dominated by graminoids, primarily reed canary grass, but also blue-joint reedgrass (*Calamagrostis canadensis*) and sallow sedge (*Carex lurida*) to a lesser degree. Some shrub species were present including speckled alder and Bebb’s willow, but they did not form any continuous shrubby canopy but rather were represented by only a few tall shrubs dotted along the stream’s edge. No priority or sensitive species were identified in WL-7 during the wetland assessment nor the plant surveys conducted within the wetland.

There are two channelized input flows that provide the assessed portion of WL-7 with its hydrology: Watercourse 9 (WC09), and a ditch flow originating on the west side of Highway 106 that is delivered via a culvert into WL-7. Watercourse 9 (WC09) is a permanent watercourse and represents the wetlands primary source of hydrology, while the ditch flow delivers intermittent storm water.

The wetland outflows immediately south of the assessed area as the wetland narrows to a point where Watercourse 9 (WC09) continues meandering southward parallel to Highway 106, but lacking a flood plain area fringing the stream.

**Wetland #8 (WL-8-2019)**

Wetland #8 (WL-8-2019) is located on the east side of Highway 106, approximately 1,750 m by road from the Pictou Roundabout. Only a small portion of WL-8 falls within the re-aligned pipeline route (0.0714 ha of an approximate total area of 64.8 ha), as much of the remaining wetland area is located on
privately-owned land to the east. WL-8-2019 is classified as a shrub swamp that is subject to seasonal flooding.

The relatively small wetland area assessed within the re-aligned pipeline route was dominated by a shrubby overstory comprised of speckled alder; however, some tree species do persist including American larch (*Larix laricina*), gray birch (*Betula populifolia*), and red maple. Dominant herbaceous species included blue-joint reedgrass and broad-leaved cattail. No priority or sensitive species were identified in WL-8-2019 during the wetland assessment nor the plant surveys conducted within the wetland.

There is one primary channelized input that provides WL-8 with most of its hydrology: Watercourse 10 (WC10); however, ditching on either side of the wetland also contributes storm water to the wetland area. Watercourse 10 (WC10) originates in a large bog wetland immediately northwest, and across the highway, from WL-8-2019 and was likely contiguous prior to the construction of Highway 106. Watercourse 10 (WC10) enters WL-8 via a culvert and continues flowing eastward before joining with Haliburton Brook approximately 525 m upstream of the assessed area of WL-7.


Wetland #9 (WL-9) is located on the east side of Highway 106, approximately 2,200 m by road from the Pictou Roundabout. Only two small portions totalling 0.035 ha of an approximate total area of 1.018 ha of WL-9 fall within the re-aligned pipeline route, as much of the remaining wetland area is located on privately-owned land to the east. WL-9A-2019 is classified as a shrub swamp that is subject to seasonal flooding.

The relatively small wetland area assessed within the re-aligned pipeline route was dominated by a shrubby overstory comprised of speckled alder; however, some tree species do persist including American larch, gray birch, and trembling aspen. Dominant herbaceous species included sensitive fern, blue-joint reedgrass, and field horsetail. No priority or sensitive species were identified in WL-9-2019 during the wetland assessment nor the plant surveys conducted within the wetland.

There does not appear to be any channelized input flows into WL-9-2019 beyond the ditching associated with Highway 106. Instead, the primary source of hydrology for this wetland appears to be sub-grade flow under the roadbed of Highway 106 from the large bog wetland on the opposite (west) side of the roadway, as no apparent culverts exist at these locations. The outflow location(s) for WL-9 are located outside the NSTIR Highway 106 ROW, and therefore the pipeline route, and could not be assessed. However, it is likely that the outflow from WL-9 contributes to hydrology of Haliburton Brook.

**Wetland #10 (WL-10)**

Wetland #10 (WL-10) is located on the east and west sides of Highway 106, approximately 2,475 m by road from the Pictou Roundabout. A small portion of WL-10 (0.1789 ha of an approximate total area of 2.2 ha) falls within the re-aligned pipeline route, as much of the remaining wetland area is located on
the west side of the ROW and on privately-owned land to the east. WL-10 is classified as a wetland complex comprised of deep marsh and shrub swamp elements.

Located immediately adjacent the highway roadbed, the deep marsh area is contiguous with the existing highway ditching and spreads eastward before developing into a flooded, hummocky shrub swamp. The deep marsh area appears to be primarily the result of the Highway 106 roadbed impounding a prior hydrological connection to the larger portion of the wetland on the west side of Highway 106, and is mostly open water with the exception of a fringe of broad-leaved cattail and some clumps in shallower areas.

The shrub swamp area is likely subject to seasonal flooding and exists along the edges of the marsh area and tended to become the more dominant wetland condition with increasing distance from the impounding roadbed. These areas tended to be dominated by a shrub overstory dominated by speckled alder with a herbaceous understory comprising mostly of sensitive fern, cinnamon fern, and three-leaf Solomon’s-plume (*Maianthemum trifolium*). The hummocky shrub swamp condition appears to continue eastward and outside the pipeline route. No priority or sensitive species were identified in WL-10 during the wetland assessment nor the plant surveys conducted within the wetland.

Watercourse 11 (WC11) is the wetland’s primary source of hydrology and represents its only channelized input. However, ditching on both sides of the wetland also contributes to its hydrology. Watercourse 11 (WC11) is delivered into WL-10 via a culvert stemming from the larger section of WL-10 located on the opposite (west) side of Highway 106. The outflow location(s) for WL-10 are located outside the NSTIR Highway ROW, and therefore the re-aligned pipeline route, and could not be assessed. However, it is likely that the outflow from WL-10 contributes to hydrology of Haliburton Brook.

**Wetland #11 (WL-11-2019)**

Wetland #11 (WL-11-2019) is located on the east side of Highway 106, approximately 430 m by road north of the Central Caribou Road overpass. A small portion of WL-11 (0.249 ha of a total area of approximately 17.7 ha) falls within the re-aligned pipeline route, as much of the remaining wetland area is located on privately-owned land to the east. WL-11 is classified as a wetland complex consisting of both shallow marsh and shrub swamp elements. Located immediately adjacent the highway roadbed, a shallow marsh area exists and is contiguous with the existing highway ditching, similar to the situation described for WL-10, but to a lesser extent. This area was mostly shallow, open water interspersed with hummocks populated mostly by sensitive fern, fowl manna-grass and soft rush (*Juncus effusus*). Occasionally patches of emergent vegetation such as pickerelweed (*Pontedaria cordata*) and broad-leaved cattail also were present.

The shrub swamp area is likely subject to seasonal flooding and exists along the upper edges of the shallow marsh and tended to become the dominant wetland condition with increasing distance from the impounding roadbed. These areas tended to be dominated by a shrub overstory of speckled alder and mountain holly (*Nemopanthus mucronatus*), however, some tree species do persist including American
larch, gray birch, and red maple. Dominant herbaceous species included sensitive fern, soft rush, and fowl manna-grass. This shrub swamp condition continues eastward and outside the pipeline route. No priority or sensitive species were identified in WL-11-2019 during the wetland assessment nor the plant surveys conducted within the wetland.

There were no channelized input flows observed flowing into the area of WL-11-2019 that was assessed, however, multi-branched internal channels were noted and suggest a channelized input likely exists off-site and to the east. This hydrological input from the east combined with ditch flows are the wetland’s primary sources of hydrology. WL-11-2019 outflows via a concrete culvert flowing north-west and into a larger wetland area on the opposite side of Highway 106 (referred to as WL-12A in EARD).

**Wetland #13 (WL-13)**

Wetland #13 (WL-13) is located on the east side of Highway 106, approximately 875 m by road north of the Central Caribou Road overpass. Only a small portion of WL-13 (0.560 ha of a total area of 4.3233 ha) falls within the re-aligned pipeline route, as much of the remaining wetland area is located on privately-owned land to the east. WL-13 is classified as a marsh wetland consisting of both shallow and deep marsh elements that are subject to permanent flooding. The deep water marsh areas are largely associated with a multi-branched internal channel (Watercourse WC13) which throughout the wetland area results in open, deep water areas occupied only by submergent vegetation such as variegated pond-lily (*Nuphar lutea ssp. variegata*) and water smartweed (*Polygonum amphibium*). The shallow marsh area, while still inundated, was occupied a more diverse vegetative community including emergent vegetation such as broad-leaved cattail, graminoids such as blue-joint reedgrass, as well as low shrub species such as sweet bayberry (*Myrica gale*), white meadowsweet, hardhack spiraea (*Spiraea tomentosa*), and leatherleaf (*Chamaedaphne calyculata*). No priority or sensitive species were identified in WL-13 during the wetland assessment nor the plant surveys conducted within the wetland.

There were no channelized input flows observed flowing into the area of WL-13 that was assessed, however, the aforementioned multi-branched internal channel suggest a channelized input likely exists off-site and to the east. This hydrological input from the east, combined with overland runoff from the surrounding landscape, are the wetland’s primary sources of hydrology. WL-13 outflows via a concrete culvert at its most southerly edge and flows westward under Highway 106 and into another large wetland area on the opposite side of Highway 106 (referred to as WL-12B in EARD), before the confluence with Mill Brook.

**Wetland #13B (WL-13B)**

Wetland #13B (WL-13B) is a very small wetland located on the east side of Highway 106, approximately 1,300 m by road north of the Central Caribou Road overpass. Its boundaries are very nearly contained within the NSTIR Highway 106 ROW, with 0.026 ha falling within the re-aligned pipeline route and only 0.00285 ha falling outside the re-aligned pipeline route and on privately-owned land to the east. WL-13B is classified as a shrub swamp subject to seasonal flooding, as well as is likely temporarily inundated during high flow events.
The wetland area assessed was dominated by a shrubby overstory of speckled alder and low shrubby layer of white meadowsweet. Prominent herbaceous species included spotted jewel-weed, sensitive fern, creeping butter-cup, and common buttercup (*Ranunculus acris*). No priority or sensitive species were identified in WL-13B during the wetland assessment nor the plant surveys conducted within the wetland.

Ditch flow from the north combined with a loosely channelized input flow originating at the toe-of-slope of a nearby mowed agricultural field appear to be the primary sources of hydrology for WL-13B. The outflow location for WL-13B becomes channelized (Watercourse WC13B) and exits via a culvert flowing westward and under Highway 106 into a larger wetland (referred to as WL-12B in EARD) that eventually feeds Mill Brook.

**Wetland #16 (WL-16)**

Wetland #16 (WL-16) is a very small wetland located on the east side of Highway 106, approximately 2,175 m by road north of the Central Caribou Road overpass. Its boundaries are very nearly contained within the NSTIR Highway 106 ROW, with 0.107 ha falling within the re-aligned pipeline route and only 0.048 ha falling outside the re-aligned pipeline route and on privately-owned land to the east. WL-16 is classified as a shrub swamp subject to seasonal flooding, as well as is likely temporarily inundated during high flow events.

The wetland area assessed was dominated by a shrubby overstory comprised mostly of speckled alder and the occasional red maple sapling; however, some trees are present including gray birch, balsam fir (*Abies balsamea*), and red spruce (*Picea rubens*). Prominent herbaceous species included sensitive fern, common wooly bulrush (*Scirpus cyperinus*), Canada manna grass (*Glyceria canadensis*), and fowl manna grass. No priority or sensitive species were identified in WL-16 during the wetland assessment nor the plant surveys conducted within the wetland.

Storm water derived from ditch flow combined with overland runoff from the surrounding uplands appear to be the primary sources of hydrology for WL-16. The outflow location(s), if any, for WL-16 are located outside the NSTIR Highway ROW, and therefore outside the re-aligned pipeline route, and could not be assessed. However, it appears that WL-16 drains away from Highway 106 and to the south-east, where it may contribute hydrology to another nearby wetland (referred to as WL-14 in EARD) located outside the re-aligned pipeline route.

**Wetland #19 (WL-19)**

Wetland #19 (WL-19) is another very small wetland located on the east side of Highway 106, approximately 75 m by road south of the Central Caribou Road overpass. Its boundaries nearly avoid the NSTIR Highway 106 ROW, with only 0.007 ha of a total area of 0.030 ha falling outside the re-aligned pipeline route and on privately-owned land to the east. WL-19 is classified as a shrub swamp subject to seasonal flooding, as well as is likely temporarily inundated during high flow events.
The wetland area assessed was dominated by a shrubby overstory comprised of mostly of mountain holly and low shrubby layer of white meadowsweet and sheep-laurel (Kalmia angustifolia). Prominent herbaceous species included soft rush, sensitive fern, common marsh bedstraw (Galium palustre), and creeping butter-cup. No priority or sensitive species were identified in WL-19 during the wetland assessment nor the plant surveys conducted within the wetland.

A loosely channelized input, originating from the ditch of the elevated section of Central Caribou Road, located to the east of WL-19, appears to be the primary source of hydrology for this wetland. The only apparent outflow location for WL-19 is the Highway 106 ditching flowing southward and joining WL-10, although this likely only occurs during high flow events.

**Wetland #20 (WL-20)**

Wetland #20 (WL-20) is located on the east side of Highway 106, approximately 190 m by road north of the Central Caribou Road overpass. Its boundaries nearly avoid the NSTIR Highway 106 ROW, with only 0.008 ha of a total area of 0.071 ha falling outside the re-aligned pipeline route and on privately-owned land to the east. WL-20 appears to be the result of former excavations or ‘borrow-pits’ and is classified as highly disturbed shrub swamp that is likely subject to seasonal flooding, as well as is likely temporarily inundated during high flow events.

The small wetland area assessed was dominated by a shrubby overstory comprised of speckled alder and a low shrub layer comprising white meadowsweet. An exotic vine, bittersweet nightshade, was also present and clinging to much of the shrub cover. Prominent herbaceous species included sensitive fern and field horsetail, although neither was very abundant. No priority or sensitive species were identified in WL-20 during the wetland assessment nor the plant surveys conducted within the wetland.

Storm water derived from ditch flow combined with overland runoff from the surrounding uplands appear to be the primary sources of hydrology for WL-20. WL-20 appears isolated as no outflow location was identified.

**Tables A5.1-5A and A5.1-5B,** below, provide a preliminary assessment of potential wetland functions for wetlands observed, based on field delineation and functional evaluation conducted in spring and summer of 2019.
### Table A5.1-5A: Key Wetland Functions for Non-Tidal Wetlands within or Adjacent to the Re-aligned Pipeline Route\(^1,2\)

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<th>Water Cooling</th>
<th>Sediment Retention &amp; Stabilization</th>
<th>Phosphorous Removal</th>
<th>Nitrate Removal and Retention</th>
<th>Carbon Sequestration</th>
<th>Organic Nutrient Export</th>
<th>Anadromous Fish Habitat</th>
<th>Resident Fish Habitat</th>
<th>Aquatic Invertebrate Habitat</th>
<th>Amphibian and Turtle Habitat</th>
<th>Waterbird Feeding Habitat</th>
<th>Waterbird Nesting Habitat</th>
<th>Songbird, Raptor &amp; Mammal Habitat</th>
<th>Pollinator Habitat</th>
<th>Native Plant Habitat</th>
<th>Public Use &amp; Recognition</th>
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<tbody>
<tr>
<td>WL-5A</td>
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</tbody>
</table>

**Notes:**

1. Key wetland functions were designated as those functions that were scored as ‘moderate and/or higher’ for both wetland function and benefit rating by the WESP-AC assessment.
2. Key wetland functions are based only the assessed portion of each wetland (i.e., within the NSTIR ROW).

● Indicates the function is present as per 1.
<table>
<thead>
<tr>
<th>Wetland No.</th>
<th>Storm Surge Interception</th>
<th>Water Purification</th>
<th>Organic Nutrient Export</th>
<th>Fish Habitat</th>
<th>Waterbird Habitat</th>
<th>Songbird &amp; Habitat</th>
<th>Biodiversity Maintenance</th>
<th>Wetland Stability</th>
<th>Public Use &amp; Recognition</th>
</tr>
</thead>
<tbody>
<tr>
<td>WL-3</td>
<td>●</td>
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</tr>
</tbody>
</table>

Notes:

1. Key wetland functions were designated as those functions that were scored as ‘moderate and/or higher’ for both wetland function and benefit rating by the WESP-AC assessment. The functions available for tidal wetlands are different than for non-tidal wetlands.

2. Key wetland functions are based only the assessed portion of each wetland (i.e., within the NSTIR ROW).

● Indicates the function is present as noted in 1.
References:


Photo plate A5.1-1 - Wetlands Assessed in 2019

WL-3 – June 17, 2019

WC05 runs through WL-3
48 inch outflow culvert

24 inch wooden culvert input

48 inch inflow culvert
WL-5C – June 18, 2019

WC08 outflow:

48 inch input culvert:
Culvert input from Roundabout: Soil pit

Small outlet stream
WL-7 - June 18, 2019

WC09 (Haliburton Brook) flows through WL-7
Soil pit in wetland:

WC10
WC11 passes through this wetland
WL-11-2019 – June 4, 2019

WC12 Passes through WL11-2019

Soil Pit
WL-13 - June 4, 2019 (WC13 passes through WL-13)
Culvert for WC-13B: Drainage from agricultural field:
Appendix A5.1-A

Wetland Delineation Data Sheets

Note: Plant wetland indicator status ranks are for United States Fish and Wildlife Service (USFWS) Northeast Region and do not always match the Nova Scotia Plant Indicator List.
WETLAND DETERMINATION DATA FORM - MARITIMES

Project/Site: Northern Pulp Plant - Pipeline PFA
Municipality/County: Pictou
Sampling Date: 30-Jul-19
Applicant/Owner: NPNS
Investigator(s): Chris Kennedy
Affiliation: Dillon Consulting

Landform (hillslope, terrace, etc.): Footslope
Local relief (concave, convex, none): flat
Slope: 0.0% / 0.0*
Lat.: 45.670176
Long.: -62.727778
Datum: NAD83

<table>
<thead>
<tr>
<th>Soil Map Unit Name/Type</th>
<th>Tormentine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Type</td>
<td>Salt Marsh</td>
</tr>
</tbody>
</table>

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐
(If no, explain in Remarks.)
Are Vegetation ☑, Soil ☑, or Hydrology ☑ significantly disturbed?
Are "Normal Circumstances" present? Yes ☐ No ☐
(If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

**Hydrophytic Vegetation Present?** Yes ☐ No ☐

**Hydric Soil Present?** Yes ☐ No ☐

**Wetland Hydrology Present?** Yes ☐ No ☐

**Is the Sampled Area within a Wetland?** Yes ☐ No ☐

Remarks:
Freshwater input from a ditch-fed culvert (hydrology). Road to Jitney trail represents encroachment of fill material (soil). Exotic shrubs and other garden escapees are present along edges and within wetland (Vegetation).

**VEGETATION** - Use scientific names of plants.

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 10 m)</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 5 m)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
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<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
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<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 2 m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Schoenoplectus acutus 25 ☑ 21.1% OBL</td>
</tr>
<tr>
<td>2. Typha latifolia 25 ☑ 21.1% OBL</td>
</tr>
<tr>
<td>3. Typha angustifolia 25 ☑ 21.1% OBL</td>
</tr>
<tr>
<td>4. Phalaris arundinacea 25 ☑ 21.1% FACW</td>
</tr>
<tr>
<td>5. Impatiens capensis 5 ☑ 4.2% FACW</td>
</tr>
<tr>
<td>6. Carex stipata 0.5 ☑ 0.4% OBL</td>
</tr>
<tr>
<td>7. Spartina alterniflora 5 ☑ 4.2% OBL</td>
</tr>
<tr>
<td>8. Galium palustre 1 ☑ 0.8% OBL</td>
</tr>
<tr>
<td>9. Solanum dulcamara 2 ☑ 1.7% FAC</td>
</tr>
<tr>
<td>10. Calystegia sepium 5 ☑ 4.2% FAC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: )</th>
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<tbody>
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<td>1</td>
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<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
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</tbody>
</table>

Remarks: (Include photo numbers here or on a separate sheet.)

<table>
<thead>
<tr>
<th>Dominant Species?</th>
<th>Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Dominant Species That are OBL, FACW, or FAC:</td>
<td>4</td>
<td>(A)</td>
</tr>
<tr>
<td>Total Number of Dominant Species Across All Strata:</td>
<td>4</td>
<td>(B)</td>
</tr>
<tr>
<td>Percent of dominant Species That are OBL, FACW, or FAC:</td>
<td>100.0%</td>
<td>(A/B)</td>
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<tr>
<td>Prevalence Index:</td>
<td>B/A = 1.371</td>
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</tbody>
</table>

Hydrophytic Vegetation Indicators:
☑ 1 - Rapid Test for Hydrophytic Vegetation
☑ 2 - Dominance Test is > 50%
☐ 3 - Prevalence Index is ≤3.0
☐ 4 - Morphological Adaptations 1 (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation 1 (Explain)

Hydrophytic Vegetation Present? Yes ☐ No ☐

1 Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
**SOIL**

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
<th>Texture</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-30</td>
<td>5YR</td>
<td>3/2</td>
<td>Silty Clay</td>
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</tbody>
</table>

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.  
2 Location: PL=Pore Lining. M=Matrix.

**Hydric Soil Indicators:**
- Histosol (A1)
- Histic Eppedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)

**Indicators for Problematic Hydric Soils:**
- Coast Prairie Redox (A16)
- Dark Surface (S7)
- Iron Manganese Masses (F12)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

**Restrictive Layer (if observed):**
- Type: None encountered
- Depth (inches): N/A

**Hydric Soil Present?** Yes ☑ No ☐

**Remarks:**

**HYDROLOGY**

**Wetland Hydrology Indicators:**
- Primary Indicators (minimum of one is required; check all that apply)
  - Surface Water (A1)
  - High Water Table (A2)
  - Saturation (A3)
  - Water Marks (B1)
  - Sediment Deposits (B2)
  - Drift Deposits (B3)
  - Algal Mat or Crust (B4)
  - Iron Deposits (B5)
  - Inundation Visible on Aerial Imagery (B7)
  - Sparsely Vegetated Concave Surface (B8)

- Secondary Indicators (minimum of two required)
  - Water-Stained Leaves (B9)
  - Aquatic Fauna (B13)
  - True Aquatic Plants (B14)
  - Hydrogen Sulfide Odor (C1)
  - Oxidized Rhizospheres on Living Roots (C3)
  - Inundation Visible on Aerial Imagery (C9)
  - Stunted or Stressed Plants (D1)
  - FAC-Neutral Test (D5)

**Field Observations:**
- Surface Water Present? Yes ☑ No ☐ Depth (inches): 4
- Water Table Present? Yes ☑ No ☐ Depth (inches): 0
- Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 0

**Wetland Hydrology Present?** Yes ☑ No ☐

**Remarks:**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
### WETLAND DETERMINATION DATA FORM - MARITIMES

**Project/Site:** Northern Pulp Plant - Pipeline PFA  
**Municipality/County:** Pictou  
**Sampling Date:** 30-Jul-19  
**Applicant/Owner:** NPNS  
**Investigator(s):** Chris Kennedy  
**Landform (hillslope, terrace, etc.):** Basin  
**Affiliation:** Dillon Consulting  
**Datum:** NAD83

Are climatic/hydrologic conditions on the site typical for this time of year? (Yes ☐ No ☐)  
Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? (Yes ☐ No ☐)  
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (Yes ☐ No ☐)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

**Hydrophytic Vegetation Present?** ☐ Yes ☐  
**Hydric Soil Present?** ☐ Yes ☐  
**Wetland Hydrology Present?** ☐ Yes ☐  
**Is the Sampled Area within a Wetland?** ☐ Yes ☐  
**Remarks:** Wetland is a shrub swamp with wet meadow characteristics and highly disturbed. Edges are regularly mowed on roundabout side (Vegetation), road and other fill material within wetland (soil), and moderate stormwater inputs (hydrology)

### VEGETATION - Use scientific names of plants.

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 10 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Dominance Test worksheet:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Salix bebbiana</td>
<td>10</td>
<td>☑ 90.9% FACW</td>
<td></td>
<td>Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)</td>
</tr>
<tr>
<td>2. Picea rubens</td>
<td>0.5</td>
<td>☑ 4.5% FACU</td>
<td></td>
<td>Total Number of Dominant Species Across All Strata: 3 (B)</td>
</tr>
<tr>
<td>3. Acer rubrum</td>
<td>0.5</td>
<td>☑ 4.5% FAC</td>
<td></td>
<td>Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)</td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td>Prevalence Index = B/A = 2.129</td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td>100.0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 5 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Dominance Test worksheet:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prunus virginiana</td>
<td>5</td>
<td>☑ 16.1% FACU</td>
<td></td>
<td>Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)</td>
</tr>
<tr>
<td>2. Alnus incana</td>
<td>20</td>
<td>☑ 64.5% FACW</td>
<td></td>
<td>Total Number of Dominant Species Across All Strata: 3 (B)</td>
</tr>
<tr>
<td>3. Rosa multiflora</td>
<td>5</td>
<td>☑ 16.1% FACU</td>
<td></td>
<td>Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)</td>
</tr>
<tr>
<td>4. Spiraea alba</td>
<td>0.5</td>
<td>1.6% FACW</td>
<td></td>
<td>Prevalence Index = B/A = 2.129</td>
</tr>
<tr>
<td>5. Rubus hispidus</td>
<td>0.5</td>
<td>1.6% FACW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td>100.0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 2 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Dominance Test worksheet:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Phalaris arundinacea</td>
<td>80</td>
<td>☑ 85.6% FACW</td>
<td></td>
<td>Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)</td>
</tr>
<tr>
<td>2. Solidago rugosa</td>
<td>2</td>
<td>2.1% FAC</td>
<td></td>
<td>Total Number of Dominant Species Across All Strata: 3 (B)</td>
</tr>
<tr>
<td>3. Carex intumescens</td>
<td>0.5</td>
<td>0.5% FACW</td>
<td></td>
<td>Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)</td>
</tr>
<tr>
<td>4. Equisetum sylvaticum</td>
<td>5</td>
<td>5.3% FACW</td>
<td></td>
<td>Prevalence Index = B/A = 2.129</td>
</tr>
<tr>
<td>5. Persicaria hydropiper</td>
<td>0.5</td>
<td>0.5% OBL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Carex iria</td>
<td>0.5</td>
<td>0.5% OBL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Lysimachia terrestris</td>
<td>5</td>
<td>5.3% OBL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>93.5</td>
<td>93.5%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: )</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Dominance Test worksheet:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Remarks: (Include photo numbers here or on a separate sheet.)

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
SOIL

Sampling Point: WL-5A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Color (moist)</th>
<th>%</th>
<th>Redox Features</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-12</td>
<td></td>
<td>7.5YR</td>
<td>4/2</td>
<td>98</td>
<td>7.5YR</td>
<td>5/8</td>
<td>2</td>
<td>C</td>
</tr>
<tr>
<td>12-16</td>
<td></td>
<td>10YR</td>
<td>6/1</td>
<td>95</td>
<td>7.5YR</td>
<td>5/8</td>
<td>5</td>
<td>C</td>
</tr>
<tr>
<td>16-36</td>
<td></td>
<td>5YR</td>
<td>4/2</td>
<td>98</td>
<td>7.5YR</td>
<td>5/8</td>
<td>2</td>
<td>C</td>
</tr>
</tbody>
</table>

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

Hydric Soil Indicators:
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)

Restrictive Layer (if observed):
- Type: None encountered
- Depth (inches): N/A

Hydric Soil Present? Yes ☐ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
- Primary Indicators (minimum of one is required; check all that apply)
  - Surface Water (A1)
  - High Water Table (A2)
  - Saturation (A3)
  - Water Marks (B1)
  - Sediment Deposits (B2)
  - Drift Deposits (B3)
  - Algal Mat or Crust (B4)
  - Iron Deposits (B5)
  - Inundation Visible on Aerial Imagery (B7)
  - Sparingly Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)
- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Dry Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)

Field Observations:
- Surface Water Present? Yes ☐ No ☐ Depth (inches): ______
- Water Table Present? Yes ☐ No ☐ Depth (inches): 26
- Saturation Present? (includes capillary fringe) Yes ☐ No ☐ Depth (inches): 20

Wetland Hydrology Present? Yes ☐ No ☐

Remarks:

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
**WETLAND DETERMINATION DATA FORM - MARITIMES**

Project/Site: Northern Pulp Plant - Pipeline PFA  
Municipality/County: Pictou  
Applicant/Owner: NPNS  
Investigator(s): Chris Kennedy  
Landform (hillslope, terrace, etc.): Basin  
Slope: 0.0% / 0.0%  
Local relief (concave, convex, none): concave  
Lat.: 45.684747  
Long.: -62.730116  
Datum: NAD83  
Soil Map Unit Name/Type:  
Wetland Type: Swamp - shrub  
Sampling Date: 30-Jul-19  
Sampling Point: WL-5B  
Affiliation: Dillon Consulting  

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes ☑️</th>
<th>No ☐</th>
<th>Is the Sampled Area within a Wetland?</th>
<th>Yes ☑️</th>
<th>No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes ☑️</td>
<td>No ☐</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes ☑️</td>
<td>No ☐</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remarks:
Wetland is a shrub swamp with wet meadow characteristics and highly disturbed. Edges are regularly mowed on roundabout side (Vegetation), road and other fill material within wetland (soil), and moderate stormwater inputs (hydrology).

### VEGETATION - Use scientific names of plants.

**Tree Stratum (Plot size: 10 m)**

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Salix bebbiana</td>
<td>10</td>
<td>66.7% FACW</td>
<td></td>
</tr>
<tr>
<td>2. Acer rubrum</td>
<td>5</td>
<td>33.3% FAC</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>0</td>
<td>0.0% FACW</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>0.0% FAC</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0% FAC</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sapling/Shrub Stratum (Plot size: 5 m)**

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alnus incana</td>
<td>60</td>
<td>91.6% FACW</td>
<td></td>
</tr>
<tr>
<td>2. Rubus allegheniensis</td>
<td>5</td>
<td>7.6% FACU</td>
<td></td>
</tr>
<tr>
<td>3. Prunus virginiana</td>
<td>0.5</td>
<td>0.8% FACU</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>0.0% FACU</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0% FACU</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>65.5</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Herb Stratum (Plot size: 2 m)**

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Solidago rugosa</td>
<td>5</td>
<td>8.0% FAC</td>
<td></td>
</tr>
<tr>
<td>2. Impatiens capensis</td>
<td>15</td>
<td>24.0% FACW</td>
<td></td>
</tr>
<tr>
<td>3. Equisetum arvense</td>
<td>5</td>
<td>8.0% FAC</td>
<td></td>
</tr>
<tr>
<td>4. Phalaris arundinacea</td>
<td>30</td>
<td>48.0% FACW</td>
<td></td>
</tr>
<tr>
<td>5. Ranunculus repens</td>
<td>3</td>
<td>8.0% FAC</td>
<td></td>
</tr>
<tr>
<td>6. Carex arctata</td>
<td>0.5</td>
<td>0.8% UPL</td>
<td></td>
</tr>
<tr>
<td>7. Carex scoparia</td>
<td>0.5</td>
<td>0.8% FACW</td>
<td></td>
</tr>
<tr>
<td>8. Lysimachia terrestris</td>
<td>0.5</td>
<td>0.8% OBL</td>
<td></td>
</tr>
<tr>
<td>9. Chelone giabra</td>
<td>0.5</td>
<td>0.8% OBL</td>
<td></td>
</tr>
<tr>
<td>10. Persicaria sagitata</td>
<td>0.5</td>
<td>0.8% OBL</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>62.5</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Woody Vine Stratum (Plot size: ____________)**

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>0</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remarks: (Include photo numbers here or on a separate sheet.)

---

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Color (moist)</td>
<td>%</td>
<td>Color (moist)</td>
<td>%</td>
</tr>
<tr>
<td>0-1</td>
<td>7.5YR</td>
<td>3/2</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>1-3</td>
<td>7.5YR</td>
<td>4/2</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>3-13</td>
<td>10YR</td>
<td>7/1</td>
<td>95</td>
<td>7.5YR</td>
</tr>
<tr>
<td>13-36</td>
<td>5YR</td>
<td>4/2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.
2Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Redox Dark Surface (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Restrictive Layer (if observed):
Type: None encountered
Depth (inches): N/A

Hydric Soil? Yes ☐ No ☐

Remarks:

Hydrology

Primary Indicators (minimum of one is required; check all that apply)
- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)

Secondary Indicators (minimum of two required)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)

Field Observations:
Surface Water Present? Yes ☐ No ☐ Depth (inches): __________
Water Table Present? Yes ☐ No ☐ Depth (inches): __________
Saturation Present? Yes ☐ No ☐ Depth (inches): 22

Wetland Hydrology? Yes ☐ No ☐

Remarks:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
**WETLAND DETERMINATION DATA FORM - MARITIMES**

<table>
<thead>
<tr>
<th>Project/Site: Northern Pulp Plant - Pipeline PFA</th>
<th>Municipality/County: Pictou</th>
<th>Sampling Date: 30-Jul-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicant/Owner: NPNS</td>
<td></td>
<td>Sampling Point: WL-5C</td>
</tr>
<tr>
<td>Investigator(s): Chris Kennedy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Landform (hillslope, terrace, etc.): Hillside**

**Slope:** 0.0% / 0.0°

**Lat.:** 45.685067

**Long.:** -62.732702

**Datum:** NAD83

**Soil Map Unit Name/Type:** Tormentine

**Wetland Type:** Swamp - shrub

**Are climatic/hydrologic conditions on the site typical for this time of year?** Yes ☐ No ☐

**Are Vegetation ☑, Soil ☑, or Hydrology ☑ significantly disturbed?**

**Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic?**

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

**Hydrophytic Vegetation Present?** Yes ☐ No ☐

**Hydric Soil Present?** Yes ☐ No ☐

**Wetland Hydrology Present?** Yes ☐ No ☐

**Is the Sampled Area within a Wetland?** Yes ☐ No ☐

**Remarks:**

Treed Swamp with flood plain characteristics. Vegetation disturbed due to proximity to roadway, evidence of ATV use and presence of road fill within wetland (soil disturbance) and strong stormwater influence from ditching and catchent (hydrology).

### VEGETATION - Use scientific names of plants.

**Tree Stratum (Plot size: 10 m)****

<table>
<thead>
<tr>
<th>Tree Stratum</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel.Strat. Cover</th>
<th>Prevalence Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Populus tremuloides</td>
<td>5</td>
<td>☑</td>
<td>30.0%</td>
<td>FACU</td>
<td></td>
</tr>
<tr>
<td>2. Acer rubrum</td>
<td>5</td>
<td>☑</td>
<td>50.0%</td>
<td>FAC</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>0</td>
<td>☐</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>☐</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>☐</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>☑</td>
<td>30.0%</td>
<td>FACU</td>
<td></td>
</tr>
</tbody>
</table>

**Sapling/Shrub Stratum (Plot size: 5 m)****

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel.Strat. Cover</th>
<th>Prevalence Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alnus incana</td>
<td>45</td>
<td>☑</td>
<td>80.4%</td>
<td>FACW</td>
<td></td>
</tr>
<tr>
<td>2. Rosa multiflora</td>
<td>10</td>
<td>☑</td>
<td>17.9%</td>
<td>FACU</td>
<td></td>
</tr>
<tr>
<td>3. Populus tremuloides</td>
<td>0.5</td>
<td>☑</td>
<td>0.9%</td>
<td>FACU</td>
<td></td>
</tr>
<tr>
<td>4. Crataegus monogyna</td>
<td>0.5</td>
<td>☑</td>
<td>0.9%</td>
<td>FACU</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>☐</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>☑</td>
<td>80.4%</td>
<td>FACW</td>
<td></td>
</tr>
</tbody>
</table>

**Herb Stratum (Plot size: 2 m)****

<table>
<thead>
<tr>
<th>Herb Stratum</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel.Strat. Cover</th>
<th>Prevalence Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Impatiens capensis</td>
<td>25</td>
<td>☑</td>
<td>35.2%</td>
<td>FACW</td>
<td></td>
</tr>
<tr>
<td>2. Persicaria sagittata</td>
<td>25</td>
<td>☑</td>
<td>35.2%</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>3. Ranunculus acris</td>
<td>5</td>
<td>☑</td>
<td>7.0%</td>
<td>FAC</td>
<td></td>
</tr>
<tr>
<td>4. Ranunculus repens</td>
<td>5</td>
<td>☑</td>
<td>7.0%</td>
<td>FAC</td>
<td></td>
</tr>
<tr>
<td>5. Geum aleppicum</td>
<td>3</td>
<td>☑</td>
<td>4.2%</td>
<td>FAC</td>
<td></td>
</tr>
<tr>
<td>6. Carex arctia</td>
<td>1</td>
<td>☑</td>
<td>1.4%</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>7. Lycopus americanus</td>
<td>1</td>
<td>☑</td>
<td>1.4%</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>8. Solidago rugosa</td>
<td>0.5</td>
<td>☑</td>
<td>0.7%</td>
<td>FAC</td>
<td></td>
</tr>
<tr>
<td>9. Glyceria striata</td>
<td>5</td>
<td>☑</td>
<td>7.0%</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>10. Lysimachia terrestris</td>
<td>0.5</td>
<td>☑</td>
<td>0.7%</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>Woody Vine Stratum (Plot size: )</td>
<td>71</td>
<td>☑</td>
<td>35.2%</td>
<td>FACW</td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**

Hydrophytic Vegetation Present? Yes ☐ No ☐

**Remarks:** (Include photo numbers here or on a separate sheet.)

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Location</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>7.5YR</td>
<td>4/2</td>
<td>99</td>
<td>7.5YR</td>
<td>5/8</td>
<td>1</td>
<td></td>
<td>Sandy Loam</td>
</tr>
<tr>
<td>10-18</td>
<td>7.5YR</td>
<td>4/2</td>
<td>97</td>
<td>7.5YR</td>
<td>5/8</td>
<td>3</td>
<td></td>
<td>Sandy Loam</td>
</tr>
<tr>
<td>18-21</td>
<td>10YR</td>
<td>7/1</td>
<td>60</td>
<td>7.5YR</td>
<td>5/8</td>
<td>40</td>
<td></td>
<td>Sandy Loam</td>
</tr>
<tr>
<td>21-36</td>
<td>5YR</td>
<td>4/2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silt Loam</td>
</tr>
</tbody>
</table>

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.  
2 Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)

Indicators of problematic Hydric Soils:
- Coast Prairie Redox (A16)
- Dark Surface (S7)
- Iron Manganese Masses (F12)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

Restrictive Layer (if observed):
- Type: Not encountered
- Depth (inches): N/A

Remarks:

Hydrology

Primary Indicators (minimum of one is required; check all that apply):
- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)
- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Dry Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)

Field Observations:
- Surface Water Present? Yes ☑ No ☐ Depth (inches): 8
- Water Table Present? Yes ☑ No ☐ Depth (inches): 
- Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 22

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
**Vegetation** - Use scientific names of plants.

<table>
<thead>
<tr>
<th>Stratum</th>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Rel. Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Stratum (Plot size: 10 m)</td>
<td>Acer rubrum</td>
<td>0.5</td>
<td>0</td>
<td>0.0% FAC</td>
<td>100.0% FAC</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>0.0</td>
<td>0</td>
<td>0.0% FAC</td>
<td>0.0% FAC</td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>0.0</td>
<td>0</td>
<td>0.0% FAC</td>
<td>0.0% FAC</td>
</tr>
<tr>
<td></td>
<td>4.</td>
<td>0.0</td>
<td>0</td>
<td>0.0% FAC</td>
<td>0.0% FAC</td>
</tr>
<tr>
<td></td>
<td>5.</td>
<td>0.0</td>
<td>0</td>
<td>0.0% FAC</td>
<td>0.0% FAC</td>
</tr>
<tr>
<td></td>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
<td>Total Cover</td>
</tr>
<tr>
<td>Sapling/Shrub Stratum (Plot size: 5 m)</td>
<td>Salix bebbiana</td>
<td>10</td>
<td>✅</td>
<td>50.0% FACW</td>
<td>0.0% FACW</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>5</td>
<td>✅</td>
<td>25.0% FAC</td>
<td>0.0% FAC</td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>5</td>
<td>✅</td>
<td>25.0% FACW</td>
<td>0.0% FACW</td>
</tr>
<tr>
<td></td>
<td>4.</td>
<td>0</td>
<td>0</td>
<td>0.0% FAC</td>
<td>0.0% FAC</td>
</tr>
<tr>
<td></td>
<td>5.</td>
<td>0</td>
<td>0</td>
<td>0.0% FAC</td>
<td>0.0% FAC</td>
</tr>
<tr>
<td></td>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
<td>Total Cover</td>
</tr>
<tr>
<td>Herb Stratum (Plot size: 2 m)</td>
<td>Typha latifolia</td>
<td>60</td>
<td>✅</td>
<td>51.9% OBL</td>
<td>0.0% OBL</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>20</td>
<td>17.3% FAC</td>
<td>0.0% FAC</td>
<td>0.0% FAC</td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>20</td>
<td>17.3% FAC</td>
<td>0.0% FAC</td>
<td>0.0% FAC</td>
</tr>
<tr>
<td></td>
<td>4.</td>
<td>5</td>
<td>4.3% FAC</td>
<td>0.0% FAC</td>
<td>0.0% FAC</td>
</tr>
<tr>
<td></td>
<td>5.</td>
<td>10</td>
<td>8.7% FAC</td>
<td>0.0% FAC</td>
<td>0.0% FAC</td>
</tr>
<tr>
<td></td>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
<td>Total Cover</td>
</tr>
<tr>
<td>Woody Vine Stratum (Plot size: )</td>
<td>1.</td>
<td>0</td>
<td>0</td>
<td>0.0% FAC</td>
<td>0.0% FAC</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>0</td>
<td>0</td>
<td>0.0% FAC</td>
<td>0.0% FAC</td>
</tr>
<tr>
<td></td>
<td>10.</td>
<td>0</td>
<td>0</td>
<td>0.0% FAC</td>
<td>0.0% FAC</td>
</tr>
<tr>
<td></td>
<td>115.5</td>
<td></td>
<td></td>
<td></td>
<td>Total Cover</td>
</tr>
</tbody>
</table>

**Prevalence Index Worksheet:**

<table>
<thead>
<tr>
<th>Percent of dominant Species That Are OBL, FACW, or FAC:</th>
<th>OBL species</th>
<th>Multiply By</th>
</tr>
</thead>
<tbody>
<tr>
<td>100.0% (A/B)</td>
<td>60.5</td>
<td>1</td>
</tr>
</tbody>
</table>

**Hydrophytic Vegetation Indicators:**

- Rapid Test for Hydrophytic Vegetation
- Dominance Test is > 50%
- Prevalence Index is ≤ 3.0
- Morphological Adaptations

**Remarks:** (Include photo numbers here or on a separate sheet.)

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
### Profile Description:

(Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix Color (moist)</th>
<th>%</th>
<th>Redox Features Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc²</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-16</td>
<td>7.5YR</td>
<td>2.5/1</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td>Muck</td>
<td></td>
</tr>
<tr>
<td>16-26</td>
<td>7.5YR</td>
<td>6/1</td>
<td>99</td>
<td>7.5YR</td>
<td>6/8</td>
<td>1</td>
<td>Silt Loam</td>
<td></td>
</tr>
<tr>
<td>26-31</td>
<td>7.5YR</td>
<td>6/1</td>
<td>99</td>
<td>7.5YR</td>
<td>6/8</td>
<td>1</td>
<td>Loam</td>
<td></td>
</tr>
</tbody>
</table>

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.  
2 Location: PL=Pore Lining. M=Matrix.

**Hydric Soil Indicators:**
- [x] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [x] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [x] Stratified Layers (A5)
- [ ] 2 cm Muck (A10)
- [x] Depleted Below Dark Surface (A11)
- [x] Thick Dark Surface (A12)
- [ ] Sandy Muck Mineral (A11)
- [ ] 5 cm Mucky Peat or Peat (A13)

**Indicators for Problematic Hydric Soils:**
- [ ] Coast Prairie Redox (A16)
- [ ] Dark Surface (S7)
- [ ] Iron Manganese Masses (F12)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

**Restrictive Layer (if observed):**
- Type:  
- Depth (inches): ______________________

**Hydric Soil Present?** Yes ☐ No ☐

**Remarks:**

### HYDROLOGY

**Wetland Hydrology Indicators:**
- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [x] Water Marks (B1)
- [x] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [x] Iron Deposits (B5)
- [x] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)

**Secondary Indicators (minimum of two required):**
- [ ] Surface Soil Cracks (B6)
- [x] Drainage Patterns (B10)
- [x] Dry Season Water Table (C2)
- [x] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Stunted or Stressed Plants (D1)
- [x] Geomorphic Position (D2)
- [x] FAC-Neutral Test (D5)

**Field Observations:**
- Surface Water Present? Yes ☐ No ☐ Depth (inches): 8
- Water Table Present? Yes ☐ No ☐ Depth (inches): 0
- Saturation Present? (includes capillary fringe) Yes ☐ No ☐ Depth (inches): 0

**Wetland Hydrology Present?** Yes ☐ No ☐

**Remarks:**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
Project/Site: Northern Pulp Plant - Pipeline PFA  
Municipality/County: Pictou  
Sampling Date: 30-Jul-19  
Applicant/Owner: NPNS  
Investigator(s): Vanessa Graves, Tom Neily  
Affiliation: Dillon Consulting  
Landform (hillslope, terrace, etc.): Basin  
Local relief (concave, convex, none): concave  
Slope: 0.0% / 0.0 *  
Lat.: 45.681052  
Long.: -62.732498  
Datum: NAD83  
Sampling Point: WL-5E  

### SUMMARY OF FINDINGS

- **Wetland Hydrology Present?** Yes  
- **Hydric Soil Present?** Yes  
- **Hydrophytic Vegetation Present?** Yes  
- **Is the Sampled Area within a Wetland?** Yes  

**Remarks:**

Wetland is a shrub swamp with wet meadow characteristics and highly disturbed. Edges are regularly mowed on roundabout side (Vegetation), road and other fill material within wetland (soil), and moderate stormwater inputs (hydrology).

**VEGETATION**

Use scientific names of plants.

<table>
<thead>
<tr>
<th>Stratum (Plot size)</th>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Rel. Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Stratum (10 m)</td>
<td>0</td>
<td>0.0%</td>
<td>Yes</td>
<td>0.0%</td>
<td>OBL</td>
</tr>
<tr>
<td>1.</td>
<td>0</td>
<td>0.0%</td>
<td>Yes</td>
<td>0.0%</td>
<td>OBL</td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>0.0%</td>
<td>Yes</td>
<td>0.0%</td>
<td>OBL</td>
</tr>
<tr>
<td>3.</td>
<td>0</td>
<td>0.0%</td>
<td>Yes</td>
<td>0.0%</td>
<td>OBL</td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>0.0%</td>
<td>Yes</td>
<td>0.0%</td>
<td>OBL</td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td>Yes</td>
<td>0.0%</td>
<td>OBL</td>
</tr>
<tr>
<td>Sapling/Shrub Stratum (5 m)</td>
<td>10</td>
<td>50.0% FACW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Alnus incana</td>
<td>10</td>
<td>50.0% FACW</td>
<td>Yes</td>
<td>50.0% FACW</td>
<td>Yes</td>
</tr>
<tr>
<td>2. Salix bebbiana</td>
<td>10</td>
<td>50.0% FACW</td>
<td>Yes</td>
<td>50.0% FACW</td>
<td>Yes</td>
</tr>
<tr>
<td>3.</td>
<td>0</td>
<td>0.0%</td>
<td>Yes</td>
<td>0.0%</td>
<td>OBL</td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>0.0%</td>
<td>Yes</td>
<td>0.0%</td>
<td>OBL</td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td>Yes</td>
<td>0.0%</td>
<td>OBL</td>
</tr>
<tr>
<td>Herb Stratum (2 m)</td>
<td>20</td>
<td>10.0% OBL</td>
<td>Yes</td>
<td>10.0% OBL</td>
<td>Yes</td>
</tr>
<tr>
<td>1. Typha latifolia</td>
<td>10</td>
<td>10.0% OBL</td>
<td>Yes</td>
<td>10.0% OBL</td>
<td>Yes</td>
</tr>
<tr>
<td>2. Phalaris arundinacea</td>
<td>40</td>
<td>40.0% FACW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Mentha arvensis</td>
<td>30</td>
<td>30.0% FACW</td>
<td>Yes</td>
<td>30.0% FACW</td>
<td>Yes</td>
</tr>
<tr>
<td>4. Persicaria sagittata</td>
<td>10</td>
<td>10.0% OBL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Myosotis laxa</td>
<td>10</td>
<td>10.0% OBL</td>
<td>Yes</td>
<td>10.0% OBL</td>
<td>Yes</td>
</tr>
<tr>
<td>6.</td>
<td>0</td>
<td>0.0%</td>
<td>Yes</td>
<td>0.0%</td>
<td>OBL</td>
</tr>
<tr>
<td>7.</td>
<td>0</td>
<td>0.0%</td>
<td>Yes</td>
<td>0.0%</td>
<td>OBL</td>
</tr>
<tr>
<td>8.</td>
<td>0</td>
<td>0.0%</td>
<td>Yes</td>
<td>0.0%</td>
<td>OBL</td>
</tr>
<tr>
<td>9.</td>
<td>0</td>
<td>0.0%</td>
<td>Yes</td>
<td>0.0%</td>
<td>OBL</td>
</tr>
<tr>
<td>10.</td>
<td>0</td>
<td>0.0%</td>
<td>Yes</td>
<td>0.0%</td>
<td>OBL</td>
</tr>
<tr>
<td>Woody Vine Stratum (2 m)</td>
<td>100</td>
<td>Total Cover</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>0</td>
<td>0.0%</td>
<td>Yes</td>
<td>0.0%</td>
<td>OBL</td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>0.0%</td>
<td>Yes</td>
<td>0.0%</td>
<td>OBL</td>
</tr>
<tr>
<td>10.</td>
<td>0</td>
<td>0.0%</td>
<td>Yes</td>
<td>0.0%</td>
<td>OBL</td>
</tr>
</tbody>
</table>

**Remarks:** (Include photo numbers here or on a separate sheet.)

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
### SOIL

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-6</td>
<td>2.5YR</td>
<td>Sandy Gleyed Matrix (S4)</td>
<td>loose with roots</td>
<td></td>
</tr>
<tr>
<td>6-18</td>
<td>5YR</td>
<td>Sandy Redox (S5)</td>
<td>saturated</td>
<td></td>
</tr>
<tr>
<td>18-25</td>
<td>10Y</td>
<td>Stripped Matrix (S6)</td>
<td>with rust and black flecks</td>
<td></td>
</tr>
</tbody>
</table>

1. Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.
2. Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)

**Restrictive Layer (if observed):**

- Type: Not encountered
- Depth (inches): N/A

**Remarks:**

---

### HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)

Secondary Indicators (minimum of two required)

- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tiled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)

**Field Observations:**

- Surface Water Present? Yes ☒ No ☐ Depth (inches): 6
- Water Table Present? Yes ☒ No ☐ Depth (inches): 13
- Saturation Present? Yes ☒ No ☐ Depth (inches): 6

**Wetland Hydrology Present?** Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

**Remarks:**

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
WETLAND DETERMINATION DATA FORM - MARITIMES

Project/Site: Northern Pulp Plant - Pipeline PFA
Applicant/Owner: NPNS
Investigator(s): Vanessa Graves, Tom Neily
Landform (hillslope, terrace, etc.): Basin
Slope: 0.0% / 0.0°

Municipality/County: Pictou
Affiliation: Dillon Consulting

Sampling Date: 30-Jul-19
Local relief (concave, convex, none): flat
Datum: NAD83

Sampling Point: WL-6

Soil Map Unit Name/Type: Tormentine
Wetland Type: Swamp - shrub

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ○
Are "Normal Circumstances" present? Yes ☒ No ○

Are Vegetation ☒, Soil ☒, or Hydrology ☒ significantly disturbed?
Are Vegetation ☒, Soil ☒, or Hydrology ☒ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☒ No ○
Hydric Soil Present? Yes ☒ No ○
Is the Sampled Area within a Wetland? Yes ☒ No ○
Remarks: Soil disturbed from road fill and agricultural field infringes, hydrology disturbed from stormwater influence.

VEGETATION - Use scientific names of plants.

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 10 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel.Strat. Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>0.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>0.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>0.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>0.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 5 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel.Strat. Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alnus incana</td>
<td>70</td>
<td>☒ 70.0%</td>
<td>FACW</td>
<td></td>
</tr>
<tr>
<td>2. Salix discolor</td>
<td>10</td>
<td>10.0%</td>
<td>FACW</td>
<td></td>
</tr>
<tr>
<td>3. Sambucus nigra ssp. canadensis</td>
<td>5</td>
<td>5.0%</td>
<td>FACW</td>
<td></td>
</tr>
<tr>
<td>4. Spiraea alba</td>
<td>15</td>
<td>15.0%</td>
<td>FACW</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 2 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel.Strat. Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Equisetum sylvaticum</td>
<td>10</td>
<td>☒ 12.5%</td>
<td>FACW</td>
<td></td>
</tr>
<tr>
<td>2. Phalaris arundinacea</td>
<td>30</td>
<td>37.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Lysimachia terrestris</td>
<td>20</td>
<td>☒ 25.0%</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>4. Onoclea sensibilis</td>
<td>10</td>
<td>12.5%</td>
<td>FACW</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>10</td>
<td>12.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: )</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel.Strat. Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Soil disturbed from road fill and agricultural field infringes, hydrology disturbed from stormwater influence. |

Remarks: (Include photo numbers here or on a separate sheet.)

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
### Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Color (moist)</th>
<th>%</th>
<th>Redox Features</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>5YR</td>
<td>3/3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-7</td>
<td>7.5YR</td>
<td>5/2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-20</td>
<td>7.5YR</td>
<td>4/3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.  
2 Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Redox Gleyed Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

### Restrictive Layer (if observed):

- Type: Not encountered
- Depth (inches): N/A

### Hydric Soil Present?  Yes ☐  No ☐

### Remarks:

### HYDROLOGY

#### Wetland Hydrology Indicators:

- Primary Indicators (minimum of one is required; check all that apply)
  - Surface Water (A1)
  - High Water Table (A2)
  - Saturation (A3)
  - Water Marks (B1)
  - Sediment Deposits (B2)
  - Drift Deposits (B3)
  - Algal Mat or Crust (B4)
  - Iron Deposits (B5)
  - Inundation Visible on Aerial Imagery (B7)
  - Sparsely Vegetated Concave Surface (B8)
  - Water-Stained Leaves (B9)
  - Aquatic Fauna (B13)
  - True Aquatic Plants (B14)
  - Hydrogen Sulfide Odor (C1)
  - Oxidized Rhizospheres on Living Roots (C3)
  - Presence of Reduced Iron (C4)
  - Recent Iron Reduction in Tilled Soils (C6)
  - Thin Muck Surface (C7)
  - Gauge or Well Data (D9)
  - Other (Explain in Remarks)

- Secondary Indicators (minimum of two required)
  - Surface Soil Cracks (B6)
  - Drainage Patterns (B10)
  - Dry Season Water Table (C2)
  - Crayfish Burrows (C8)
  - Saturation Visible on Aerial Imagery (C9)
  - Stunted or Stressed Plants (D1)
  - Geomorphic Position (D2)
  - FAC-Neutral Test (D5)

### Field Observations:

<table>
<thead>
<tr>
<th>Surface Water Present?</th>
<th>Yes ☐  No ☐</th>
<th>Depth (inches): 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Table Present?</td>
<td>Yes ☐  No ☐</td>
<td>Depth (inches):</td>
</tr>
<tr>
<td>Saturation Present?</td>
<td>Yes ☐  No ☐</td>
<td>Depth (inches): 5</td>
</tr>
</tbody>
</table>

### Wetland Hydrology Present?  Yes ☐  No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

### Remarks:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
**WETLAND DETERMINATION DATA FORM - MARITIMES**

**Project/Site:** Northern Pulp Plant - Pipeline PFA  
**Applicant/Owner:** NPNS  
**Investigator(s):** Chris Kennedy  
**Municipality/County:** Pictou  
**Affiliation:** Dillon Consulting  
**Sampling Date:** 30-Jul-19  
**Sampling Point:** WL-7

**Landform (hillslope, terrace, etc.):** Floodplain  
**Local relief (concave, convex, none):** flat

| Slope: | 0.0% / 0.0% | Lat.: | 45.695260 | Long.: |-62.725775 |
|--------|-------------|-------|-----------|---------|
| Soil Map Unit Name/Type: | Torrentine | | | | |
| Wetland Type: | Floodplain |

**SUMMARY OF FINDINGS** - Attach site map showing sampling point locations, transects, important features, etc.

- Hydrophytic Vegetation Present? Yes ☐ No ☑
- Hydric Soil Present? Yes ☐ No ☑
- Wetland Hydrology Present? Yes ☐ No ☑
- Is the Sampled Area within a Wetland? Yes ☐ No ☑

Remarks:  
Hydrology disturbed by stormwater influence.

**VEGETATION** - Use scientific names of plants.

### Tree Stratum (Plot size: 10 m)

<table>
<thead>
<tr>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
<th>9.</th>
<th>10.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Absolute % Cover
- Dominant Species? Yes ☑ No ☐
- Rel.Strat. Cover
- Indicator Status

- Number of Dominant Species
  - That are OBL, FACW, or FAC: 3 (A)

- Total Number of Dominant Species Across All Strata: 3 (B)

- Percent of dominant Species
  - That Are OBL, FACW, or FAC: 100.0% (A/B)

### Sapling/Shrub Stratum (Plot size: 5 m)

<table>
<thead>
<tr>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
<th>9.</th>
<th>10.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30.3% FACW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Herb Stratum (Plot size: 2 m)

<table>
<thead>
<tr>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
<th>9.</th>
<th>10.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Woody Vine Stratum (Plot size: )

<table>
<thead>
<tr>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
<th>9.</th>
<th>10.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Remarks: (Include photo numbers here or on a separate sheet.)**

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Color (moist)</th>
<th>%</th>
<th>Redox Features</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>7.5YR</td>
<td>3/2</td>
<td>100</td>
<td></td>
<td>7.5YR</td>
<td>3/2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-10</td>
<td>7.5YR</td>
<td>4/1</td>
<td>98</td>
<td></td>
<td>5YR</td>
<td>4/7</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>10-36</td>
<td>7.5YR</td>
<td>3/1</td>
<td>98</td>
<td></td>
<td>5YR</td>
<td>4/7</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

Hydric Soil Indicators:
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)

Indicators of hydric soil: Indicators for Problematic Hydric Soils:
- Coast Prairie Redox (A16)
- Dark Surface (S7)
- Iron Manganese Masses (F12)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

Restrictive Layer (if observed):
Type: Not encountered
Depth (inches): N/A

Remarks:

Hydrology

Wetland Hydrology Indicators:
- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)

Primary Indicators (minimum of one is required; check all that apply)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)
- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Dry Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Yes ☑ No ☐ Depth (inches): 6
Water Table Present? Yes ☑ No ☐ Depth (inches): 13
Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 8

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
**WETLAND DETERMINATION DATA FORM - MARITIMES**

**Project/Site:** Northern Pulp Plant - Pipeline PFA  
**Applicant/Owner:** NPNS  
**Investigator(s):** Chris Kennedy, Kelly Regan  
**Municipality/County:** Pictou  
**Affiliation:** Dillon Consulting  
**Sampling Date:** 28-May-19

---

**Landform (hillslope, terrace, etc.):** Basin  
**Local relief (concave, convex, none):** concave  
**Slope:** 0.0%  
**Lat.:** 45.697830  
**Long.:** -62.724630

**Soil Map Unit Name/Type:** Tormentine  
**Wetland Type:** Swamp - shrub

---

**SUMMARY OF FINDINGS** - Attach site map showing sampling point locations, transects, important features, etc.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes ☑</th>
<th>No ☐</th>
<th>Is the Sampled Area within a Wetland?</th>
<th>Yes ☑</th>
<th>No ☐</th>
</tr>
</thead>
</table>

Remarks: 
Soil disturbed from road fill infringes, hydrology disturbed due to impounding by roadway and stormwater influence.

---

**VEGETATION** - Use scientific names of plants.

<table>
<thead>
<tr>
<th>Stratum</th>
<th>Plot Size</th>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Relative Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree</td>
<td>10 m</td>
<td>1. <em>Larix laricina</em></td>
<td>15</td>
<td>✓ 60.0%</td>
<td>FACW</td>
</tr>
<tr>
<td>2. <em>Betula populifolia</em></td>
<td>5</td>
<td>✓ 20.0%</td>
<td>FAC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. <em>Acer rubrum</em></td>
<td>5</td>
<td>✓ 20.0%</td>
<td>FAC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>= Total Cover</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stratum</th>
<th>Plot Size</th>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Relative Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sapling/Shrub</td>
<td>5 m</td>
<td>1. <em>Alnus incana</em></td>
<td>80</td>
<td>✓ 83.8%</td>
<td>FACW</td>
</tr>
<tr>
<td>2. <em>Spiraea alba</em></td>
<td>10</td>
<td>10.5%</td>
<td>FAC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. <em>Myrica gale</em></td>
<td>5</td>
<td>5.2%</td>
<td>OBL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. <em>Acer rubrum</em></td>
<td>0.5</td>
<td>0.5%</td>
<td>FAC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>95.5</td>
<td>= Total Cover</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stratum</th>
<th>Plot Size</th>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Relative Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herb</td>
<td>2 m</td>
<td>1. <em>Sarracenia purpurea</em></td>
<td>10</td>
<td>18.9%</td>
<td>OBL</td>
</tr>
<tr>
<td>2. <em>Iris versicolor</em></td>
<td>2</td>
<td>3.8%</td>
<td>OBL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. <em>Calamagrostis canadensis</em></td>
<td>25</td>
<td>47.2%</td>
<td>OBL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. <em>Rubus hispidus</em></td>
<td>0.5</td>
<td>0.9%</td>
<td>FACW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. <em>Viola macloskeyi</em></td>
<td>0.5</td>
<td>0.9%</td>
<td>OBL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. <em>Typha latifolia</em></td>
<td>15</td>
<td>28.3%</td>
<td>OBL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
<td>= Total Cover</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stratum</th>
<th>Plot Size</th>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Relative Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woody Vine</td>
<td></td>
<td>1.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remarks: (Include photo numbers here or on a separate sheet.)

**Hydrophytic Vegetation Present?** Yes ☑ No ☐

**Hydric Soil Present?** Yes ☑ No ☐

**Wetland Hydrology Present?** Yes ☑ No ☐

---

**Hydrophytic Vegetation Indicators:**

1. Rapid Test for Hydrophytic Vegetation
2. Dominance Test is > 50%
3. Prevalence Index is ≤ 3.0
4. Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

**Problematic Hydrophytic Vegetation**

Hydrophytic Vegetation Present? Yes ☑ No ☐

---

**SUMMARY OF FINDINGS** - Attach site map showing sampling point locations, transects, important features, etc.

**Remarks:**
Soil disturbed from road fill infringes, hydrology disturbed due to impounding by roadway and stormwater influence.

---

**Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.**
SOIL

Sampling Point: WL-8-2019

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td></td>
<td></td>
<td>Peat</td>
<td></td>
</tr>
<tr>
<td>10-18</td>
<td>10YR</td>
<td>4/2 100</td>
<td>Sandy Clay Loam</td>
<td>hard packed, refusal at 18 inches</td>
</tr>
</tbody>
</table>

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)

Indicators for Problematic Hydric Soils:
- Hard packed soil

Restrictive Layer (if observed):
- Type: Hard packed soil
- Depth (inches): 18

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Primary Hydrology Indicators:
- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)

Secondary Hydrology Indicators:
- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Dry Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)

Field Observations:
- Surface Water Present? Yes No
- Water Table Present? Yes No
- Saturation Present? Yes No

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
WETLAND DETERMINATION DATA FORM - MARITIMES

Project/Site: Northern Pulp Plant - Pipeline PFA
Municipality/County: Pictou
Sampling Date: 28-May-19
Applicant/Owner: NPNS
Investigator(s): Chris Kennedy, Kelly Regan
Affiliation: Dillon Consulting
Landform (hillslope, terrace, etc.): Basin
Local relief (concave, convex, none): concave

Slope: 0.0% / 0.0°
Lat.: 45.701121
Long.: -62.721264
Datum: NAD83

Soil Map Unit Name/Type: Tormentine
Wetland Type: Swamp - shrub

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed?
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☐
Hydric Soil Present? Yes ☐ No ☐
Wetland Hydrology Present? Yes ☐ No ☐
Is the Sampled Area within a Wetland? Yes ☐ No ☐
Remarks:
Soil disturbed from road fill infringement, hydrology disturbed due to impounding by roadway and stormwater influence.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 10 m)
1. Larix laricina
2. Betula populifolia
3. Acer rubrum
4. Populus tremuloides
5. ☐

Sapling/Shrub Stratum (Plot size: 5 m)
1. Abies balsamea
2. Alnus incana
3. Salix bebbiana
4. Spiraea alba
5. ☐

Herb Stratum (Plot size: 2 m)
1. Equisetum arvense
2. Onoclea sensibilis
3. Calamagrostis canadensis
4. Viola macloskeyi
5. Scirpus cyperinus
6. ☐
7. ☐
8. ☐
9. ☐
10. ☐

Woody Vine Stratum (Plot size: )
1. ☐
2. ☐
3. ☐

Remarks: (Include photo numbers here or on a separate sheet.)

### Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Color (moist)</td>
<td>%</td>
</tr>
<tr>
<td>0-5</td>
<td>5YR</td>
<td>4/4</td>
</tr>
<tr>
<td>5-14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Type:** C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.
- **Texture:** Mucky Peat
- **Remarks:** With gravel, possible road fill, refusal 14 in.

### Hydric Soil Indicators:
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)

### Restrictive Layer (if observed):
- **Type:** Gravel
- **Depth (inches):** 14

### Remarks:
Histic epipedon with red parent material. Fill from roadway present in soil pit.

### HYDROLOGY

#### Primary Indicators (minimum of one is required; check all that apply)
- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)

#### Secondary Indicators (minimum of two required)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)

#### Field Observations:
- **Surface Water Present?** Yes • No ○ Depth (inches): 3
- **Water Table Present?** Yes • No ○ Depth (inches): 0
- **Saturation Present?** (includes capillary fringe) Yes • No ○ Depth (inches): 0

**Wetland Hydrology Present?** Yes • No ○

**Remarks:**

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Remarks:
Swamp with marsh characteristics due to impounding of deep water in the ditch along Hwy 106. Soil is disturbed by roadfill.

VEGETATION - Use scientific names of plants.

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 10 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Relative Stratum Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <em>Larix laricina</em></td>
<td>5</td>
<td>19.6%</td>
<td>FACW</td>
<td></td>
</tr>
<tr>
<td>2. <em>Acer rubrum</em></td>
<td>20</td>
<td>78.4%</td>
<td>FAC</td>
<td></td>
</tr>
<tr>
<td>3. <em>Pinus strobus</em></td>
<td>0.5</td>
<td>0.0%</td>
<td>FACU</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>0.0%</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td>OBL</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 5 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Relative Stratum Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <em>Alnus incana</em></td>
<td>80</td>
<td>98.2%</td>
<td>FACW</td>
<td></td>
</tr>
<tr>
<td>2. <em>Acer rubrum</em></td>
<td>0.5</td>
<td>0.6%</td>
<td>FAC</td>
<td></td>
</tr>
<tr>
<td>3. <em>Leduem groenlandicum</em></td>
<td>0.5</td>
<td>0.6%</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>4. <em>Kalmia angustifolia</em></td>
<td>0.5</td>
<td>0.6%</td>
<td>FAC</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td>OBL</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 2 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Relative Stratum Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <em>Osmundastrum cinnamomeum</em></td>
<td>10</td>
<td>23.5%</td>
<td>FACW</td>
<td></td>
</tr>
<tr>
<td>2. <em>VIo/a macloskey</em></td>
<td>5</td>
<td>11.8%</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>3. <em>Iris versicolor</em></td>
<td>0.5</td>
<td>1.2%</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>4. <em>Onoclea sensibilis</em></td>
<td>15</td>
<td>35.3%</td>
<td>FACW</td>
<td></td>
</tr>
<tr>
<td>5. <em>Carex folliculata</em></td>
<td>0.5</td>
<td>1.2%</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>6. <em>Typha latifolia</em></td>
<td>0.5</td>
<td>1.2%</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>7. <em>Maianthemum trifolium</em></td>
<td>10</td>
<td>23.5%</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>8. <em>Vaccinium macrocarpon</em></td>
<td>0.5</td>
<td>1.2%</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>9. <em>Carex trisperma</em></td>
<td>0.5</td>
<td>1.2%</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>0</td>
<td>0.0%</td>
<td>OBL</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: )</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Relative Stratum Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0</td>
<td>0.0%</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>0.0%</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>0</td>
<td>0.0%</td>
<td>OBL</td>
<td></td>
</tr>
</tbody>
</table>

Remarks: (Include photo numbers here or on a separate sheet.)

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
### Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)

### Indicators for Problematic Hydric Soils:

- Coast Prairie Redox (A16)
- Dark Surface (S7)
- Iron Manganese Masses (F12)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

### Restrictive Layer (if observed):

- **Type:** Not encountered
- **Depth (inches):** N/A

### Remarks:

- Hydric Soil Present? **Yes ☑ No ☐**

### HYDROLOGY

#### Wetland Hydrology Indicators:

**Primary Indicators (minimum of one is required; check all that apply):**

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)

**Secondary Indicators (minimum of two required):**

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Dry Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)

#### Field Observations:

- **Surface Water Present?** Yes ☑ No ☐ Depth (inches): 40
- **Water Table Present?** Yes ☑ No ☐ Depth (inches): 0
- **Saturation Present?** (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 0

**Wetland Hydrology Present?** **Yes ☑ No ☐**

#### Remarks:

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
### WETLAND DETERMINATION DATA FORM - MARITIMES

**Project/Site:** Northern Pulp Plant - Pipeline PFA  
**Applicant/Owner:** NPNS  
**Investigator(s):** Chris Kennedy, Kelly Regan  
**Landform (hillside, terrace, etc.):** Basin  
**Soil Map Unit Name/Type:** Tormentine  
**Affiliation:** Dillon Consulting  
**Sampling Date:** 04-Jun-19  
**Datum:** NAD83  
**Wetland Type:** Swamp - shrub

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes ☑</th>
<th>No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes ☑</td>
<td>No ☐</td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes ☑</td>
<td>No ☐</td>
</tr>
</tbody>
</table>

Remarks: Soil disturbed from road fill, hydrology disturbed from stormwater influences and impounding by roadway.

### VEGETATION - Use scientific names of plants.

#### Tree Stratum (Plot size: 10 m)

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acer rubrum</td>
<td>15</td>
<td>49.2% FAC</td>
<td></td>
</tr>
<tr>
<td>Picea mariana</td>
<td>5</td>
<td>16.4% FACW</td>
<td></td>
</tr>
<tr>
<td>Betula populifolia</td>
<td>10</td>
<td>32.8% FAC</td>
<td></td>
</tr>
<tr>
<td>Larix laricina</td>
<td>0.5</td>
<td>1.6% FACW</td>
<td></td>
</tr>
<tr>
<td>1. 15 x 1</td>
<td>30.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Sapling/Shrub Stratum (Plot size: 5 m)

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alnus incana</td>
<td>40</td>
<td>50.0% FACW</td>
<td></td>
</tr>
<tr>
<td>Spiraea alba</td>
<td>10</td>
<td>12.5% FACW</td>
<td></td>
</tr>
<tr>
<td>Nemopanthus mucronatus</td>
<td>20</td>
<td>25.0% OBL</td>
<td></td>
</tr>
<tr>
<td>Betula populifolia</td>
<td>5</td>
<td>6.3% FAC</td>
<td></td>
</tr>
<tr>
<td>Acer rubrum</td>
<td>5</td>
<td>6.3% FAC</td>
<td></td>
</tr>
<tr>
<td>1. 40 x 1</td>
<td>20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Herb Stratum (Plot size: 2 m)

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pontederia cordata</td>
<td>15</td>
<td>31.9% OBL</td>
<td></td>
</tr>
<tr>
<td>Onoclea sensibilis</td>
<td>15</td>
<td>31.9% FACW</td>
<td></td>
</tr>
<tr>
<td>Juncus effusus</td>
<td>10</td>
<td>10.6% OBL</td>
<td></td>
</tr>
<tr>
<td>Glyceria striata</td>
<td>10</td>
<td>21.3% OBL</td>
<td></td>
</tr>
<tr>
<td>Carex liruca</td>
<td>0.5</td>
<td>1.1% OBL</td>
<td></td>
</tr>
<tr>
<td>Maianthemum trifolium</td>
<td>0.5</td>
<td>1.1% FACW</td>
<td></td>
</tr>
<tr>
<td>Impatiens capensis</td>
<td>0.5</td>
<td>1.1% FACW</td>
<td></td>
</tr>
<tr>
<td>Osmundastrum cinnamomeum</td>
<td>0.5</td>
<td>1.1% OBL</td>
<td></td>
</tr>
<tr>
<td>1. 15 x 1</td>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Woody Vine Stratum (Plot size: 1 m)

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 15 x 1</td>
<td>20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Dominance Test worksheet:

- Number of Dominant Species That are OBL, FAC, FACW, or FAC: 7 (A)
- Total Number of Dominant Species Across All Strata: 7 (B)
- Percent of dominant Species That Are OBL, FAC, FACW, or FAC: 100.0% (A/B)

### Prevalence Index worksheet:

- Total % Cover of:  
  - OBL species 51 x 1 = 51  
  - FACW species 71.5 x 2 = 143  
  - FAC species 35 x 3 = 105  
  - FACU species 0 x 4 = 0  
  - UPL species 0 x 5 = 0  
- Column Totals: 157.5 (A) 299 (B)
- Prevalence Index = B/A = 1.898

### Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is > 50%
- 3 - Prevalence Index is ≤ 3.0
- 4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

- Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
### Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-13</td>
<td></td>
<td></td>
<td>Muck</td>
<td>Black with high organic content</td>
</tr>
<tr>
<td>13-15</td>
<td>7.5YR</td>
<td>3/1 100</td>
<td>Loamy Sand</td>
<td></td>
</tr>
<tr>
<td>15-25</td>
<td>7.5YR</td>
<td>6/1 99</td>
<td>Loamy Sand</td>
<td></td>
</tr>
</tbody>
</table>

**Type:** C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. **Location:** PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)

### Restrictive Layer (if observed):
- Type: Not encountered
- Depth (inches): N/A

### HYDROLOGY

#### Primary Indicators (minimum of one is required; check all that apply)
- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)

#### Secondary Indicators (minimum of two required)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)

#### Field Observations:
- Surface Water Present? Yes ☑ No ☐ Depth (inches): 8
- Water Table Present? Yes ☑ No ☐ Depth (inches): 0
- Saturation Present? Yes ☑ No ☐ Depth (inches): 0

### Wetland Hydrology Present? Yes ☑ No ☐

**Density Visible on Aerial Imagery (C9)**
- Drainage Patterns (C10)
- Dry Season Water Table (C2)
- Crayfish Burrows (C8)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)

### Remarks:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
**WETLAND DETERMINATION DATA FORM - MARITIMES**

**Northern Pulp Plant - Pipeline PFA**

**Investigator(s):** Chris Kennedy, Kelly Regan

**Applicant/Owner:** NPNS

**Landform (hillslope, terrace, etc.):** Basin

**Affiliation:** Dillon Consulting

**Latitude:** 45.714652

---

### Are climatic/hydrologic conditions on the site typical for this time of year?

- **Yes** ☑
- **No**

(If no, explain in Remarks.)

### Are Vegetation, Soil, or Hydrology significantly disturbed?

- **Yes**
- **No**

### Are Vegetation, Soil, or Hydrology naturally problematic?

- **Yes**
- **No**

(If needed, explain any answers in Remarks.)

---

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

- **Hydrophytic Vegetation Present?**
  - Yes ☑
  - No

- **Hydric Soil Present?**
  - Yes ☑
  - No

- **Wetland Hydrology Present?**
  - Yes ☑
  - No

- **Is the Sampled Area within a Wetland?**
  - Yes ☑
  - No

Remarks: soil disturbed from roadfill infringes and hydrology disturbed from stormwater influence and impounding by roadway.

---

**VEGETATION**

- **Use scientific names of plants.**

**Tree Stratum (Plot size: 10 m)***

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
</tr>
</tbody>
</table>

**Sapling/Shrub Stratum (Plot size: 5 m)**

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>40</td>
<td>57.1%</td>
<td>OBL</td>
</tr>
<tr>
<td>2.</td>
<td>15</td>
<td>21.4%</td>
<td>FACW</td>
</tr>
<tr>
<td>3.</td>
<td>5</td>
<td>7.1%</td>
<td>FACW</td>
</tr>
<tr>
<td>4.</td>
<td>10</td>
<td>14.3%</td>
<td>OBL</td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
</tr>
</tbody>
</table>

**Herb Stratum (Plot size: 2 m)**

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>20</td>
<td>36.4%</td>
<td>OBL</td>
</tr>
<tr>
<td>2.</td>
<td>30</td>
<td>54.5%</td>
<td>OBL</td>
</tr>
<tr>
<td>3.</td>
<td>5</td>
<td>9.1%</td>
<td>OBL</td>
</tr>
</tbody>
</table>

**Woody Vine Stratum (Plot size: )**

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
</tr>
</tbody>
</table>

Remarks: (Include photo numbers here or on a separate sheet.)

---

**DOMINANCE TEST WORKSHEET:**

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute % Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBL</td>
<td>105</td>
</tr>
<tr>
<td>FACW</td>
<td>20</td>
</tr>
<tr>
<td>FAC</td>
<td>0</td>
</tr>
<tr>
<td>FACU</td>
<td>0</td>
</tr>
<tr>
<td>UPL</td>
<td>0</td>
</tr>
</tbody>
</table>

| Total Number of Dominant Species Across All Strata: | 4 |

**Total % Cover of:**

<table>
<thead>
<tr>
<th>Species</th>
<th>Multiply by</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBL</td>
<td>105</td>
</tr>
<tr>
<td>FACW</td>
<td>20</td>
</tr>
<tr>
<td>FAC</td>
<td>0</td>
</tr>
<tr>
<td>FACU</td>
<td>0</td>
</tr>
<tr>
<td>UPL</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column Totals:</th>
<th>(A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prevalence Index:</th>
<th>(A/B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.160</td>
<td></td>
</tr>
</tbody>
</table>

**Prevalence Index worksheet:**

<table>
<thead>
<tr>
<th>Total % Cover of:</th>
<th>Multiply by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBL</td>
<td>105</td>
</tr>
<tr>
<td>FACW</td>
<td>20</td>
</tr>
<tr>
<td>FAC</td>
<td>0</td>
</tr>
<tr>
<td>FACU</td>
<td>0</td>
</tr>
<tr>
<td>UPL</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column Totals:</th>
<th>(A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prevalence Index:</th>
<th>(A/B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.160</td>
<td></td>
</tr>
</tbody>
</table>

**Hydrophytic Vegetation Indicators:**

1. Rapid Test for Hydrophytic Vegetation
2. Dominance Test is > 50%
3. Prevalence Index is ≤ 3.0
4. Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

**Problematic Hydrophytic Vegetation**

If indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

---

**SOIL**

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Datum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marsh</td>
<td>NAD83</td>
</tr>
</tbody>
</table>

---

**Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.**
### Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-29</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29-36</td>
<td></td>
<td></td>
<td></td>
<td>Muck</td>
</tr>
</tbody>
</table>

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.  
2 Location: PL=Pore Lining. M=Matrix.

### Hydric Soil Indicators:

- [x] Histosol (A1)
- [x] Histic Epipedon (A2)
- [x] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [x] Stratified Layers (A5)
- 2 cm Muck (A10)
- [x] Depleted Below Dark Surface (A11)
- [x] Thick Dark Surface (A12)
- [x] Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)

### Indicators for Problematic Hydric Soils:

- [ ] Coast Prairie Redox (A16)
- [ ] Dark Surface (S7)
- [ ] Iron Manganese Masses (F12)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

### Restrictive Layer (if observed):

- Type: Not encountered
- Depth (inches): N/A

### Remarks:

### HYDROLOGY

### Wetland Hydrology Indicators:

#### Primary Indicators (minimum of one is required; check all that apply)

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [x] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)

- [ ] Water-Stained Leaves (B9)
- [x] True Aquatic Plants (B14)
- [x] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Gauge or Well Data (D9)
- [ ] Other (Explain in Remarks)

#### Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Drainage Patterns (B10)
- [ ] Dry Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Stunted or Stressed Plants (D1)
- [ ] Geomorphic Position (D2)
- [ ] FAC-Neutral Test (D5)

### Field Observations:

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Present?</th>
<th>Depth (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Water</td>
<td>Yes</td>
<td>40</td>
</tr>
<tr>
<td>Water Table</td>
<td>Yes</td>
<td>0</td>
</tr>
<tr>
<td>Saturation (includes capillary fringe)</td>
<td>Yes</td>
<td>0</td>
</tr>
</tbody>
</table>

### Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
**Wetland Determination Data Form - Maritimes**

**Project/Site:** Northern Pulp Plant - Pipeline PFA  
**Applicant/Owner:** NPNS  
**Investigator(s):** Chris Kennedy, Kelly Regan  
**Landform (hillslope, terrace, etc.):** Basin  
**Slope:** 0.0% / 0.0°  
**Local relief (concave, convex, none):** Convex  
**Sampling Date:** 05-Jun-19  
**Datum:** NAD83  
**Affiliation:** Dillon Consulting  
**Municipality/County:** Pictou  
**Sampling Point:** WL-13B  

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes</th>
<th>No</th>
<th>Is the Sampled Area within a Wetland?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**
Soil disturbed from agricultural field runoff which is sediment-laden (red deposits) and roadfill, hydrology disturbed from stormwater influence.

**VEGETATION - Use scientific names of plants.**

<table>
<thead>
<tr>
<th>Strata</th>
<th>Plot Size</th>
<th>Species</th>
<th>Absolute</th>
<th>% Cover</th>
<th>Rel.Strat.</th>
<th>Cover</th>
<th>Indicator</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Stratum (Plot size: 10 m)</td>
<td></td>
<td>1. Abies balsamea</td>
<td>0.5</td>
<td>30.0%</td>
<td>FAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Picea glauca</td>
<td>0.5</td>
<td>50.0%</td>
<td>FAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.</td>
<td>0</td>
<td>0.0%</td>
<td>FACV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.</td>
<td>0</td>
<td>0.0%</td>
<td>FACU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td>UPL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sapling/Shrub Stratum (Plot size: 5 m)</td>
<td></td>
<td>1. Alnus incana</td>
<td>0.6</td>
<td>92.3%</td>
<td>FACW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Spiraea alba</td>
<td>0.5</td>
<td>7.7%</td>
<td>FACW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.</td>
<td>0</td>
<td>0.0%</td>
<td>FACW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.</td>
<td>0</td>
<td>0.0%</td>
<td>FACW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td>FACW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Herb Stratum (Plot size: 2 m)</td>
<td></td>
<td>1. Impatiens capensis</td>
<td>0.40</td>
<td>60.6%</td>
<td>FACW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Solidago rugosa</td>
<td>0.3</td>
<td>7.6%</td>
<td>FAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Viola maaloskeyi</td>
<td>0.5</td>
<td>4.5%</td>
<td>OBL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Oxalis stricta</td>
<td>0.3</td>
<td>8.0%</td>
<td>FACU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Ranunculus acris</td>
<td>0.1</td>
<td>1.5%</td>
<td>FAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Ranunculus repens</td>
<td>0.1</td>
<td>1.5%</td>
<td>FAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. Rubus hispidus</td>
<td>0.7</td>
<td>1.5%</td>
<td>FAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8. Onoclea sensibilis</td>
<td>0.5</td>
<td>15.2%</td>
<td>FACW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>9. Phalaris arundinacea</td>
<td>0.2</td>
<td>0.8%</td>
<td>FACW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10.</td>
<td>0.0%</td>
<td>0.0%</td>
<td>FACW</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dominance Test worksheet:**
- **Number of Dominant Species That Are OBL, FACW, or FAC:** 2 (A)
- **Total Number of Dominant Species Across All Strata:** 100.0% (A/B)

**Prevalence Index worksheet:**
- **Total % Cover of:**
  - OBL species: 3  x 1 = 3  
  - FACW species: 120.5  x 2 = 241
  - FAC species: 7.5  x 3 = 22.5
  - FACU species: 1  x 4 = 4
  - UPL species: 0  x 5 = 0
- **Column Totals:** 132 (A)  
- **Prevalence Index = B/A = 2.049**

**Hydrophytic Vegetation Indicators:**
- Rapid Test for Hydrophytic Vegetation
- Dominance Test is > 50%
- Prevalence Index is ≤ 3.0
- Morphological Adaptations ¹

**Remarks:** (Include photo numbers here or on a separate sheet.)

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
### Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Color (moist)</td>
<td>%</td>
</tr>
<tr>
<td>0-8</td>
<td>7.5YR</td>
<td>3/3</td>
</tr>
<tr>
<td>8-16</td>
<td>7.5YR</td>
<td>3/4</td>
</tr>
<tr>
<td>16-24</td>
<td>7.5YR</td>
<td>3/4</td>
</tr>
</tbody>
</table>

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. 2Location: PL=Pore Lining. M=Matrix.

#### Hydric Soil Indicators:
- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] 2 cm Muck (A10)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Muck Mineral (S1)
- [ ] 5 cm Mucky Peat or Peat (S3)

#### Hydric Soil Present? Yes ☑ No ☐

#### Remarks:
Red parent material present, possible fill from historic agricultural or highway construction activities.

### HYDROLOGY

#### Wetland Hydrology Indicators:
- Primary Indicators (minimum of one is required; check all that apply)
  - [ ] Surface Water (A1)
  - [ ] High Water Table (A2)
  - [ ] Saturation (A3)
  - [ ] Water Marks (B1)
  - [ ] Sediment Deposits (B2)
  - [ ] Drift Deposits (B3)
  - [ ] Algal Mat or Crust (B4)
  - [ ] Iron Deposits (B5)
  - [ ] Inundation Visible on Aerial Imagery (B7)
  - [ ] Sparsely Vegetated Concave Surface (B8)

- Secondary Indicators (minimum of two required)
  - [ ] Water-Stained Leaves (B9)
  - [ ] Aquatic Fauna (B13)
  - [ ] True Aquatic Plants (B14)
  - [ ] Hydrogen Sulfide Odor (C1)
  - [ ] Oxidized Rhizospheres on Living Roots (C3)
  - [ ] Presence of Reduced Iron (C4)
  - [ ] Recent Iron Reduction in Tilled Soils (C6)
  - [ ] Thin Muck Surface (C7)
  - [ ] Gauge or Well Data (D9)
  - [ ] Other (Explain in Remarks)

#### Field Observations:
- Surface Water Present? Yes ☑ No ☐ Depth (inches): 4
- Water Table Present? Yes ☑ No ☐ Depth (inches): 8
- Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 0

#### Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

#### Remarks:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
**WETLAND DETERMINATION DATA FORM - MARITIMES**

Project/Site: Northern Pulp Plant - Pipeline PFA
Municipality/County: Pictou
Sampling Date: 05-Jun-19
Applicant/Owner: NPNS
Investigator(s): Chris Kennedy, Kelly Regan
Affiliation: Dillon Consulting
Landform (hillslope, terrace, etc.): Hillside
Local relief (concave, convex, none): convex
Slope: 0.0% / 0.0°
Lat.: 45.722537
Long.: -62.699933
Datum: NAD83
Soil Map Unit Name/Type: Tormentine
Wetland Type: Swamp - treed

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☐ No ☑
(if no, explain in Remarks.)
Are Vegetation ☐, Soil ☑, or Hydrology ☑ significantly disturbed? Are “Normal Circumstances” present? Yes ☑ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (if needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes ☑ No ☐</th>
<th>Is the Sampled Area within a Wetland?</th>
<th>Yes ☑ No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes ☑ No ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes ☑ No ☐</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remarks:
Soil disturbed from roadfill, hydrology disturbed from stormwater influence.

**VEGETATION - Use scientific names of plants.**

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 10 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species? Rel.Strat. Cover</th>
<th>Indicator Status</th>
<th>Domain Test worksheet:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Betula populifolia</td>
<td>20</td>
<td>☑ 44.4% FAC</td>
<td></td>
<td>Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)</td>
</tr>
<tr>
<td>2. Populus tremuloides</td>
<td>5</td>
<td>☑ 11.1% FACU</td>
<td></td>
<td>Total Number of Dominant Species Across All Strata: 5 (B)</td>
</tr>
<tr>
<td>3. Abies balsamea</td>
<td>10</td>
<td>☑ 22.2% FAC</td>
<td></td>
<td>Percent of dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)</td>
</tr>
<tr>
<td>4. Picea rubens</td>
<td>10</td>
<td>☑ 22.2% FACU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 5 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species? Rel.Strat. Cover</th>
<th>Indicator Status</th>
<th>Domain Test worksheet:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alnus incana</td>
<td>55</td>
<td>☑ 84.6% FACW</td>
<td></td>
<td>Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)</td>
</tr>
<tr>
<td>2. Acer rubrum</td>
<td>10</td>
<td>☑ 15.4% FAC</td>
<td></td>
<td>Total Number of Dominant Species Across All Strata: 5 (B)</td>
</tr>
<tr>
<td>3.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td>Percent of dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)</td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 2 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species? Rel.Strat. Cover</th>
<th>Indicator Status</th>
<th>Domain Test worksheet:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Onoclea sensibilis</td>
<td>25</td>
<td>☑ 100.0% FACW</td>
<td></td>
<td>Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)</td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td>Total Number of Dominant Species Across All Strata: 5 (B)</td>
</tr>
<tr>
<td>3.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td>Percent of dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)</td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: )</th>
<th>Absolute % Cover</th>
<th>Dominant Species? Rel.Strat. Cover</th>
<th>Indicator Status</th>
<th>Domain Test worksheet:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>25</td>
<td>☑ 100.0% FACW</td>
<td></td>
<td>Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)</td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td>Total Number of Dominant Species Across All Strata: 5 (B)</td>
</tr>
</tbody>
</table>

Prevalence Index worksheet:

<table>
<thead>
<tr>
<th>Total % Cover of:</th>
<th>Multiply by:</th>
<th>Prevalence Index = B/A =</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBL species 0 x 1 = 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACW species 80 x 2 = 160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FAC species 40 x 3 = 120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACU species 15 x 4 = 60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UPL species 0 x 5 = 0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Column Totals: 135 (A) 340 (B) | Prevalence Index = B/A = 2.519 |

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation
☑ 2 - Dominance Test is > 50%
☐ 3 - Prevalence Index is ≤3.0 ¹
☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation ¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Remarks: (Include photo numbers here or on a separate sheet.)

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
### Profile Description:
(Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-7</td>
<td>7.5YR</td>
<td>4/1</td>
<td>100</td>
<td>Mucky Peat</td>
</tr>
<tr>
<td>7-11</td>
<td>7.5YR</td>
<td>6/1</td>
<td>100</td>
<td>Muck</td>
</tr>
<tr>
<td>11-15</td>
<td>7.5YR</td>
<td>5/4</td>
<td>100</td>
<td>Sandy Clay</td>
</tr>
<tr>
<td>15-21</td>
<td>2.5YR</td>
<td>5/3</td>
<td>100</td>
<td>Sandy Clay</td>
</tr>
</tbody>
</table>

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

2 Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:
- [ ] Histosol (A1)
- [ ] Histic Eppiedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] 2 cm Muck (A10)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Muck Mineral (S1)
- [ ] 5 cm Mucky Peat or Peat (S3)

### Restrictive Layer (if observed):
- Type: **Not encountered**
- Depth (inches): **N/A**

### Hydrology

#### Wetland Hydrology Indicators:
- Primary Indicators (minimum of one is required; check all that apply)
  - [ ] Surface Water (A1)
  - [ ] High Water Table (A2)
  - [ ] Saturation (A3)
  - [ ] Water Marks (B1)
  - [ ] Sediment Deposits (B2)
  - [ ] Drift Deposits (B3)
  - [ ] Algal Mat or Crust (B4)
  - [ ] Iron Deposits (B5)
  - [ ] Inundation Visible on Aerial Imagery (B7)
  - [ ] Sparsely Vegetated Concave Surface (B8)
- Secondary Indicators (minimum of two required)
  - [ ] Water-Stained Leaves (B9)
  - [ ] Aquatic Fauna (B13)
  - [ ] True Aquatic Plants (B14)
  - [ ] Hydrogen Sulfide Odor (C1)
  - [ ] Oxidized Rhizospheres on Living Roots (C3)
  - [ ] Presence of Reduced Iron (C4)
  - [ ] Recent Iron Reduction in Tilled Soils (C6)
  - [ ] Thin Muck Surface (C7)
  - [ ] Gauge or Well Data (D9)
  - [ ] Other (Explain in Remarks)

#### Field Observations:
- Surface Water Present? **Yes**
- Water Table Present? **Yes**
- Saturation Present? **Yes**

#### Wetland Hydrology Present? **Yes**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

### Remarks:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
**WETLAND DETERMINATION DATA FORM - MARITIMES**

**Project/Site:** Northern Pulp Plant - Pipeline PFA  
**Applicant/Owner:** NPNS  
**Investigator(s):** Chris Kennedy, Kelly Regan  
**Landform (hillside, terrace, etc.):** Basin  
**Slope:** 0.0%  

<table>
<thead>
<tr>
<th>Municipality/County: Pictou</th>
<th>Sampling Date: 28-May-19</th>
<th>Sampling Point: WL-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long.: -62.716295</td>
<td>Datum: NAD83</td>
<td></td>
</tr>
<tr>
<td>Lat.: 45.706188</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Soil Map Unit Name/Type:** Tormentine  
**Wetland Type:** Swamp - shrub

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes ☑ No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes ☑ No ☐</td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes ☑ No ☐</td>
</tr>
</tbody>
</table>

**Remarks:**  
Soil disturbed from roadfill and hydrology disturbed from stormwater influences.

### VEGETATION - Use scientific names of plants.

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 10 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel.Strat. Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Larix laricina</td>
<td>5</td>
<td>19.6%</td>
<td>FACW</td>
<td>1</td>
</tr>
<tr>
<td>2. Acer rubrum</td>
<td>15</td>
<td>58.8%</td>
<td>FAC</td>
<td>2</td>
</tr>
<tr>
<td>3. Picea mariana</td>
<td>0.5</td>
<td>2.0%</td>
<td>FACW</td>
<td>3</td>
</tr>
<tr>
<td>4. Abies balsamea</td>
<td>5</td>
<td>19.6%</td>
<td>FAC</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td>Total Cover</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 5 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel.Strat. Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Spiraea alba</td>
<td>5</td>
<td>7.5%</td>
<td>FACW</td>
<td>1</td>
</tr>
<tr>
<td>2. Nemopanthus mucronatus</td>
<td>60</td>
<td>90.2%</td>
<td>OBL</td>
<td>2</td>
</tr>
<tr>
<td>3. Viburnum nudum</td>
<td>0.5</td>
<td>0.8%</td>
<td>FACW</td>
<td>3</td>
</tr>
<tr>
<td>4. Abies balsamea</td>
<td>0.5</td>
<td>0.8%</td>
<td>FAC</td>
<td>4</td>
</tr>
<tr>
<td>5. Kalmia angustifolia</td>
<td>0.5</td>
<td>0.8%</td>
<td>FAC</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 2 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel.Strat. Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Maianthemum trifolium</td>
<td>5</td>
<td>13.9%</td>
<td>OBL</td>
<td>1</td>
</tr>
<tr>
<td>2. Onoclea sensibilis</td>
<td>30</td>
<td>83.3%</td>
<td>FACW</td>
<td>2</td>
</tr>
<tr>
<td>3. Iris versicolor</td>
<td>0.5</td>
<td>1.4%</td>
<td>OBL</td>
<td>3</td>
</tr>
<tr>
<td>4. Ranunculus repens</td>
<td>0.5</td>
<td>1.4%</td>
<td>FAC</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td>Total Cover</td>
<td>5</td>
</tr>
<tr>
<td>6.</td>
<td>0</td>
<td>0.0%</td>
<td>Total Cover</td>
<td>6</td>
</tr>
<tr>
<td>7.</td>
<td>0</td>
<td>0.0%</td>
<td>Total Cover</td>
<td>7</td>
</tr>
<tr>
<td>8.</td>
<td>0</td>
<td>0.0%</td>
<td>Total Cover</td>
<td>8</td>
</tr>
<tr>
<td>9.</td>
<td>0</td>
<td>0.0%</td>
<td>Total Cover</td>
<td>9</td>
</tr>
<tr>
<td>10.</td>
<td>0</td>
<td>0.0%</td>
<td>Total Cover</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: )</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel.Strat. Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0</td>
<td>0.0%</td>
<td>Total Cover</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>0.0%</td>
<td>Total Cover</td>
<td>2</td>
</tr>
</tbody>
</table>

**Remarks:** (Include photo numbers here or on a separate sheet.)

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

### Hydrophytic Vegetation Indicators:

- **1 - Rapid Test for Hydrophytic Vegetation**
- **2 - Dominance Test is > 50%**
- **3 - Prevalence Index is ≤ 3.0**
- **4 - Morphological Adaptations 1** (Provide supporting data in Remarks or on a separate sheet)
- **Problematic Hydrophytic Vegetation 1** (Explain)

1 Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ☑ No ☐

**Hydric Soil Present?** Yes ☑ No ☐

**Wetland Hydrology Present?** Yes ☑ No ☐

**Remarks:** (Include photo numbers here or on a separate sheet.)

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
### Profile Description:

(Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix Color (moist)</th>
<th>%</th>
<th>Redox Features Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>7.5YR 2.5/1</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-11</td>
<td>7.5YR 5/2</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. **Type**: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.
2. **Location**: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)

### RedoX Features Indicators:

- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Redox Dark Surface (F3)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

### Restrictive Layer (if observed):

- Type: clay
- Depth (inches): 11

**Hydric Soil?**

- **Yes** ☑
- **No** ☐

### Remarks:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.

---

### HYDROLOGY

#### Wetland Hydrology Indicators:

**Primary Indicators** (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)

**Secondary Indicators** (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Dry Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)

#### Field Observations:

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Present?</th>
<th>Depth (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Water Present?</td>
<td>Yes ☑</td>
<td>6</td>
</tr>
<tr>
<td>Water Table Present?</td>
<td>Yes ☑</td>
<td>0</td>
</tr>
<tr>
<td>Saturation Present?</td>
<td>Yes ☑</td>
<td>0</td>
</tr>
</tbody>
</table>

**Wetland Hydrology Present?**

- **Yes** ☑
- **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

**Remarks:**
**WETLAND DETERMINATION DATA FORM - MARITIMES**

**Project/Site:** Northern Pulp Plant - Pipeline PFA  
**Municipality/County:** Pictou  
**Sampling Date:** 30-Jul-19  
**Applicant/Owner:** NPNS  
**Investigator(s):** Chris Kennedy  
**Affiliation:** Dillon Consulting  
**Landform (hillslope, terrace, etc.):** Basin  
**Local relief (concave, convex, none):** flat  
**Sampling Date:** 30-Jul-19  
**Sampling Point:** WL-20  
**Datum:** NAD83  
**Slope:** 0.0% / 0.0°  
**Lat.:** 45.707936  
**Long.:** -62.714413  
**PLot size:** 2 m

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Is the Sampled Area within a Wetland?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ☑ No ☐</td>
<td>Yes ☑ No ☐</td>
</tr>
</tbody>
</table>

**Remarks:** Excavation and compaction caused disturbances to soil as well as hydrology due to ponding. Additional hydrology disturbance due to ditching.

### VEGETATION - Use scientific names of plants.

#### Tree Stratum (Plot size: 10 m)
1. Acer rubrum  
2. Picea rubens  
3. Abies balsamea  
4.  
5.  

#### Sapling/Shrub Stratum (Plot size: 5 m)
1. Alnus incana  
2. Spiraea alba  
3.  
4.  
5.  

#### Herb Stratum (Plot size: 2 m)
1. Onoclea sensibilis  
2. Equisetum arvense  
3. Solanum dulcamara  
4.  
5.  
6.  
7.  
8.  
9.  
10.  

#### Woody Vine Stratum (Plot size: )
1.  
2.  
3.  

### Dominance Test worksheet:
- **Number of Dominant Species That are OBL, FACW, or FAC:** 7 (A)
- **Total Number of Dominant Species Across All Strata:** 8 (B)
- **Percent of dominant Species That Are OBL, FAC, or FAC:** 87.5% (A/B)

### Prevalence Index worksheet:
- **Total % Cover of:** Multiply by:
  - OBL species 0 x 1 = 0
  - FACW species 55 x 2 = 110
  - FAC species 20 x 3 = 60
  - FACU species 5 x 4 = 20
  - UPL species 0 x 5 = 0
- **Column Totals:** 80 (A) 190 (B)
- **Prevalence Index = B/A =** 2.375

### Hydrophytic Vegetation Indicators:
- **1 - Rapid Test for Hydrophytic Vegetation**
- **2 - Dominance Test is > 50%**
- **3 - Prevalence I Index is ≤3.0**
- **4 - Morphological Adaptations** (Provide supporting data in Remarks or on a separate sheet)

### Remarks: (Include photo numbers here or on a separate sheet.)

adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Color (moist)</td>
<td>%</td>
</tr>
<tr>
<td>0-4</td>
<td>5YR</td>
<td>3/1</td>
</tr>
<tr>
<td>4-9</td>
<td>5YR</td>
<td>3/1</td>
</tr>
<tr>
<td>9-13</td>
<td>2.5YR</td>
<td>4/3</td>
</tr>
</tbody>
</table>

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.  
2 Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)

Restrictive Layer (if observed):
Type: Gravels and Rock  
Depth (inches): 13

Remarks:

Hydrology

Wetland Hydrology Indicators:
- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required):
- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Dry Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☑ No ☐ Depth (inches): 5
Water Table Present? Yes ☑ No ☐ Depth (inches): 5
Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 5

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
**WETLAND DETERMINATION DATA FORM - MARITIMES**

- **Project/Site:** Northern Pulp Plant - Pipeline PFA
- **Municipality/County:** Pictou
- **Applicant/Owner:** NPNS
- **Investigator(s):** Chris Kennedy
- **Affiliation:** Dillon Consulting
- **Datum:** NAD83
- **Sampling Date:** 30-Jul-19
- **Sampling Point:** Up Pit 1

### Landform (Hillslope, Terrace, etc.): Shoulder slope

- Local relief (concave, convex, none): flat

### Slope: 0.0% / 0.0°

- **Latitude:** 45.684987
- **Longitude:** -62.729257

### Soil Map Unit Name/Type: Tormentine

### Wetland Type: UPLAND

**Are climatic/hydrologic conditions on the site typical for this time of year?** Yes ☐ No ☐

**Are Vegetation, Soil, or Hydrology significantly disturbed?** Yes ☐ No ☐

**Are Vegetation, Soil, or Hydrology naturally problematic?** Yes ☐ No ☐

**Hydrophytic Vegetation Present?** Yes ☐ No ☐

**Hydric Soil Present?** Yes ☐ No ☐

**Wetland Hydrology Present?** Yes ☐ No ☐

**Remarks:**

---

### VEGETATION - Use scientific names of plants.

#### Tree Stratum (Plot size: 10 m)

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel. Strat. Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fraxinus americana</td>
<td>5</td>
<td>12.2%</td>
<td>FACU</td>
<td>12.2%</td>
</tr>
<tr>
<td>Populus tremuloides</td>
<td>25</td>
<td>61.0%</td>
<td>FACU</td>
<td>61.0%</td>
</tr>
<tr>
<td>Prunus virginiana</td>
<td>10</td>
<td>24.4%</td>
<td>FACU</td>
<td>24.4%</td>
</tr>
<tr>
<td>Crataegus monogyna</td>
<td>0.5</td>
<td>1.2%</td>
<td>FACU</td>
<td>1.2%</td>
</tr>
<tr>
<td>Sorbus aucuparia</td>
<td>0.5</td>
<td>1.2%</td>
<td>UPL</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

#### Sapling/Shrub Stratum (Plot size: 5 m)

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel. Strat. Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prunus virginiana</td>
<td>15</td>
<td>71.4%</td>
<td>FACU</td>
<td>71.4%</td>
</tr>
<tr>
<td>Populus tremuloides</td>
<td>0.5</td>
<td>2.4%</td>
<td>FACU</td>
<td>2.4%</td>
</tr>
<tr>
<td>Sorbus aucuparia</td>
<td>0.5</td>
<td>2.4%</td>
<td>UPL</td>
<td>2.4%</td>
</tr>
<tr>
<td>Fraxinus americana</td>
<td>5</td>
<td>23.8%</td>
<td>FACU</td>
<td>23.8%</td>
</tr>
</tbody>
</table>

#### Herb Stratum (Plot size: 2 m)

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel. Strat. Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>21</td>
<td></td>
<td></td>
<td>Total Cover</td>
</tr>
</tbody>
</table>

#### Woody Vine Stratum (Plot size: )

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel. Strat. Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td>Total Cover</td>
</tr>
</tbody>
</table>

**Remarks:**

---

**Hydrophytic Vegetation Indicators:**

1. Rapid Test for Hydrophytic Vegetation
2. Dominance Test is > 50%
3. Prevalence Index is ≤ 3.0
4. Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

- Problematic Hydrophytic Vegetation (Explain)

**Hydrophytic Vegetation Present?** Yes ☐ No ☐

---

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

<table>
<thead>
<tr>
<th>Is the Sampled Area within a Wetland?</th>
<th>Yes ☐ No ☐</th>
</tr>
</thead>
</table>

**DOMINANCE TEST WORKSHEET:**

- Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)
- Total Number of Dominant Species Across All Strata: 4 (B)
- Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

**PREVALENCE INDEX WORKSHEET:**

<table>
<thead>
<tr>
<th>Total % Cover of:</th>
<th>Multiply by:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>OBL species</td>
<td>0 x 1 = 0</td>
<td></td>
</tr>
<tr>
<td>FACW species</td>
<td>0 x 2 = 0</td>
<td></td>
</tr>
<tr>
<td>FAC species</td>
<td>0 x 3 = 0</td>
<td></td>
</tr>
<tr>
<td>FACU species</td>
<td>61 x 4 = 244</td>
<td></td>
</tr>
<tr>
<td>UPL species</td>
<td>1 x 5 = 5</td>
<td></td>
</tr>
</tbody>
</table>

Column Totals: 62 (A) 249 (B)

Prevalence Index = B/A = 4.016

Hydrophytic Vegetation Indicators:

- 1. Rapid Test for Hydrophytic Vegetation
- 2. Dominance Test is > 50%
- 3. Prevalence Index is ≤ 3.0
- 4. Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation (Explain)

Hydrophytic Vegetation Present? Yes ☐ No ☐

---

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
### Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9</td>
<td>7.5YR</td>
<td>3/1 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9-16</td>
<td>5YR</td>
<td>4/4 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-21</td>
<td>10YR</td>
<td>6/2 98</td>
<td>7.5YR</td>
<td>5/8 2</td>
</tr>
</tbody>
</table>

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

### Hydric Soil Indicators:
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

### Restrictive Layer (if observed):
- Type: gravels
- Depth (inches): 21

### HYDROLOGY

#### Wetland Hydrology Indicators:
- Primary Indicators (minimum of one is required; check all that apply)
  - Surface Water (A1)
  - High Water Table (A2)
  - Saturation (A3)
  - Water Marks (B1)
  - Sediment Deposits (B2)
  - Drift Deposits (B3)
  - Algal Mat or Crust (B4)
  - Iron Deposits (B5)
  - Inundation Visible on Aerial Imagery (B7)
  - Sparsely Vegetated Concave Surface (B8)
  - Water-Stained Leaves (B9)
  - Aquatic Fauna (B13)
  - True Aquatic Plants (B14)
  - Hydrogen Sulfide Odor (C1)
  - Oxidized Rhizospheres on Living Roots (C3)
  - Presence of Reduced Iron (C4)
  - Recent Iron Reduction in Tilled Soils (C6)
  - Thin Muck Surface (C7)
  - Gauge or Well Data (D9)
  - Other (Explain in Remarks)

- Secondary Indicators (minimum of two required)
  - Surface Soil Cracks (B6)
  - Drainage Patterns (B10)
  - Dry Season Water Table (C2)
  - Crayfish Burrows (C8)
  - Saturation Visible on Aerial Imagery (C9)
  - Stunted or Stressed Plants (D1)
  - Geomorphic Position (D2)
  - FAC-Neutral Test (D5)

#### Field Observations:
- Surface Water Present? Yes No Depth (inches): ___________
- Water Table Present? Yes No Depth (inches): ___________
- Saturation Present? Yes No Depth (inches): ___________

#### Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

<table>
<thead>
<tr>
<th>Wetland Hydrology Present?</th>
<th>Yes ☐ No ☐</th>
<th>Is the Sampled Area within a Wetland?</th>
<th>Yes ☐ No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes ☐ No ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrophytic Vegetation Present?</td>
<td>Yes ☐ No ☐</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### VEGETATION - Use scientific names of plants.

#### Tree Stratum (Plot size: 10 m)

- **1. Acer rubrum**
  - Absolute % Cover: 35
  - Rel. Strat. Cover: 43.5%
  - Indicator Status: FAC

- **2. Populus tremuloides**
  - Absolute % Cover: 5
  - Rel. Strat. Cover: 6.2%
  - Indicator Status: FACU

- **3. Abies balsamea**
  - Absolute % Cover: 35
  - Rel. Strat. Cover: 43.5%
  - Indicator Status: FACU

- **4. Betula populifolia**
  - Absolute % Cover: 5
  - Rel. Strat. Cover: 6.2%
  - Indicator Status: FACU

- **5. Betula papyrifera**
  - Absolute % Cover: 0.5
  - Rel. Strat. Cover: 0.6%
  - Indicator Status: FACU

#### Sapling/Shrub Stratum (Plot size: 5 m)

- **1. Abies balsamea**
  - Absolute % Cover: 5
  - Rel. Strat. Cover: 90.9%
  - Indicator Status: FAC

#### Herb Stratum (Plot size: 2 m)

- **1. Veronica officinalis**
  - Absolute % Cover: 5
  - Rel. Strat. Cover: 32.3%
  - Indicator Status: FACU

- **2. Maianthemum canadense**
  - Absolute % Cover: 5
  - Rel. Strat. Cover: 32.3%
  - Indicator Status: FACU

- **3. Hieracium alleghaniense**
  - Absolute % Cover: 4
  - Rel. Strat. Cover: 25.8%
  - Indicator Status: UPL

- **4. Ranunculus acris**
  - Absolute % Cover: 1
  - Rel. Strat. Cover: 6.5%
  - Indicator Status: FAC

- **5. Luzula acuminata**
  - Absolute % Cover: 0.5
  - Rel. Strat. Cover: 3.2%
  - Indicator Status: FACU

#### Woody Vine Stratum (Plot size: 2 m)

- **1.**
  - Absolute % Cover: 0
  - Rel. Strat. Cover: 0.0%
  - Total Cover: 0

- **2.**
  - Absolute % Cover: 0
  - Rel. Strat. Cover: 0.0%
  - Total Cover: 0

### Remarks:

(Include photo numbers here or on a separate sheet.)

---

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
### SOIL

**Sampling Point:** Up Pit 2

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Redox Features</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc²</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-24</td>
<td>5YR</td>
<td>3/3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sandy Loam</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

### Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)

### Hydric Soil Present? Yes ☐ No ☐

### Restrictive Layer (if observed):

<table>
<thead>
<tr>
<th>Type</th>
<th>Depth (inches):</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Hydric Soil Indicators for Problematic Hydric Soils³:

- Coast Prairie Redox (A16)
- Dark Surface (S7)
- Iron Manganese Masses (F12)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

### HYDROLOGY

**Wetland Hydrology Indicators:**

- Primary Indicators (minimum of one is required; check all that apply)
  - Surface Water (A1)
  - High Water Table (A2)
  - Saturation (A3)
  - Water Marks (B1)
  - Sediment Deposits (B2)
  - Drift Deposits (B3)
  - Algal Mat or Crust (B4)
  - Iron Deposits (B5)
  - Inundation Visible on Aerial Imagery (B7)
  - Sparsely Vegetated Concave Surface (B8)

- Secondary Indicators (minimum of two required)
  - Water-Stained Leaves (B9)
  - Aquatic Fauna (B13)
  - True Aquatic Plants (B14)
  - Hydrogen Sulfide Odor (C1)
  - Oxidized Rhizospheres on Living Roots (C3)
  - Presence of Reduced Iron (C4)
  - Thin Muck Surface (C7)
  - Gauge or Well Data (D9)
  - Surface Soil Cracks (B6)
  - Drainage Patterns (B10)
  - Dry Season Water Table (C2)
  - Crayfish Burrows (C8)
  - Saturation Visible on Aerial Imagery (C9)
  - Stunted or Stressed Plants (D1)
  - Geomorphic Position (D2)
  - FAC-Neutral Test (D5)

**Field Observations:**

- Surface Water Present? Yes ☐ No ☐ Depth (inches): __________
- Water Table Present? Yes ☐ No ☐ Depth (inches): __________
- Saturation Present? Yes ☐ No ☐ Depth (inches): __________

**Wetland Hydrology Present? Yes ☐ No ☐**

**Remarks:**

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
WETLAND DETERMINATION DATA FORM - MARITIMES

Project/Site: Northern Pulp Plant - Pipeline PFA
Municipality/County: Pictou
Applicant/Owner: NPNS
Investigator(s): Chris Kennedy
Affiliation: Dillon Consulting
Landform (hillslope, terrace, etc.): Shoulder slope
Local relief (concave, convex, none): convex
Slope: 0.0% / 0.0° Lat.: 45.705717
Long.: -62.716690
Datum: NAD83
Soil Map Unit Name/Type: Tormentine
Wetland Type: UPLAND

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes ☐ No ☐</th>
<th>Is the Sampled Area within a Wetland?</th>
<th>Yes ☐ No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes ☐ No ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes ☐ No ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remarks:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

VEGETATION - Use scientific names of plants.

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 10 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel.Strat. Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Abies balsamea</td>
<td>10</td>
<td>14.3%</td>
<td>FAC</td>
<td>0</td>
</tr>
<tr>
<td>2. Acer rubrum</td>
<td>15</td>
<td>21.4%</td>
<td>FAC</td>
<td>0</td>
</tr>
<tr>
<td>3. Picea rubens</td>
<td>35</td>
<td>50.0%</td>
<td>FACU</td>
<td>0</td>
</tr>
<tr>
<td>4. Pinus strobus</td>
<td>5</td>
<td>7.1%</td>
<td>FAC</td>
<td>0</td>
</tr>
<tr>
<td>5. Populus tremuloides</td>
<td>5</td>
<td>7.1%</td>
<td>FACU</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 5 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel.Strat. Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Abies balsamea</td>
<td>4</td>
<td>80.0%</td>
<td>FAC</td>
<td>0</td>
</tr>
<tr>
<td>2. Picea rubens</td>
<td>1</td>
<td>20.0%</td>
<td>FACU</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 2 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel.Strat. Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0</td>
<td>0.0%</td>
<td>FAC</td>
<td>0</td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>0.0%</td>
<td>FAC</td>
<td>0</td>
</tr>
<tr>
<td>3.</td>
<td>0</td>
<td>0.0%</td>
<td>FAC</td>
<td>0</td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>0.0%</td>
<td>FAC</td>
<td>0</td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td>FAC</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: 5 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>Rel.Strat. Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0</td>
<td>0.0%</td>
<td>FAC</td>
<td>0</td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>0.0%</td>
<td>FAC</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Remarks:</th>
<th>(Include photo numbers here or on a separate sheet.)</th>
</tr>
</thead>
</table>

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td>7.5YR</td>
<td>4/4</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td>Loam</td>
<td>leaf litter/dull</td>
</tr>
<tr>
<td>2-8</td>
<td>5YR</td>
<td>4/4</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td>Loam</td>
<td>refusal at 18 inches due to gravel</td>
</tr>
</tbody>
</table>

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.
2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
- Histosol (A1)
- Histic EEpipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)

Indicators for Problematic Hydric Soils:
- Coast Prairie Redox (A16)
- Dark Surface (S7)
- Iron Manganese Masses (F12)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)
- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Dry Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)

Hydric Soil Present? Yes ☐ No ☑

Remarks:

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)
- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)
- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Dry Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)

Field Observations:

<table>
<thead>
<tr>
<th>Surface Water Present?</th>
<th>Yes ☐ No ☑</th>
<th>Depth (inches):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Table Present?</td>
<td>Yes ☐ No ☑</td>
<td>Depth (inches):</td>
</tr>
<tr>
<td>Saturation Present?</td>
<td>Yes ☐ No ☑</td>
<td>Depth (inches):</td>
</tr>
</tbody>
</table>

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
WETLAND DETERMINATION DATA FORM - MARITIMES

Project/Site: Northern Pulp Plant - Pipeline PFA
Applicant/Owner: NPNS
Investigator(s): Chris Kennedy
Municipality/County: Pictou
Affiliation: Dillon Consulting
Sampling Date: 30-Jul-19
Sampling Point: Up pit 4

Landform (hillslope, terrace, etc.): Shoulder slope
Local relief (concave, convex, none): convex
Slope: 0.0% / 0.0
Lat.: 45.711163
Long.: -62.7211307
Datum: NAD83

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed?
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes ☐ No ☐</th>
<th>Is the Sampled Area within a Wetland?</th>
<th>Yes ☐ No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes ☐ No ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes ☐ No ☐</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remarks:

VEGETATION - Use scientific names of plants.

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 10 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species? Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Picea rubens</td>
<td>20</td>
<td>☑ 25.0% FACU</td>
<td></td>
</tr>
<tr>
<td>2. Betula papyrifera</td>
<td>30</td>
<td>☑ 37.5% FACU</td>
<td></td>
</tr>
<tr>
<td>3. Betula populifolia</td>
<td>20</td>
<td>☑ 25.0% FAC</td>
<td></td>
</tr>
<tr>
<td>4. Abies balsamea</td>
<td>10</td>
<td>☑ 12.5% FACU</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td>= Total Cover</td>
</tr>
<tr>
<td></td>
<td>80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 5 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species? Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Picea rubens</td>
<td>25</td>
<td>☑ 49.0% FACU</td>
<td></td>
</tr>
<tr>
<td>2. Abies balsamea</td>
<td>25</td>
<td>☑ 49.0% FAC</td>
<td></td>
</tr>
<tr>
<td>3. Populus tremuloides</td>
<td>1</td>
<td>☑ 2.0% FACU</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td>= Total Cover</td>
</tr>
<tr>
<td></td>
<td>51</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 2 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species? Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td>= Total Cover</td>
</tr>
<tr>
<td>10.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: )</th>
<th>Absolute % Cover</th>
<th>Dominant Species? Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td>= Total Cover</td>
</tr>
</tbody>
</table>

| Remarks: (Include photo numbers here or on a separate sheet.)

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
### Profile Description:

(Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Color (moist)</td>
<td>%</td>
</tr>
<tr>
<td>0-1</td>
<td>7.5YR</td>
<td>4/4</td>
</tr>
<tr>
<td>1-26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26-41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41-61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61-120</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

^1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.  
^2 Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat Peat (S3)

**Restrictive Layer (if observed):**

- Type: 
- Depth (inches): ________________

**Remarks:**

---

### HYDROLOGY

**Wetland Hydrology Indicators:**

*Primary Indicators (minimum of one is required; check all that apply)*

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)

- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)

*Secondary Indicators (minimum of two required)*

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Dry Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)

**Field Observations:**

- Surface Water Present? Yes ○ No ◦ Depth (inches): ____________
- Water Table Present? Yes ○ No ◦ Depth (inches): ____________
- Saturation Present? Yes ○ No ◦ Depth (inches): ____________

**Wetland Hydrology Present?**

Yes ○ No ◦

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

**Remarks:**

---

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
WETLAND DETERMINATION DATA FORM - MARITIMES

Project/Site: Northern Pulp Plant - Pipeline PFA
Applicant/Owner: NPNS
Investigator(s): Chris Kennedy

Municipality/County: Pictou
Affiliation: Dillon Consulting

Landform (hillslope, terrace, etc.): Shoulder slope
Local relief (concave, convex, none): convex

Slope: 0.0% / 0.0 *
Lat.: 45.718141
Long.: -62.704326
Datum: NAD83

Soil Map Unit Name/Type: Tormentine

Wetland Type: UPLAND

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☐ No ☑

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed?
Are "Normal Circumstances" present? Yes ☐ No ☑

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes ☐ No ☑</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes ☐ No ☑</td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes ☐ No ☑</td>
</tr>
<tr>
<td>Is the Sampled Area within a Wetland?</td>
<td>Yes ☐ No ☑</td>
</tr>
</tbody>
</table>

Remarks:

VEGETATION - Use scientific names of plants.

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 10 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Picea rubens</td>
<td>30</td>
<td>☑ 35.1% FACU</td>
<td></td>
</tr>
<tr>
<td>2. Pinus strobus</td>
<td>15</td>
<td>☑ 17.5% FACU</td>
<td></td>
</tr>
<tr>
<td>3. Abies balsamea</td>
<td>25</td>
<td>☑ 29.2% FAC</td>
<td></td>
</tr>
<tr>
<td>4. Acer rubrum</td>
<td>15</td>
<td>☑ 17.5% FAC</td>
<td></td>
</tr>
<tr>
<td>5. Betula populifolia</td>
<td>0.5</td>
<td>☑ 0.6% FAC</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>85.5</td>
<td>☑ Total Cover</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 5 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Picea rubens</td>
<td>10</td>
<td>☑ 95.2% FACU</td>
<td></td>
</tr>
<tr>
<td>2. Abies balsamea</td>
<td>0.5</td>
<td>☑ 4.8% FAC</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10.5</td>
<td>☑ Total Cover</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 2 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pteridium aquilinum</td>
<td>0.5</td>
<td>☑ 100.0% FACU</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>☑ 0.0%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10.5</td>
<td>☑ Total Cover</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: )</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0.5</td>
<td>☑ Total Cover</td>
<td></td>
</tr>
</tbody>
</table>

Remarks: (Include photo numbers here or on a separate sheet.)

Prevalence Index worksheet:

<table>
<thead>
<tr>
<th>Total % Cover of:</th>
<th>Multiply by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBL species</td>
<td>0 x 1 = 0</td>
</tr>
<tr>
<td>FACW species</td>
<td>0 x 2 = 0</td>
</tr>
<tr>
<td>FAC species</td>
<td>41 x 3 = 123</td>
</tr>
<tr>
<td>FACU species</td>
<td>55.5 x 4 = 222</td>
</tr>
<tr>
<td>UPL species</td>
<td>0 x 5 = 0</td>
</tr>
<tr>
<td>Column Totals:</td>
<td>96.5 (A) 345 (B)</td>
</tr>
</tbody>
</table>

Prevalence Index = B/A = 3.575

Hydrophytic Vegetation Indicators:

1. Rapid Test for Hydrophytic Vegetation
2. Dominance Test is > 50%
3. Prevalence Index ≤ 3.0
4. Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
5. Problematic Hydrophytic Vegetation (Explain)

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks: (Include photo numbers here or on a separate sheet.)

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
### Profile Description:
(Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>7.5YR</td>
<td>4/4</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-3</td>
<td>7.5YR</td>
<td>6/2</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-10</td>
<td>7.5YR</td>
<td>4/4</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.  
2 Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:
- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] 2 cm Muck (A10)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Muck Mineral (S1)
- [ ] 5 cm Mucky Peat or Peat (S3)

### Hydric Soil Present?
- [ ] Yes
- [ ] No

### Hydric Soil Present?
- [ ] Yes
- [ ] No

### Hydric Soil Present?
- [ ] Yes
- [ ] No

### Hydric Soil Present?
- [ ] Yes
- [ ] No

### Hydric Soil Present?
- [ ] Yes
- [ ] No

### Restrictive Layer (if observed):
- Type:  
- Depth (inches): __________________________

### Remarks:

### HYDROLOGY

#### Wetland Hydrology Indicators:

<table>
<thead>
<tr>
<th>Primary Indicators (minimum of one is required; check all that apply)</th>
<th>Secondary Indicators (minimum of two required)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] Surface Water (A1)</td>
<td>[ ] Surface Soil Cracks (B6)</td>
</tr>
<tr>
<td>[ ] High Water Table (A2)</td>
<td>[ ] Drainage Patterns (B10)</td>
</tr>
<tr>
<td>[ ] Saturation (A3)</td>
<td>[ ] Dry Season Water Table (C2)</td>
</tr>
<tr>
<td>[ ] Water Marks (B1)</td>
<td>[ ] Crayfish Burrows (C8)</td>
</tr>
<tr>
<td>[ ] Sediment Deposits (B2)</td>
<td>[ ] Saturation Visible on Aerial Imagery (C9)</td>
</tr>
<tr>
<td>[ ] Drift Deposits (B3)</td>
<td>[ ] Stunted or Stressed Plants (D1)</td>
</tr>
<tr>
<td>[ ] Algal Mat or Crust (B4)</td>
<td>[ ] Geomorphic Position (D2)</td>
</tr>
<tr>
<td>[ ] Iron Deposits (B5)</td>
<td>[ ] FAC-Neutral Test (D5)</td>
</tr>
<tr>
<td>[ ] Inundation Visible on Aerial Imagery (B7)</td>
<td></td>
</tr>
<tr>
<td>[ ] Sparsely Vegetated Concave Surface (B8)</td>
<td></td>
</tr>
</tbody>
</table>

#### Field Observations:

- Surface Water Present?  
  - [ ] Yes
  - [ ] No
  - Depth (inches): ______________ 

- Water Table Present?  
  - [ ] Yes
  - [ ] No
  - Depth (inches): ______________ 

- Saturation Present? (includes capillary fringe)  
  - [ ] Yes
  - [ ] No
  - Depth (inches): ______________ 

#### Wetland Hydrology Present?
- [ ] Yes
- [ ] No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

### Remarks:

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
**WETLAND DETERMINATION DATA FORM - MARITIMES**

**Project/Site:** Northern Pulp Plant - Pipeline PFA

**Municipality/County:** Pictou

**Applicant/Owner:** NPNS

**Investigator(s):** Vanessa Graves, Tom Neily

**Affiliation:** Dillon Consulting

**Sampling Date:** 30-Jul-19

**Sampling Point:** WL5E Up

<table>
<thead>
<tr>
<th>Slope: 0.0%</th>
<th>Local relief (concave, convex, none):</th>
<th>convex</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-Jul-19</td>
<td>Latitude:</td>
<td>45.6811174</td>
</tr>
<tr>
<td></td>
<td>Longitude:</td>
<td>-62.732112</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Soil Map Unit Name/Type:</th>
<th>Tormentine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Type:</td>
<td>UPLAND</td>
</tr>
</tbody>
</table>

**SUMMARY OF FINDINGS** - Attach site map showing sampling point locations, transects, important features, etc.

**Hydrophytic Vegetation Present?** Yes ☑ No ☐

**Hydric Soil Present?** Yes ☑ No ☐

**Wetland Hydrology Present?** Yes ☑ No ☐

**Remarks:**

---

### VEGETATION - Use scientific names of plants.

**Tree Stratum** (Plot size: 10 m)

<table>
<thead>
<tr>
<th>Species</th>
<th>% Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Populus tremuloides</td>
<td>80</td>
<td>□ 100.0% FACU</td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>☑ 0.0%</td>
</tr>
<tr>
<td>3.</td>
<td>0</td>
<td>☑ 0.0%</td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>☑ 0.0%</td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>☑ 0.0%</td>
</tr>
</tbody>
</table>

**Sapling/Shrub Stratum** (Plot size: 5 m)

<table>
<thead>
<tr>
<th>Species</th>
<th>% Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rhamnus cathartica</td>
<td>30</td>
<td>□ 75.0% FAC</td>
</tr>
<tr>
<td>2. Alnus incana</td>
<td>10</td>
<td>□ 25.0% FACW</td>
</tr>
<tr>
<td>3.</td>
<td>0</td>
<td>☑ 0.0%</td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>☑ 0.0%</td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>☑ 0.0%</td>
</tr>
</tbody>
</table>

**Herb Stratum** (Plot size: 2 m)

<table>
<thead>
<tr>
<th>Species</th>
<th>% Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Doellingeria umbellata</td>
<td>20</td>
<td>□ 28.6% FACW</td>
</tr>
<tr>
<td>2. EQUISETUM ARVENSE</td>
<td>40</td>
<td>□ 57.1% FAC</td>
</tr>
<tr>
<td>3. Carex aquatilis</td>
<td>10</td>
<td>□ 14.3% OBL</td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>☑ 0.0%</td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>☑ 0.0%</td>
</tr>
<tr>
<td>6.</td>
<td>0</td>
<td>☑ 0.0%</td>
</tr>
<tr>
<td>7.</td>
<td>0</td>
<td>☑ 0.0%</td>
</tr>
<tr>
<td>8.</td>
<td>0</td>
<td>☑ 0.0%</td>
</tr>
</tbody>
</table>

**Woody Vine Stratum** (Plot size: )

<table>
<thead>
<tr>
<th>Species</th>
<th>% Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0</td>
<td>☑ 0.0%</td>
</tr>
<tr>
<td>2.</td>
<td>0</td>
<td>☑ 0.0%</td>
</tr>
</tbody>
</table>

**Remarks:** (Include photo numbers here or on a separate sheet.)

---

**Dominance Test worksheet:**

<table>
<thead>
<tr>
<th>Number of Dominant Species That are OBL, FACW, or FAC:</th>
<th>4 (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Dominant Species Across All Strata:</td>
<td>5 (B)</td>
</tr>
<tr>
<td>Percent of dominant Species That Are OBL, FACW, or FAC:</td>
<td>80.0% (A/B)</td>
</tr>
</tbody>
</table>

**Prevalence Index worksheet:**

<table>
<thead>
<tr>
<th>Total % Cover of:</th>
<th>Multiply by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBL species 10 x 1</td>
<td>10</td>
</tr>
<tr>
<td>FACW species 30 x 2</td>
<td>60</td>
</tr>
<tr>
<td>FACW species 70 x 3</td>
<td>210</td>
</tr>
<tr>
<td>FACU species 80 x 4</td>
<td>320</td>
</tr>
<tr>
<td>UPL species 0 x 5</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column Totals:</th>
<th>190 (A)</th>
<th>600 (B)</th>
</tr>
</thead>
</table>

| Prevalence Index = B/A = | 3.158 |

**Hydrophytic Vegetation Indicators:**

- 1 - Rapid Test for Hydrophytic Vegetation (☑)
- 2 - Dominance Test is > 50% (☑)
- 3 - Prevalence Index is ≤3.0 1
- 4 - Morphological Adaptations 1 (Provide supporting data in Remarks or on a separate sheet or explain any answers in Remarks.

**Problematic Hydrophytic Vegetation** 1 (Explain)

1 Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ☑ No ☐
### Soil Profile Description:

**Depth (inches)** | **Matrix** | **Redox Features**
---|---|---
| | Color (moist) | % | Color (moist) | % | Type | Loc | Texture | Remarks |
0-4 | SYR | 3/2 | | | | | | Silt Loam |
4-18 | SYR | 4/2 | | | | | | |
18-21 | 7SYR | 3/1 | | | | | | |
21-23 | SYR | 4/2 | | | | | | |

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.  
2 Location: PL=Pore Lining. M=Matrix.

### Hydric Soil Indicators:

- Histosol (A1)
- Histosol Epipedon (A2)
- Black Histosol (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)

### Secondary Indicators (if observed):

- Sandy Gleyed Matrix (S4)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

### High Water Table

- Surface Water Present?
- Water Table Present?
- Saturation Present?

### Hydrology

**Primary Indicators** (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Depositions (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)

**Secondary Indicators** (minimum of two required)

- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)

**Field Observations**

- Surface Water Present?
- Water Table Present?
- Saturation Present? (includes capillary fringe)

**Wetland Hydrology Present?**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

---

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
**WETLAND DETERMINATION DATA FORM - MARITIMES**

- **Project/Site:** Northern Pulp Plant - Pipeline PFA
- **Municipality/County:** Pictou
- **Applicant/Owner:** NPNS
- **Investigator(s):** Vanessa Graves, Tom Neily
- **Affiliation:** Dillon Consulting

### Slope and Location
- **Slope:** 0.0% / 0.0
- **Lat.** 45.689866
- **Long.** -62.729489
- **Datum:** NAD83

### Soil Map Unit Name/Type
- **Type:** Tormentine

### Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐
- **(If no, explain in Remarks.)**

### Are Vegetation ☑, Soil ☑, or Hydrology ☑ significantly disturbed?
- **(If needed, explain any answers in Remarks.)**

### Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic?

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes ☑ No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes ☑ No ☐</td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes ☑ No ☐</td>
</tr>
</tbody>
</table>

### Is the Sampled Area within a Wetland? Yes ☑ No ☐

### Remarks:

### VEGETATION - Use scientific names of plants.

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 10 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species? Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Salix bebbiana</td>
<td>10</td>
<td>☑</td>
<td>14.3%</td>
</tr>
<tr>
<td>2. Populus tremuloides</td>
<td>50</td>
<td>☑</td>
<td>71.4%</td>
</tr>
<tr>
<td>3. Quercus rubra</td>
<td>10</td>
<td>☑</td>
<td>14.3%</td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>0.0%</td>
<td>FAC</td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td>FAC</td>
</tr>
<tr>
<td>Total Cover</td>
<td>70</td>
<td>= Total Cover</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 5 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species? Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alnus incana</td>
<td>10</td>
<td>☑</td>
<td>40.0%</td>
</tr>
<tr>
<td>2. Amelanchier canadensis</td>
<td>5</td>
<td>☑</td>
<td>20.0%</td>
</tr>
<tr>
<td>3. Rosa virginiana</td>
<td>10</td>
<td>☑</td>
<td>40.0%</td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>0.0%</td>
<td>FAC</td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>0.0%</td>
<td>FAC</td>
</tr>
<tr>
<td>Total Cover</td>
<td>25</td>
<td>= Total Cover</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 2 m)</th>
<th>Absolute % Cover</th>
<th>Dominant Species? Rel.Strat. Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Spiraea alba</td>
<td>30</td>
<td>☑</td>
<td>46.2%</td>
</tr>
<tr>
<td>2. Doellingeria umbellata</td>
<td>20</td>
<td>☑</td>
<td>30.8%</td>
</tr>
<tr>
<td>3. Maianthemum canadense</td>
<td>5</td>
<td>☑</td>
<td>7.7%</td>
</tr>
<tr>
<td>4. Equisetum sylvaticum</td>
<td>5</td>
<td>☑</td>
<td>7.7%</td>
</tr>
<tr>
<td>5. Solidago rugosa</td>
<td>5</td>
<td>☑</td>
<td>7.7%</td>
</tr>
<tr>
<td>Total Cover</td>
<td>65</td>
<td>= Total Cover</td>
<td></td>
</tr>
</tbody>
</table>

### Dominance Test worksheet:
- **Number of Dominant Species That are OBL, FACW, or FAC:** 5 (A)
- **Total Number of Dominant Species Across All Strata:** 6 (B)
- **Percent of dominant Species That Are OBL, FACW, or FAC:** 83.3% (A/B)

### Prevalence Index worksheet:
- **Total % Cover of:** Multiply by:
  - OBL species | 0 | x 1 = 0 |
  - FACW species | 75 | x 2 = 150 |
  - FAC species | 20 | x 3 = 60 |
  - FACU species | 65 | x 4 = 260 |
  - UPL species | 0 | x 5 = 0 |
- **Column Totals:** 160 (A) 470 (B)
- **Prevalence Index = B/A =** 2.938

### Hydrophytic Vegetation Indicators:
- **1 - Rapid Test for Hydrophytic Vegetation**
- **2 - Dominance Test is > 50%**
- **3 - Prevalence Index is ≤3.0**
- **4 - Morphological Adaptations**
  - **Problematic Hydrophytic Vegetation** (Provide supporting data in Remarks or on a separate sheet)

### Remarks:
- (Include photo numbers here or on a separate sheet.)

Adapted from U.S. Corps of Engineers form for Northeast-North Central Supplement for use in Maritimes.
### Profile Description:
(Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Color (moist)</th>
<th>%</th>
<th>Redox Features</th>
<th>Type</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>5YR</td>
<td>3/2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-12</td>
<td>5YR</td>
<td>4/3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.  
2 Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:
- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] 2 cm Muck (A10)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Muck Mineral (S1)
- [ ] 5 cm Mucky Peat or Peat (S3)

### Restrictive Layer (if observed):
- Type:
- Depth (inches): 12

### Remarks:

### HYDROLOGY

#### Primary Indicators (minimum of one is required; check all that apply)
- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)

#### Secondary Indicators (minimum of two required)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] True Aquatic Plants (B14)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Gauge or Well Data (D9)
- [ ] FAC-Neutral Test (D5)

#### Field Observations:
- Surface Water Present? Yes ☐ No ☐ Depth (inches): __________
- Water Table Present? Yes ☐ No ☐ Depth (inches): __________
- Saturation Present? Yes ☐ No ☐ Depth (inches): __________

#### Wetland Hydrology Present? Yes ☐ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

### Remarks:

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