

## 10.0 SUMMARY OF MITIGATION

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Chapter 8 of this EIA Report identified various mitigation measures for the Project. These were developed to avoid or minimize the environmental effects of the Project on each applicable valued environmental component (VEC) considered in this EIA.

A summary table of the various mitigation measures presented in the environmental effects assessment for each VEC is provided in Table 10.1.1 below, for convenience. It is cautioned that, in the interests of maintaining the exact language of the text within the EIA Report, the mitigation measures in Chapter 8 of this EIA Report have been reproduced *verbatim* in the table below, and no editorial changes have been made to the text presented in this table. Where added text was necessary to provide context for the mitigation measure, this added text has been provided in *[square brackets and italic text]*.

The reader is referred to the respective environmental effects assessment for each VEC in Chapter 8 of this EIA Report for a full understanding and the context of mitigation measures to be implemented to avoid or minimize any adverse environmental effects of the Project. Acronyms in the table are not spelled out to maintain consistency with the actual text of the mitigation measure as identified in Chapter 8; a List of Acronyms and Units is provided in Appendix A.

Mitigation by design, as described in the Project Description (Chapter 3), is not repeated in this summary table. Only those mitigation measures that are specific to VECs are included.

Table 10.1.1 Summary of Mitigation

#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
1.	Atmospheric Environment	Construction	<ul style="list-style-type: none"> <li>Implement idling reduction program.</li> </ul>	Section 8.2.4
2.	Atmospheric Environment	Construction	<ul style="list-style-type: none"> <li>Application of water on the site access road and on-site roads within the PDA (but not on forest resource roads) as required to reduce dust generation.</li> </ul>	Section 8.2.4
3.	Atmospheric Environment	Construction	<ul style="list-style-type: none"> <li>Seeding and re-vegetation of topsoil and overburden storage piles as soon as possible after disturbance.</li> </ul>	Section 8.2.4
4.	Atmospheric Environment	Construction	<ul style="list-style-type: none"> <li>Implement equipment and vehicle maintenance program to improve operational efficiency and reduce emissions.</li> </ul>	Section 8.2.4
5.	Atmospheric Environment	Operation	<ul style="list-style-type: none"> <li>Implement idling reduction program.</li> </ul>	Section 8.2.4
6.	Atmospheric Environment	Operation	<ul style="list-style-type: none"> <li>Application of water on the site access road and on-site roads within the PDA (but not on forest resource roads) as required to minimize dust generation.</li> </ul>	Section 8.2.4
7.	Atmospheric Environment	Operation	<ul style="list-style-type: none"> <li>Use of H<sub>2</sub>S and NH<sub>3</sub> scrubber on APT plant.</li> </ul>	Section 8.2.4
8.	Atmospheric Environment	Operation	<ul style="list-style-type: none"> <li>Implement equipment and vehicle maintenance program.</li> </ul>	Section 8.2.4
9.	Atmospheric Environment	Operation	<ul style="list-style-type: none"> <li>Dust collection systems on primary crusher, ore processing and APT plant.</li> </ul>	Section 8.2.4
10.	Atmospheric Environment	Operation	<ul style="list-style-type: none"> <li>Seeding and re-vegetation of topsoil and overburden storage piles.</li> </ul>	Section 8.2.4
11.	Acoustic Environment:	Construction	<ul style="list-style-type: none"> <li>Implement an idling reduction policy.</li> </ul>	Section 8.3.4
12.	Acoustic Environment	Construction	<ul style="list-style-type: none"> <li>Limit construction activity to daytime hours where feasible.</li> </ul>	Section 8.3.4
13.	Acoustic Environment	Construction	<ul style="list-style-type: none"> <li>Limit blasting activity to daytime hours only, where feasible, and minimize the frequency of blasts.</li> </ul>	Section 8.3.4
14.	Acoustic Environment	Construction	<ul style="list-style-type: none"> <li>Complete drilling and blasting events during daytime hours only whenever feasible, and minimize the frequency of blasts.</li> </ul>	Section 8.3.4
15.	Acoustic Environment	Construction	<ul style="list-style-type: none"> <li>Use of mufflers.</li> </ul>	Section 8.3.4
16.	Acoustic Environment	Construction	<ul style="list-style-type: none"> <li>Ensure equipment is properly maintained.</li> </ul>	Section 8.3.4
17.	Acoustic Environment	Operation	<ul style="list-style-type: none"> <li>Complete drilling and blasting events during daytime hours only whenever feasible, and minimize the frequency of blasts.</li> </ul>	Section 8.3.4
18.	Acoustic Environment	Operation	<ul style="list-style-type: none"> <li>Notify nearby residents and camp owners of the blasting schedule.</li> </ul>	Section 8.3.4
19.	Acoustic Environment	Operation	<ul style="list-style-type: none"> <li>Implementation of an idling reduction policy.</li> </ul>	Section 8.3.4
20.	Acoustic Environment	Operation	<ul style="list-style-type: none"> <li>Routine trucking during daytime hours only.</li> </ul>	Section 8.3.4

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#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
21.	Acoustic Environment	Operation	<ul style="list-style-type: none"> <li>Carry out preventative maintenance on equipment.</li> </ul>	Section 8.3.4
22.	Acoustic Environment	Construction	<ul style="list-style-type: none"> <li>Process equipment enclosed in buildings.</li> </ul>	Section 8.3.4
23.	Acoustic Environment	Construction	<ul style="list-style-type: none"> <li>Partially enclosed primary crusher and conveyors.</li> </ul>	Section 8.3.4
24.	Water Resources	Construction	<ul style="list-style-type: none"> <li>Document the pre-construction status and condition of water supplies at recreational campsites.</li> </ul>	Section 8.4.4
25.	Water Resources	Construction	<ul style="list-style-type: none"> <li>Maintain existing drainage patterns to the extent possible.</li> </ul>	Section 8.4.4
26.	Water Resources	Construction	<ul style="list-style-type: none"> <li>Comply with the Wetland and Watercourse Alteration (WAWA) permit.</li> </ul>	Section 8.4.4
27.	Water Resources	Construction	<ul style="list-style-type: none"> <li>Implement erosion and sedimentation control during Construction and document measures taken as prescribed in the EPP.</li> </ul>	Section 8.4.4
28.	Water Resources	Construction	<ul style="list-style-type: none"> <li>Site fresh water wells for the Project outside the zone of influence of the TSF to ensure Project water quantity and quality requirements are met.</li> </ul>	Section 8.4.4
29.	Water Resources	Operation	<ul style="list-style-type: none"> <li>Implement erosion and sedimentation control during progressive construction of the TSF and other earth moving activities.</li> </ul>	Section 8.4.4
30.	Water Resources	Operation	<ul style="list-style-type: none"> <li>Design water management structures to reduce erosion and assure adequate water conveyance in extreme events.</li> </ul>	Section 8.4.4
31.	Water Resources	Operation	<ul style="list-style-type: none"> <li>Recycle water from the TSF for use in the ore processing to minimize Project demands on the environment for water, and to reduce the production of contact water.</li> </ul>	Section 8.4.4
32.	Water Resources	Operation	<ul style="list-style-type: none"> <li>Collect and treat (as required) surplus mine contact water before discharge to the environment.</li> </ul>	Section 8.4.4
33.	Water Resources	Operation	<ul style="list-style-type: none"> <li>Construct engineered surface water drainage and diversion channels to collect TSF embankment run-off and seepage and associated collection in lined WMPs which are pumped back to the TSF.</li> </ul>	Section 8.4.4
34.	Water Resources	Operation	<ul style="list-style-type: none"> <li>Install and operate groundwater pump-back wells at the northern extent of the TSF to collect some groundwater seepage that bypasses the collection system for pump back to the WMP and TSF.</li> </ul>	Section 8.4.4
35.	Water Resources	Operation	<ul style="list-style-type: none"> <li>Implement an adaptive management plan to install groundwater monitoring wells below the TSF WMPs to monitor the groundwater quality, which can be converted to groundwater interception wells should downstream water quality monitoring indicate that seepage is jeopardizing downstream water quality objectives.</li> </ul>	Section 8.4.4
36.	Water Resources	Decommissioning, Reclamation and Closure	<ul style="list-style-type: none"> <li>Flood the open pit during Closure to minimize the potential for metal leaching and acid rock drainage (ML/ARD) from the remaining pit walls.</li> </ul>	Section 8.4.4

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#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
37.	Water Resources	Decommissioning, Reclamation and Closure	<ul style="list-style-type: none"> <li>Maintain ponded water over PAG tailings and waste rock within the TSF to effectively mitigate the potential for ARD/ML.</li> </ul>	Section 8.4.4
38.	Water Resources	Decommissioning, Reclamation and Closure	<ul style="list-style-type: none"> <li>Post-Closure, maintain pit lake level to ensure it is a groundwater sink until water quality meets discharge requirements described in the Approval to Operate.</li> </ul>	Section 8.4.4
39.	Water Resources	Decommissioning, Reclamation and Closure	<ul style="list-style-type: none"> <li>As required, treat water released from the Project following Closure for as long as necessary to meet discharge water quality requirements.</li> </ul>	Section 8.4.4
40.	Aquatic Environment	Construction	<ul style="list-style-type: none"> <li>Fish habitat compensation for direct loss of fish habitat.</li> </ul>	Section 8.5.4
41.	Aquatic Environment	Construction	<ul style="list-style-type: none"> <li>Relocation of fish from watercourses within the TSF and open pit to nearby watercourses with suitable habitat.</li> </ul>	Section 8.5.4
42.	Aquatic Environment	Construction	<ul style="list-style-type: none"> <li>Maintain existing drainage patterns to the extent possible.</li> </ul>	Section 8.5.4
43.	Aquatic Environment	Construction	<ul style="list-style-type: none"> <li>Comply with the Wetland and Watercourse Alteration (WAWA) permit.</li> </ul>	Section 8.5.4
44.	Aquatic Environment	Construction	<ul style="list-style-type: none"> <li>Implement erosion and sedimentation control during Construction and document measures taken as prescribed in the EPP.</li> </ul>	Section 8.5.4
45.	Aquatic Environment	Construction	<ul style="list-style-type: none"> <li>Siting of Project facilities to minimize disturbance of watersheds and watercourses</li> </ul>	Section 8.5.4
46.	Aquatic Environment	Operation	<ul style="list-style-type: none"> <li>Fish habitat compensation for indirect loss of fish habitat.</li> </ul>	Section 8.5.4
47.	Aquatic Environment	Operation	<ul style="list-style-type: none"> <li>Erosion and sedimentation control during progressive construction of the TSF and other earth moving activities.</li> </ul>	Section 8.5.4
48.	Aquatic Environment	Operation	<ul style="list-style-type: none"> <li>Design water management structures to reduce erosion and assure adequate water conveyance in extreme events.</li> </ul>	Section 8.5.4
49.	Aquatic Environment	Operation	<ul style="list-style-type: none"> <li>Recycle water from the TSF for use in the ore processing to minimize Project demands on the environment for water, and to reduce the production of contact water.</li> </ul>	Section 8.5.4
50.	Aquatic Environment	Operation	<ul style="list-style-type: none"> <li>Treat (as required) surplus mine contact water before discharge to the environment.</li> </ul>	Section 8.5.4
51.	Aquatic Environment	Operation	<ul style="list-style-type: none"> <li>Construct engineered drainage collection channels to collect TSF embankment run-off and seepage and associated collection in lined WMPs which are pumped back to the TSF.</li> </ul>	Section 8.5.4
52.	Aquatic Environment	Operation	<ul style="list-style-type: none"> <li>Install and operate groundwater pump-back wells below the northwestern TSF embankment to collect some groundwater seepage for return to the TSF.</li> </ul>	Section 8.5.4

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#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
53.	Aquatic Environment	Operation	<ul style="list-style-type: none"> <li>Implement an adaptive management plan integrated with Follow-up and Monitoring Program to identify the need for and install groundwater monitoring wells below the TSF WMPs to monitor the groundwater quality, which can be converted to groundwater pump-back wells should downstream water quality monitoring indicate that seepage is jeopardizing downstream water quality objectives.</li> </ul>	Section 8.5.4
54.	Aquatic Environment	Operation	<ul style="list-style-type: none"> <li>Construct engineered drainage and diversion channels to divert non-contact water around the Project facilities wherever possible.</li> </ul>	Section 8.5.4
55.	Aquatic Environment	Operation	<ul style="list-style-type: none"> <li>Construct and operate a water treatment facility to treat surplus water from the Project before discharge, as required.</li> </ul>	Section 8.5.4
56.	Aquatic Environment	Operation	<ul style="list-style-type: none"> <li>Adaptive management measures to further reduce seepage in the event that Follow-up and Monitoring Program identifies further mitigation is required.</li> </ul>	Section 8.5.4
57.	Aquatic Environment	Decommissioning, Reclamation and Closure	<ul style="list-style-type: none"> <li>Fish habitat compensation for indirect loss of fish habitat.</li> </ul>	Section 8.5.4
58.	Aquatic Environment	Decommissioning, Reclamation and Closure	<ul style="list-style-type: none"> <li>Flood the open pit to minimize potential metal leaching and acid rock drainage (ML/ARD) from remaining pit walls.</li> </ul>	Section 8.5.4
59.	Aquatic Environment	Decommissioning, Reclamation and Closure	<ul style="list-style-type: none"> <li>Maintain ponded water over PAG tailings and waste rock within the TSF to prevent ML/ARD.</li> </ul>	Section 8.5.4
60.	Aquatic Environment	Decommissioning, Reclamation and Closure	<ul style="list-style-type: none"> <li>Treat water released from Project following Closure, as required to meet the conditions of the Approval to Operate.</li> </ul>	Section 8.5.4
61.	Aquatic Environment	Decommissioning, Reclamation and Closure	<ul style="list-style-type: none"> <li>Maintain pit lake level to ensure it is a groundwater sink until water quality meets discharge conditions of the Approval to Operate.</li> </ul>	Section 8.5.4
62.	Aquatic Environment	Decommissioning, Reclamation and Closure	<ul style="list-style-type: none"> <li>Adaptive management measures to further reduce seepage in the event that Follow-up and Monitoring Program identifies further mitigation to be required</li> </ul>	Section 8.5.4
63.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Northcliff will work with NBDNR and Crown licensees and sub-licensees to communicate information about the Project footprint and schedule for habitat alteration so that it can be factored into broader forest management and other related wildlife management initiatives in the region.</li> </ul>	Section 8.6.4
64.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Avoidance of, to the extent feasible, known locations of wildlife SAR and SOCC.</li> </ul>	Section 8.6.4

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#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
65.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Minimization of the loss or fragmentation of mature forest habitat and interior forest.</li> </ul>	Section 8.6.4
66.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Co-location of linear facilities, where possible, to other linear disturbances to minimize the environmental effects of fragmentation.</li> </ul>	Section 8.6.4
67.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Minimization of linear corridor width/footprint and clearing to extent practicable.</li> </ul>	Section 8.6.4
68.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Minimization of size of temporary work spaces.</li> </ul>	Section 8.6.4
69.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Limiting clearing and grubbing to infrastructure footprint to that which is necessary.</li> </ul>	Section 8.6.4
70.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Maintenance of natural buffers around wetlands and riparian zones.</li> </ul>	Section 8.6.4
71.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Use of down-lighting, a technique of directing night lighting downward so as not to attract migrating birds.</li> </ul>	Section 8.6.4
72.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>An Avifauna Management Plan (AMP) to address incidental take.</li> </ul>	Section 8.6.4
73.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Establishment of buffers and protection of active migratory bird nests until fledging, upon their discovery in work areas.</li> </ul>	Section 8.6.4
74.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Scheduling of clearing activities outside the breeding season of migratory birds (when possible).</li> </ul>	Section 8.6.4
75.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Flag environmentally sensitive areas prior to commencement of clearing and construction.</li> </ul>	Section 8.6.4
76.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Development of a wildlife awareness program for Construction and Operation.</li> </ul>	Section 8.6.4
77.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Permitting the development of shrub vegetation along transmission lines (to the extent practical) to promote their use by wildlife.</li> </ul>	Section 8.6.4
78.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Rehabilitate access routes that are no longer needed.</li> </ul>	Section 8.6.4
79.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Proper storage of food and waste on site so as to avoid the attraction of wildlife to the Project.</li> </ul>	Section 8.6.4
80.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Use of approved noise arrest mufflers on all equipment to reduce potential environmental effects of noise.</li> </ul>	Section 8.6.4
81.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>Implementation of various dust control measures.</li> </ul>	Section 8.6.4

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#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
82.	Terrestrial Environment	Construction and Operation	<ul style="list-style-type: none"> <li>• Vehicle operation at appropriate speed and yielding to wildlife.</li> </ul>	Section 8.6.4
83.	Vegetated Environment	Construction	<ul style="list-style-type: none"> <li>• Clearing activities will be restricted to necessary portions of the PDA, and not beyond.</li> </ul>	Section 8.7.4
84.	Vegetated Environment	Construction	<ul style="list-style-type: none"> <li>• Standard erosion and sedimentation control measures will be employed, including:               <ul style="list-style-type: none"> <li>• erosion control fencing;</li> <li>• check dams;</li> <li>• sedimentation control ponds where appropriate;</li> <li>• construction sequencing to minimize soil exposure;</li> <li>• retaining existing vegetation as long as possible;</li> <li>• vegetation and mulching of denuded areas;</li> <li>• diverting runoff away from denuded areas;</li> <li>• optimizing length and steepness of slope;</li> <li>• keeping surface water runoff velocities low;</li> <li>• proper sizing and protecting of drainage ways and outlets;</li> <li>• intercepting of sediments on site; and</li> <li>• inspecting and maintaining the above-mentioned control measures.</li> </ul> </li> </ul>	Section 8.7.4
85.	Vegetated Environment	Construction	<ul style="list-style-type: none"> <li>• Clean, coarse fill material will be used for grading, to minimize the risk of introducing or spreading exotic and/or invasive vascular plant species.</li> </ul>	Section 8.7.4
86.	Vegetated Environment	Construction	<ul style="list-style-type: none"> <li>• Construction machinery will be cleaned prior to entering and leaving wetlands to minimize the risk of introducing or spreading exotic and/or invasive species from one wetland to another.</li> </ul>	Section 8.7.4
87.	Vegetated Environment	Construction	<ul style="list-style-type: none"> <li>• Any vascular plant SAR or SOCC within or adjacent to the PDA will be flagged and/or fenced off, and construction activities will be minimized in areas adjacent to SAR or SOCC, whenever possible.</li> </ul>	Section 8.7.4
88.	Vegetated Environment	Construction	<ul style="list-style-type: none"> <li>• NB Power will follow an EPP during the construction of the transmission line and associated infrastructure, which includes mitigation measures for vascular plant SAR or SOCC within the transmission line ROW.</li> </ul>	Section 8.7.4
89.	Vegetated Environment	Construction	<ul style="list-style-type: none"> <li>• Road construction activities will be minimized in wetland areas to reduce the potential environmental effects of disturbance, such as erosion and sedimentation, and the introduction or spread of exotic and/or invasive vascular plant species.</li> </ul>	Section 8.7.4

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90.	Vegetated Environment	Construction	<ul style="list-style-type: none"> <li>• Forested Crown land that will be removed from the PDA will be accounted for by NBDNR in consideration of the results of this assessment and the appropriate forest licensee in the management plans of the subsequent forest cycle.</li> </ul>	Section 8.7.4
91.	Vegetated Environment	Construction	<ul style="list-style-type: none"> <li>• NBDNR Conservation Vegetation Communities within the PDA will be replaced within the ecoregion and license block whenever stands meeting the criteria are available. The licensees, the regional NBDNR office, and the NBDNR Fish and Wildlife Branch will collaborate to identify replacement stands.</li> </ul>	Section 8.7.4
92.	Vegetated Environment	Operation	<ul style="list-style-type: none"> <li>• As part of infrastructure maintenance, access roads will be periodically re-graded and ditched to improve water flow, reduce erosion and/or to deter excessive vegetation growth.</li> </ul>	Section 8.7.4
93.	Wetland Environment	Construction	<ul style="list-style-type: none"> <li>• Clearing activities will be restricted to necessary portions of the PDA, and not beyond, to minimize the amount of habitat lost or altered through direct disturbance, or adjacent edge effects.</li> </ul>	Section 8.8.4
94.	Wetland Environment	Construction	<ul style="list-style-type: none"> <li>• Standard erosion and sedimentation control measures will be employed, including:               <ul style="list-style-type: none"> <li>• erosion control fencing;</li> <li>• check dams;</li> <li>• sedimentation control ponds where appropriate;</li> <li>• construction sequencing to minimize soil exposure;</li> <li>• retaining existing vegetation as long as possible;</li> <li>• re-vegetation and mulching of denuded areas;</li> <li>• diverting runoff away from denuded areas;</li> <li>• optimizing length and steepness of slope;</li> <li>• keeping surface water runoff velocities low;</li> <li>• proper sizing and protecting of drainage ways and outlets;</li> <li>• intercepting of sediments on site; and</li> <li>• inspecting and maintaining the above-mentioned control measures.</li> </ul> </li> </ul>	Section 8.8.4
95.	Wetland Environment	Construction	<ul style="list-style-type: none"> <li>• Any loss of GeoNB-mapped wetlands will be compensated.</li> </ul>	Section 8.8.4
96.	Wetland Environment	Construction	<ul style="list-style-type: none"> <li>• Standard dust control measures will be implemented.</li> </ul>	Section 8.8.4
97.	Wetland Environment	Construction	<ul style="list-style-type: none"> <li>• Quarried, crushed material will be used for road building in and near wetlands, to minimize the risk of introducing or spreading exotic and/or invasive vascular plant species.</li> </ul>	Section 8.8.4

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#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
98.	Wetland Environment	Construction	<ul style="list-style-type: none"> <li>Road construction activities will be minimized in wetland areas to reduce the potential environmental effects of disturbance, such as erosion and sedimentation, and the introduction or spread of exotic and/or invasive vascular plant species.</li> </ul>	Section 8.8.4
99.	Wetland Environment	Operation	<ul style="list-style-type: none"> <li>Water will be treated as necessary prior to release to the environment.</li> </ul>	Section 8.8.4
100.	Wetland Environment	Operation	<ul style="list-style-type: none"> <li>Invasive species will be managed, as described above for Construction activities.</li> </ul>	Section 8.8.4
101.	Wetland Environment	Operation	<ul style="list-style-type: none"> <li>Standard erosion and sedimentation control measures will be employed, as described above for Construction activities.</li> </ul>	Section 8.8.4
102.	Wetland Environment	Operation	<ul style="list-style-type: none"> <li>Standard dust control measures will be implemented.</li> </ul>	Section 8.8.4
103.	Public Health and Safety	Construction, Operation, and Decommissioning, Reclamation and Closure	<ul style="list-style-type: none"> <li>Mitigation measures as described in Section 8.2.4.2 [<i>Atmospheric Environment</i>] will be employed to reduce air contaminant emissions during Construction and Operation and to reduce people's exposure to the Project-related air emissions. These include the implementation of an idling reduction policy, the application of water sprays on the site access road and internal site roads in the PDA, the use of dust collection systems on the primary crusher and within the ore processing plant, and the use of scrubbers on the APT plant, among others.</li> </ul>	Section 8.9.4
104.	Public Health and Safety	Construction, Operation, and Decommissioning, Reclamation and Closure	<ul style="list-style-type: none"> <li>Mitigation measures as described in Sections 8.4.4.2 [<i>Water Resources</i>] and 8.5.4.2 [<i>Aquatic Environment</i>] will be employed to reduce metal loadings to the streams, including collection and treatment of surplus mine contact water before discharge to the environment, construction of engineered drainage channels to collect TSF embankment run-off and seepage, flooding the open pit during Closure to minimize the potential for metal leaching and acid rock drainage (ML/ARD) from the pit walls, and provision of water treatment to meet discharge permit requirements post-Closure.</li> </ul>	Section 8.9.4
105.	Labour and Economy	Construction and Operation	<ul style="list-style-type: none"> <li>Qualified local workers will be given priority consideration for Project employment.</li> </ul>	Section 8.10.4
106.	Labour and Economy	Construction and Operation	<ul style="list-style-type: none"> <li>Northcliff will work with local education and training institutions and communicate work requirements to improve the availability of appropriate programs, allowing local people opportunities to gain qualifications for employment.</li> </ul>	Section 8.10.4
107.	Labour and Economy	Construction and Operation	<ul style="list-style-type: none"> <li>Local companies will be given preference for site contract work where qualified companies and suppliers can be identified.</li> </ul>	Section 8.10.4
108.	Labour and Economy	Construction and Operation	<ul style="list-style-type: none"> <li>Northcliff will work with the local business community to communicate requirements and expectations for contracting opportunities and to identify new Project-related business opportunities for local companies.</li> </ul>	Section 8.10.4

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109.	Labour and Economy	Construction and Operation	<ul style="list-style-type: none"> <li>Northcliff will continue to engage with the public throughout Operation, allowing sufficient time to plan for and mitigate any adverse environmental effects on Economy that may occur during Decommissioning, Reclamation and Closure.</li> </ul>	Section 8.10.4
110.	Labour and Economy	Decommissioning, Reclamation and Closure	<ul style="list-style-type: none"> <li>Northcliff will continue to engage with the public throughout its planning procedures for Decommissioning, Reclamation and Closure, allowing optimal time to plan for and mitigate environmental effects.</li> </ul>	Section 8.10.4
111.	Community Services and Infrastructure	Construction and Operation	<ul style="list-style-type: none"> <li>The ESMS will be implemented by the Project to reduce adverse environmental effects and enhance positive environmental effects. The ESMS will be part of all site construction contracts and include all applicable procedures and permit requirements.</li> </ul>	Section 8.11.4
112.	Community Services and Infrastructure	Construction and Operation	<ul style="list-style-type: none"> <li>An Employee Assistance Program will also be offered by the Proponent to its employees. Workforce education to encourage healthy lifestyle choices, sensitivity training, and strict enforcement of the Proponent's health and safety policies will also serve to mitigate adverse social effects. For example, sensitivity training would raise the level of awareness regarding the potential environmental effects that workers can have on the community and their families through drug and alcohol use or other social concerns.</li> </ul>	Section 8.11.4
113.	Community Services and Infrastructure	Construction and Operation	<ul style="list-style-type: none"> <li>Demands on police services related to Project activities will be reduced by controlling access to the Project site with the use of a security gate and guard house, and by employing on-site security staff.</li> </ul>	Section 8.11.4
114.	Community Services and Infrastructure	Construction and Operation	<ul style="list-style-type: none"> <li>Demands on emergency response services will be reduced by the presence of mine rescue vehicles and trained paramedics at the Project site.</li> </ul>	Section 8.11.4
115.	Community Services and Infrastructure	Construction and Operation	<ul style="list-style-type: none"> <li>The management and provision of many elements of Community Services and Infrastructure is the responsibility of a wide range of government departments and private sector organizations. As described in the ESMS, Northcliff will consult regularly with the relevant agencies and organizations to provide Project information, to identify and address potential Project-related implications for local services and infrastructure, and to support responsible organizations to plan for and adapt to or benefit from any changing demand.</li> </ul>	Section 8.11.4
116.	Land and Resource Use	Construction and Operation	<ul style="list-style-type: none"> <li>Forestry management plans will need to be revised by Crown Timber License Holders to incorporate the harvesting of forestry resources in the PDA as part of Site Preparation. Northcliff will provide information to licensees well in advance of Construction to facilitate planning in collaboration with NBDNR.</li> </ul>	Section 8.12.4

Table 10.1.1 Summary of Mitigation

#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
117.	Land and Resource Use	Construction and Operation	<ul style="list-style-type: none"> <li>Where possible in accessible areas (e.g., along cleared right-of-ways), trees and other vegetation will be left in place or encouraged to grow to obstruct the view of Project facilities, reducing the change in viewshed and muffling nuisance noise.</li> </ul>	Section 8.12.4
118.	Land and Resource Use	Construction and Operation	<ul style="list-style-type: none"> <li>The Proponent will communicate with local recreational campsite owners and land owners regarding Project schedule, and the timing of blasting events, to minimize surprise and nuisance.</li> </ul>	Section 8.12.4
119.	Land and Resource Use	Construction and Operation	<ul style="list-style-type: none"> <li>Construction and Operation activities will follow mitigation measures and guidelines outlined in the Environmental and Social Management System (ESMS) to reduce nuisance noise, air emissions, and changes to the viewshed.</li> </ul>	Section 8.12.4
120.	Land and Resource Use	Construction and Operation	<ul style="list-style-type: none"> <li>No trespassing signs will be posted along the perimeter of the Project site to alert local land users of the presence of the Project and its facilities.</li> </ul>	Section 8.12.4
121.	Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons	Construction	<ul style="list-style-type: none"> <li>Continued on-going engagement of First Nations throughout the EIA, to develop a sustainable, economically viable and responsible management and reclamation plans for the Project.</li> </ul>	Section 8.13.4
122.	Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons	Construction	<ul style="list-style-type: none"> <li>Forestry management plans will be revised by Crown licensees to incorporate the harvesting of forestry resources in the PDA as part of Site Preparation. Northcliff will provide information to Crown licensees (including Aboriginal licensees) well in advance of Construction to facilitate planning in collaboration with NBDNR.</li> </ul>	Section 8.13.4
123.	Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons	Construction	<ul style="list-style-type: none"> <li>Work with First Nations and appropriate government agencies to facilitate the harvesting of resources used for traditional purposes in the PDA prior to site preparation activities (where reasonable within the timeframe of planned activities).</li> </ul>	Section 8.13.4
124.	Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons	Construction	<ul style="list-style-type: none"> <li>Reclamation of the PDA with consideration of traditional resources, to ensure the land is accessible for traditional purposes post closure of the Project.</li> </ul>	Section 8.13.4
125.	Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons	Construction	<ul style="list-style-type: none"> <li>Work to optimize training, employment, and business opportunities of the Project for Aboriginal people.</li> </ul>	Section 8.13.4

**Table 10.1.1 Summary of Mitigation**

#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
126.	Heritage Resources	Construction	<ul style="list-style-type: none"> <li>During the course of the archaeological survey conducted in 2011, several areas of elevated archaeological potential were identified that are recommended for shovel testing within the Project site (Stantec 2012j). It was noted that a redesign of the TSF would avoid two watercourses, and thus, greatly reduce the number of shovel test pits required for the TSF areas. The footprint of the TSF was modified, thus eliminating some of the elevated archaeological potential areas to be affected by Project activities, and reducing the number of required shovel test pits within the TSF. As the location of the open pit is fixed by the location of the ore body, it is not possible to make similar adjustments to the open pit.</li> </ul>	Section 8.14.4
127.	Heritage Resources	Construction	<ul style="list-style-type: none"> <li>As mitigation for the Project, a systematic sub-surface test (“shovel testing”) program has been developed and submitted to Archaeological Services for review and approval. This shovel testing will be undertaken by a Permitted archaeologist prior to Construction and Operation disturbance of the areas recommended and approved for shovel testing. The shovel testing will follow the provincial Guidelines (Archaeological Services 2012) and accepted professional standards and practices. The proposed shovel testing strategy is described in the ESMS.</li> </ul>	Section 8.14.4
128.	Heritage Resources	Construction	<ul style="list-style-type: none"> <li>The archaeological survey of the 138 kV electrical transmission line will assist in the planning and placement of transmission line towers to avoid elevated areas of archaeological potential areas where possible. Due to the relatively small area of the transmission line towers and base, and the average 160 to 200 m span limit between transmission line towers, NB Power Transmission will attempt to move the location of these towers outside of any areas identified as having elevated potential for archaeological resources. Following the completion of the design of the new transmission line, any areas where towers cannot avoid areas of elevated archaeological potential will be subject to an archaeological survey that will determine detailed shovel testing recommendations that will be provided to Archaeological Services for approval prior to implementation.</li> </ul>	Section 8.14.4
129.	Heritage Resources	Construction	<ul style="list-style-type: none"> <li>Any small areas of the PDA that may not have been previously assessed due to minor adjustments in the Project footprint will be assessed prior to initiating Construction, and any recommended mitigation (e.g., shovel testing) will be implemented. These areas likely have low archaeological potential as no additional watercourses or areas considered to hold elevated archaeological potential were identified on the archaeological potential map</li> </ul>	Section 8.14.4

Table 10.1.1 Summary of Mitigation

#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
130.	Heritage Resources	Construction	<ul style="list-style-type: none"> <li>The specific recommendations of the number of shovel test pits are documented in the Archaeological Assessment Reports (Stantec 2012k; Stantec 2013a) and have been provided to Archaeological Services. If any archaeological resources are identified during the shovel testing, further mitigation (<i>i.e.</i>, archaeological excavation) will be implemented in consultation with Archaeological Services and in accordance with their most current Guidelines (Archaeological Services 2012). Local First Nations will be engaged as appropriate</li> </ul>	Section 8.14.4
131.	Heritage Resources	Construction	<ul style="list-style-type: none"> <li>Regarding Lower Lake Dam, should HADD compensation requirements be implemented at this location, a detailed archaeological survey will be completed in order to determine a shovel testing strategy as warranted. Any recommendations for shovel testing will be reviewed and approved by Archaeological Services and completed prior to any proposed ground breaking activities associated with HADD compensation works. In addition, the wooden cribwork will be photographed and monitored during any construction activities as the age of the cribwork has not yet been determined.</li> </ul>	Section 8.14.4
132.	Heritage Resources	Construction	<ul style="list-style-type: none"> <li>A heritage resources response procedure will be in place and will be followed in the unlikely event that a heritage resource is discovered during Project-related construction activities as a part of the overall ESMS. In the event of the discovery of a potential archaeological or palaeontological site, all work in this area would immediately be temporarily suspended and a sufficient buffer would be established around the find until it can be fully investigated. If it is confirmed to be a heritage resource, appropriate mitigation will be developed and implemented in consultation with Archaeological Services, the NBM, and First Nations, as appropriate. The heritage resources response procedure will include procedures to be followed in the event of the discovery of archaeological resources, palaeontological resources, and unidentified bone material.</li> </ul>	Section 8.14.3
133.	Transportation	Construction	<ul style="list-style-type: none"> <li>During Construction, bussing of personnel to/from the Project location from off-site parking lots in Nackawic and Napadogan, and potentially from other towns. For the purposes of this EIA, it is conservatively assumed that bussing will only be to/from the parking lots at Nackawic and Napadogan.</li> </ul>	Section 8.15.4
134.	Transportation	Construction and Operation	<ul style="list-style-type: none"> <li>The designation of principal truck routes to the Project site to limit truck traffic to PSA and SSA routes during all phases.</li> </ul>	Section 8.15.4
135.	Transportation	Construction and Operation	<ul style="list-style-type: none"> <li>Design of the realignment of the Fire Road will be done in consultation with and approved by NBDNR and in agreement with the Crown Timber Licence Holders.</li> </ul>	Section 8.15.4

Table 10.1.1 Summary of Mitigation

#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
136.	Transportation	Construction and Operation	<ul style="list-style-type: none"> <li>Adherence to current design standards and best-practices for forest road construction, for the realignment of the Fire Road and refurbishment of the forest resource roads along the PSA and SSA as required to accommodate two-way Project traffic.</li> </ul>	Section 8.15.4
137.	Transportation	Construction and Operation	<ul style="list-style-type: none"> <li>In consultation with NBDNR and the Crown Timber Licence Holders, maintenance of the roadway and roadside warning signs to reduce traffic safety risks along the forest roads that are part of the PSA and SSA routes during all phases.</li> </ul>	Section 8.15.4
138.	Transportation	Construction and Operation	<ul style="list-style-type: none"> <li>Best-practices for the maintenance of gravel roads will be implemented, including posting of signage identifying areas under maintenance activities.</li> </ul>	Section 8.15.4
139.	Transportation	Construction and Operation	<ul style="list-style-type: none"> <li>In consultation with NBDTI, NBDNR and the Crown Timber Licence Holders, the clearing of bushes along roadsides to improve sight distance at the approaches of the intersections of the RSA and SSA routes at provincial highways during Operation.</li> </ul>	Section 8.15.4
140.	Transportation	Construction and Operation	<ul style="list-style-type: none"> <li>Compliance with the existing forest roads best practices that require use of CB radio systems (in Northcliff-controlled vehicles like heavy trucks and buses) for communicating the location of heavy or vehicles among drivers will reduce traffic safety risks along the PSA and SSA routes during all phases.</li> </ul>	Section 8.15.4
141.	Transportation	Construction and Operation	<ul style="list-style-type: none"> <li>A Traffic Plan will be developed to guide Project employees and delivery vehicles that specifically identifies roadway hazards along the PSA and SSA routes. The Traffic Plan will include communications and best-practices training and a monitoring and reporting program aimed at reducing traffic safety risks along the PSA and SSA routes for the Operation phase.</li> </ul>	Section 8.15.4
142.	Effects of the Environment on the Project	Construction and Operation	<ul style="list-style-type: none"> <li>As a factor of safety, and a matter of responsible engineering practice, the design and materials to be chosen for construction of the Project will be selected so that the Project will withstand environmental stressors that could occur from various natural and environmental phenomena (e.g., extreme storms, increased precipitation and other factors arising from climate change, and others).</li> </ul>	Section 8.16.6
143.	Effects of the Environment on the Project	Construction and Operation	<ul style="list-style-type: none"> <li>The Project will be built to the standards of the National Building Code of Canada, the Canadian Standards Association (CSA), the Canadian Dam Association (CDA) other codes and standards, and provincial and federal Acts and Regulations. To minimize the potential effects of environmental extremes on the Project, the design of structures and equipment will be compliant with the National Building Code of Canada.</li> </ul>	Section 8.16.6

Table 10.1.1 Summary of Mitigation

#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
144.	Effects of the Environment on the Project	Construction and Operation	<ul style="list-style-type: none"> <li>Other mitigation measures implemented as part of the planning process, including adherence to engineering design codes and standards, use of good engineering judgment and careful construction practices, care in selection of appropriate construction materials and equipment, careful planning of operation activities (e.g., TSF embankment raises; receipt of materials and/or supplies, product deliveries), and the implementation of a proactive monitoring, maintenance and safety management program, will minimize the potential for adverse effects of the environment on the Project to such an extent that they are not significant.</li> </ul>	Section 8.16.6
145.	Effects of the Environment on the Project	Construction and Operation	<ul style="list-style-type: none"> <li>In addition to complying with codes and standards, the Basic Engineering Team for the Project will adopt a proactive approach to incorporate climate change considerations and adaptation measures into the Project. Several publications are available to guide design engineers in this regard, including, for example, the PIEVC (Public Infrastructure Engineering Vulnerability Committee) "Engineering Protocol for Infrastructure Vulnerability Assessment and Adaptation to a Changing Climate" (PIEVC 2011). This protocol outlines a process to assess the infrastructure component responses to changing climate to assist engineers and proponents in effectively incorporating climate change into design, development and management of their existing and planned infrastructure. This and other guidance will be considered, as applicable, in advancing the design and construction of the Project.</li> </ul>	Section 8.16.6
146.	Effects of the Environment on the Project	Construction and Operation	<ul style="list-style-type: none"> <li>The National Building Code of Canada (2010, Volume 2, Appendix C, Division B) provides for factors of safety to account for possible extreme weather (including allowances for future increased frequency and/or severity of these storms that could arise from climate change), and will form the basis of the design and construction of the Project-related buildings and structures. The TSF will be constructed to meet the Dam Safety Guidelines (Canadian Dam Association 2007) of the Canadian Dam Association and with sufficient capacity and freeboard to store the probable maximum precipitation at all times during operations and into Post-Closure.</li> </ul>	Section 8.16.6
147.	Effects of the Environment on the Project	Construction and Operation	<ul style="list-style-type: none"> <li>Many of the major structures, such as the TSF, will be constructed in stages throughout the Project life; the design criteria will be reassessed prior to construction of each new stage, and this will provide an opportunity to ensure that any observed or predicted changes in the environmental are accounted for in the design. As a result, structures will be designed such that they will be able to withstand extremes of temperature, wind, rain, snow, and ice events through the life of the Project and into Post-Closure (as applicable).</li> </ul>	Section 8.16.6

Table 10.1.1 Summary of Mitigation

#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
148.	Effects of the Environment on the Project	Construction and Operation	<ul style="list-style-type: none"> <li>As such, the Project and related facilities and infrastructure will be designed to account for a one-in-2,500-year seismic event. Furthermore, the TSF will be constructed to meet the guidelines of the Canadian Dam Association for a one-in-5,000-year seismic event, which are also developed to withstand reasonably probable seismic activity.</li> </ul>	Section 8.16.6
149.	Effects of the Environment on the Project	Construction and Operation	<ul style="list-style-type: none"> <li>A cleared buffer will be maintained around Project infrastructure, where feasible, that would reduce the potential for a fire to affect the structures (which given the nature of the materials they contain are inherently fire resistant).</li> </ul>	Section 8.16.6
150.	Effects of the Environment on the Project	Construction and Operation	<ul style="list-style-type: none"> <li>Firefighting capabilities (including appropriate equipment) on-site will be at a high level of training and readiness. The safety and security programs will be in place in conjunction with facility, community, and provincial emergency response crews to provide for rapid detection and response to any fire threat.</li> </ul>	Section 8.16.6
151.	Accidents, Malfunctions and Unplanned Events - Erosion and Sediment Control	All phases	<ul style="list-style-type: none"> <li>If required, [<i>in the case of an Erosion and Sediment Control Failure</i>] Northcliff will provide an alternate drinking water source (such as bottled water) or post known surface water collection sites until parameters return to acceptable levels.</li> </ul>	Section 8.17.3.1
152.	Accidents, Malfunctions and Unplanned Events - Erosion and Sediment Control	All phases	<ul style="list-style-type: none"> <li>The water quality monitoring program to be developed and implemented during normal operating conditions would detect any exceedances of drinking water guidelines arising from [<i>an Erosion and Sediment Control Failure</i>]. As these exceedances would be temporary and measures will be in place to monitor water quality and notify potential users and provide alternate drinking water source if required, the potential for this event to affect Public Health and Safety can be effectively mitigated.</li> </ul>	Section 8.17.3.1
153.	Accidents, Malfunctions and Unplanned Events – Pipeline Leak	Operation	<ul style="list-style-type: none"> <li>Mitigation measures will be in place to prevent [<i>a Pipeline Leak</i>] from occurring including regular maintenance and inspection of equipment, use of drip trays, training of staff in the proper use of fueling equipment, implementation of safe procedures for this activity, and use of designated areas for refueling which are at least 30 m from any watercourse or wetland. Spill kits will be maintained on-site and employees will be trained in their use. Contingency and emergency response procedures will be documented in the ESMS, and employees will be trained in the safe response and reporting procedures.</li> </ul>	Section 8.17.3.2

Table 10.1.1 Summary of Mitigation

#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
154.	Accidents, Malfunctions and Unplanned Events - On-site hazardous material spill	All phases	<ul style="list-style-type: none"> <li>The following measures will be in place to reduce or eliminate the potential for a major release arising from an on-site hazardous material spill: <ul style="list-style-type: none"> <li>the provision of impermeable containment berms (or other forms of secondary containment);</li> <li>placement of protective barriers as appropriate;</li> <li>the establishment of groundwater monitoring wells around the TSF;</li> <li>regular inspection of all components of the TSF;</li> <li>provision of alarms on secondary containment measures;</li> <li>careful implementation of fuel transfer operations; and</li> <li>provision of an emergency response plan for the immediate isolation and clean-up of a release.</li> </ul> </li> </ul>	Section 8.17.3.3
155.	Accidents, Malfunctions and Unplanned Events - On-site hazardous material spill	All phases	<ul style="list-style-type: none"> <li>Guidance documents such as the CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products (CCME 2003) will be followed. Specifically, the Code of Practice indicates that above-ground petroleum storage tanks must have: <ul style="list-style-type: none"> <li>corrosion protection;</li> <li>secondary containment;</li> <li>leak detection;</li> <li>overflow protection (alarm);</li> <li>containment sumps; and</li> <li>piping in accordance with Part 5 of the Code.</li> </ul> </li> </ul>	Section 8.17.3.3
156.	Accidents, Malfunctions and Unplanned Events - On-site hazardous material spill	All phases	<ul style="list-style-type: none"> <li>Northcliff will develop an Environmental Emergency Plan as part of the overall Emergency Response Plan (ERP) in order to effectively manage the hazardous materials that will be stored on-site.</li> </ul>	Section 8.17.3.3
157.	Accidents, Malfunctions and Unplanned Events - On-site hazardous material spill	All phases	<ul style="list-style-type: none"> <li>The ERP will describe measures taken to prevent any unplanned releases and to mitigate the effects of such a release should it occur. The <i>MMER</i> specify that the ERP must include the following: <ul style="list-style-type: none"> <li>identification of accidental spills that can reasonably be expected to occur and the potential damage or danger that could result (<i>i.e.</i>, a site risk analysis);</li> <li>a description of the measures to be used to prevent, prepare for, and respond to an accidental release of a deleterious substance;</li> </ul> </li> </ul>	Section 8.17.3.3

**Table 10.1.1 Summary of Mitigation**

#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
			<ul style="list-style-type: none"> <li>• a list of the individuals who are to implement the ERP and a description of their roles and responsibilities;</li> <li>• the identification of the emergency response training required for each of the individuals listed above;</li> <li>• a list of the emergency response equipment included as part of the plan, and the equipment's location; and</li> <li>• alerting and notification procedures including the measures to be taken to notify members of the public who may be adversely affected by the accidental event.</li> </ul> <p>Northcliff will comply with all requirements related to emergency response planning and will have an ERP in place prior to initiation of Project activities.</p>	
158.	Accidents, Malfunctions and Unplanned Events - On-site hazardous material spill	All phases	<ul style="list-style-type: none"> <li>• While it is possible for an On-Site Hazardous Material Spill to occur, a number of prevention and mitigation measures will be in place to prevent such a spill from happening or to minimize the environmental effects. These include the following measures.</li> <li>• Persons responsible for managing spill response efforts, including their authority, role and contact details will be identified in the emergency response plan.</li> <li>• An appropriate number of staff will be trained in the handling of emergency response and spill scenarios.</li> <li>• Diagrams of the surrounding layout, topography, evacuation paths and drainage flow paths, ground and surface water resources, sensitive ecological and protected areas will be developed and included as part of the ERP.</li> <li>• Quantities of oil that could be released, with predicted flow path, and flow rate will be documented.</li> <li>• All fuel and service vehicles will carry a minimum of 10 kg of commercial sorbent materials, suitable for use on both soil and water. These materials will be applied to contain and recover spilled material.</li> <li>• Vehicle equipment will be inspected for leaks prior to arrival on-site and on a regular basis during Construction and Operation.</li> <li>• Locations with the potential for a spill of a significant volume of fuel will be graded to flow towards the TSF or the surface water collection system where it could be safely collected and would not enter the surrounding natural environment.</li> <li>• Roadside ditches within the property with regularly spaced culverts will also help to contain spills as the culverts could be blocked to stop the spread of spilled materials.</li> </ul>	Section 8.17.3.3

**Table 10.1.1 Summary of Mitigation**

#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
			<ul style="list-style-type: none"> <li>• All fuel storage and distribution infrastructure will be constructed to modern engineering standards and will be approved under provincial legislation requirements.</li> <li>• Storage of liquid petroleum, and refueling of machinery will not occur within 30 m of any watercourse or wetland.</li> <li>• The incorporation of road design features for Project roads within the PDA (such as speed limits and passing bays).</li> <li>• An ERP will be developed and included as part of the ESMS. The response plan will outline procedures for containing and cleaning up spills in a safe and efficient manner, and associated federal and provincial reporting requirements. Spill response kits will be available at the Project-site during all phases of the Project to minimize any potential adverse environmental effects.</li> <li>• Measures for spill containment and spill emergency response and environmental protection will be in place before any potentially hazardous materials are brought on-site. These will be outlined in the EPRP.</li> <li>• All bulk explosives spills must be dealt with quickly for safety and environmental reasons. Product must be recovered quickly by means of a non-sparking shovel and brooms. Spills management will use recommended best practice for clean-up of any spills for the chemicals involved with commercial explosives.</li> </ul>	
159.	Accidents, Malfunctions and Unplanned Events - On-site hazardous material spill	All phases	<ul style="list-style-type: none"> <li>• In the unlikely event of a spill of any material, emergency containment and recovery procedures developed in the ERP will include:               <ul style="list-style-type: none"> <li>• immediate containment and recovery of spill material using equipment includes a variety of booms, barriers, sand bags, and skimmers, as well as natural and synthetic sorbent materials;</li> <li>• containment measures will immediately be initiated to limit the spread of the spill;</li> <li>• any nearby drainage (non-watercourse) culverts will be blocked to limit spill migration if required;</li> <li>• if the spill source is from a leaking fuel truck, the tanker will be pumped dry and transferred into another tanker or other appropriate and secure container(s) and the leak will be repaired immediately;</li> <li>• excavation and removal of hydrocarbon saturated soil for temporary storage, and eventual permanent treatment/disposal;</li> <li>• interception and removal of hydrocarbon entrapped within the fractured bedrock using recovery wells and immiscible scavenger methods;</li> <li>• repair of an secondary containment breach;</li> </ul> </li> </ul>	Section 8.17.3.3

Table 10.1.1 Summary of Mitigation

#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
			<ul style="list-style-type: none"> <li>• conduct post-spill response investigation to evaluate the performance of spill prevention measures;</li> <li>• collect post-response samples of soil and water for testing; and</li> <li>• any equipment cleaning that is required as a result of a leak or spill on the equipment will be implemented in a confined area where the wash water can be collected for proper disposal.</li> </ul>	
160.	Accidents, Malfunctions and Unplanned Events - Release of Off-Specification Effluent from Water Treatment Plant	Operation	<ul style="list-style-type: none"> <li>• All effluent released from the Project will be monitored to verify that it meets <i>MMER</i> or other effluent quality requirements as defined by the approvals or permits to be issued for the Project. In the event that contaminant limits above the permitted levels are indicated, the Water Treatment Plant will be temporarily shut down until repairs to the facility can be implemented and/or changes to the treatment process can be implemented in order to meet the permitted levels for effluent release.</li> </ul>	Section 8.17.3.4
161.	Accidents, Malfunctions and Unplanned Events - Release of Off-Specification Effluent from Water Treatment Plant	Operation	<ul style="list-style-type: none"> <li>• The planned monitoring program for Operation would also be effective in detecting any changes that may affect public health and safety. If necessary, warning and public advisories will be posted and broadcasted to potential resource users. The area downstream of Sisson Brook that may be affected is not heavily used for hunting, trapping and fishing and there are alternative locations that could be accessed should a restriction of resource use be required as a result of the Project. Again, with monitoring and notification procedures in place, this malfunction is unlikely to result in residual adverse environmental effects to Public Health and Safety.</li> </ul>	Section 8.17.3.4
162.	Accidents, Malfunctions and Unplanned Events - Release of Off-Specification Effluent from Water Treatment Plant	Operation	<ul style="list-style-type: none"> <li>• Prior to Construction, surface water users in the area will be identified to allow Northcliff to inform any potentially affected users in a timely manner. If required, <i>[in the event of a Release of Off-Specification Effluent from Water Treatment Plant]</i> Northcliff will provide an alternate drinking water source (such as bottled water) until parameters return to acceptable levels.</li> </ul>	Section 8.17.3.4
163.	Accidents, Malfunctions and Unplanned Events – Failure of Water Management Pond	Operation	<ul style="list-style-type: none"> <li>• While it is possible for water management pond pumps to temporarily fail due to mechanical failure or loss of power, a number of mitigation measures will be in place to prevent such a failure from resulting in an overflow of the ponds. These include: <ul style="list-style-type: none"> <li>• the design of the ponds to store inflow volume resulting from a 1 in 10-year design flood event within 10 days, and will maintain sufficient freeboard to allow time for repairs to the pump, should it fail;</li> </ul> </li> </ul>	Section 8.17.3.5

**Table 10.1.1 Summary of Mitigation**

#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
			<ul style="list-style-type: none"> <li>• level control instrumentation and level alarms will monitor water levels within the water management ponds to prevent overflow, and regular visual inspection of the ponds by site personnel, particularly preceding and following large precipitation events;</li> <li>• regular inspection and maintenance of pumps to minimize the potential for unanticipated failure;</li> <li>• maintain replacement pumps on-site to allow timely replacement in the event of a mechanical failure;</li> <li>• provision of emergency generators on-site to power necessary equipment in the event of a longer-term power outage; and</li> <li>• prior to any forecasted extreme precipitation event, checking and further reduction of water levels in the ponds prior to the event if deemed necessary.</li> </ul>	
164.	Accidents, Malfunctions and Unplanned Events – Failure of Water Management Pond	Operation	<ul style="list-style-type: none"> <li>• Prior to Construction, surface water users in the area will be identified to allow Northcliff to inform any potentially affected users in a timely manner. If required, Northcliff will provide an alternate drinking water source (e.g., bottled water) until parameters return to acceptable levels.</li> </ul>	
165.	Accidents, Malfunctions and Unplanned Events – Off-Site Trucking Accident	Construction and Operation	<ul style="list-style-type: none"> <li>• While this assessment focuses on the emergency response and other post-spill mitigation, it must be considered that various measures are in place to prevent such accidents from happening in the first place. A description of such measures in place is presented below:               <ul style="list-style-type: none"> <li>• purchasing reagents from reliable suppliers who use well qualified and experienced transport contractors;</li> <li>• imposing speed limits on non-regulated access roads;</li> <li>• provide communication along access roads such that emergency response personnel and equipment can be notified and mobilized in a timely fashion;</li> <li>• engaging only reputable shipping contractors and shipping companies that have sound emergency procedures in place throughout the handling chain and regularly audit their performance;</li> <li>• requiring all containers (drums/barrels) loaded onto trucks to be blocked or tied down with hardware adequate to prevent the load from shifting on the vehicle;</li> <li>• requiring that no person drives or operates a vehicle carrying a load unless the load is properly secured;</li> <li>• requiring that all drivers be trained in emergency response and that the transport vehicles carry appropriate spill containment and neutralizing agents and are trained in their use as appropriate;</li> </ul> </li> <li>• clearly defining all shipping routes, and identifying all critical areas such as</li> </ul>	Section 8.17.3.6

Table 10.1.1 Summary of Mitigation

#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
			<p>sources of community drinking water;</p> <ul style="list-style-type: none"> <li>consulting with regional officials along the transportation route to ensure that they are aware of the associated risks;</li> <li>assisting community leaders within the local site area in the development of local EPRP and training local people;</li> <li>having a designated coordinator to ensure that the public and local authorities are notified in a timely fashion with appropriate and accurate information should a spill occur; and</li> <li>addressing off-site chemical and/or fuel spills in the ESMS.</li> </ul>	
166.	Accidents, Malfunctions and Unplanned Events – Off-Site Trucking Accident	Construction and Operation	<ul style="list-style-type: none"> <li>Soil and vegetation affected by a spill can be remediated through standard response and clean-up procedures such that long-term or significant environmental effects are not anticipated.</li> </ul>	Section 8.17.3.6
167.	Accidents, Malfunctions and Unplanned Events – Off-Site Trucking Accident	Construction and Operation	<ul style="list-style-type: none"> <li>Should any spill occur with the potential of contaminating ground or surface drinking water resources or contaminating surface water used by the public for recreational purposes such as swimming, public notifications would be issued in conjunction with Provincial authorities. If required, alternate drinking water (<i>i.e.</i>, bottled water) would be supplied to affected users and monitoring of water quality would be conducted until such time as water quality returns to pre-spill conditions and known publically accessed water sources could be posted as non-potable.</li> </ul>	Section 8.17.3.6
168.	Accidents, Malfunctions and Unplanned Events – Off-Site Trucking Accident	Construction and Operation	<ul style="list-style-type: none"> <li>While it is extremely unlikely for an Off-Site trucking Accident to result in a large spill, should a release of concentrates, reagents, or petroleum products occur, the following mitigation and response measures will be in place to minimize the adverse environmental effects on the aquatic environment. These include: <ul style="list-style-type: none"> <li>Containment measures will immediately be initiated to limit the spread of the spill, minimize environmental effects on the surrounding environment (<i>e.g.</i>, wetlands and watercourses) or other areas of environmental concern, and prevent damage to property.</li> <li>Should a spill occur in a watercourse a fuel containment/absorbent boom will be deployed to contain the plume and begin collecting the fuel from the surface of the water until other spill response personnel arrive on site.</li> <li>In the case of a spill of a large quantity of liquid, any nearby drainage (non-watercourse) culverts will be blocked to limit spill migration if required.</li> <li>If clean-up of a petroleum product on equipment is required as a result of a leak or spill, equipment or machinery will be cleaned at least 30 m from watercourses or wetlands and any natural materials affected by the spill or</li> </ul> </li> </ul>	Section 8.17.3.6

Table 10.1.1 Summary of Mitigation

#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
			<p>clean-up (e.g., leaves) will also be collected.</p> <ul style="list-style-type: none"> <li>If any containers are damaged during an accident, the material contained within them will be transported to another undamaged container before transport resumes. For example, if the spill is from a damaged fuel truck, the tanker will be pumped dry and transferred into another tanker or other appropriate and secure container(s). All leaks will be repaired immediately.</li> <li>Water sampling will also be conducted to monitor the movement of the spilled material and its potential to cause an adverse effect. After clean-up, all collected fuel or other hazardous material will be stored, or disposed of safely in accordance with applicable regulations.</li> </ul>	
169.	Accidents, Malfunctions and Unplanned Events – Off-Site Trucking Accident	Construction and Operation	<ul style="list-style-type: none"> <li>For any spill as a result of an Off-Site Trucking Accident, emergency response and clean-up procedures would be initiated immediately upon discovery. For clean-up of impacted wetlands, the measures to be employed will be selected based on the nature and extent of the wetlands affected, type of material spilled, and time of year.</li> </ul>	Section 8.17.3.6
170.	Accidents, Malfunctions and Unplanned Events – Off-Site Trucking Accident	Construction and Operation	<ul style="list-style-type: none"> <li>The use of surfactant booms within the wetland will be determined on a case by case basis depending whether or not there is the potential for contaminated water flowing out of the wetland into a watercourse.</li> </ul>	Section 8.17.3.6
171.	Accidents, Malfunctions and Unplanned Events – Off-Site Trucking Accident	Construction and Operation	<ul style="list-style-type: none"> <li>Post-clean-up monitoring will be undertaken following spill response if deemed necessary by regulating agencies, and compensation for loss of wetland habitat may be undertaken if a spill results in the loss of wetland area or function as a result of a spill.</li> </ul>	Section 8.17.3.6
172.	Accidents, Malfunctions and Unplanned Events – Off-Site Trucking Accident	Construction and Operation	<ul style="list-style-type: none"> <li>Northcliff is committed to maintaining safe travel routes within the LAA and a number of traffic safety measures will be in place to reduce the potential for vehicle collisions to occur. These include, but are not limited to, the following. <ul style="list-style-type: none"> <li>The construction of the site access road, internal site roads, and the realignment of a portion of the Fire Road to accommodate Project facilities will be designed to applicable standards and adhere to best-practices for the construction of forest roads.</li> <li>In consultation with NBDNR and the Crown Timber License holder, bushes will be cleared along roadsides to improve sight distance at the intersection approaches of the PSA and SSA routes at provincial highways.</li> <li>In consultation with NBDNR and the Crown Timber License holder(s), the roadway and roadside warning signs will be maintained to reduce traffic safety risks along the forest roads that are part of the PSA and SSA routes.</li> </ul> </li> </ul>	Section 8.17.3.7

**Table 10.1.1 Summary of Mitigation**

#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
			<ul style="list-style-type: none"> <li>• A traffic plan will be developed for the Project to specifically identify roadway hazards along the PSA and SSA routes, and will include communications and best practices training, and a monitoring and reporting program.</li> <li>• Drivers will be required to adhere to posted speed limits.</li> <li>• Drivers will be required to yield to wildlife and will not be permitted to chase or harass wildlife.</li> </ul>	
173.	Accidents, Malfunctions and Unplanned Events – Vehicle Collision	All phases	<ul style="list-style-type: none"> <li>• A number of mitigation measures will also be in place to reduce the potential for vehicle collisions, including but not limited to the following.</li> <li>• Off-site parking lots will be provided in Nackawic and Napadogan as construction workers are bussed to the Project site during the Construction phase. This will reduce passenger vehicle traffic on the public and forest roads that form part of the PSA and SSA routes to the site.</li> <li>• To reduce the potential traffic safety risks, the forest industry currently requires the use of CB radio systems for communicating vehicle locations among drivers using the forest roads. Northcliff would continue with this practice.</li> <li>• Warning signs requiring the use of CB radios are posted at entry points to the forest roads from the provincial highways.</li> <li>• Stop signs and stop warning signs are posted at the approaches of these forest roads to the provincial highways.</li> <li>• The realignment of the Fire Road will widen the travelling surface to allow for continuous two-way passing traffic.</li> <li>• In consultation with the NBDNR and the Crown Timber License holder(s), bushes will be cleared along roadsides to improve sight distance at the intersection approaches of the PSA and SSA routes at provincial highways.</li> <li>• In consultation with NBDNR and the Crown Timber License holder(s), the roadway and roadside warning signs will be maintained to reduce traffic safety risks along the forest roads that are part of the PSA and SSA routes.</li> <li>• Signage advising motorists of construction activities in the area and traffic pattern changes will be posted at regular intervals on the forest roads in accordance with current safety and construction standards and best practices for the construction of forest roads.</li> <li>• The physical construction of the site access road and internal site roads, in and of itself, will not result in increased traffic levels travelling on the PSA or SSA routes, although it will facilitate the safe and effective movement of vehicles through the LAA.</li> </ul>	Section 8.17.3.7

**Table 10.1.1 Summary of Mitigation**

#	Valued Environmental Component (VEC)	Project Phase	Mitigation /Compensation Measure	Location within EIA Report where Mitigation Measure is Identified
			<ul style="list-style-type: none"> <li>The development and application of a Traffic Plan to specifically identify roadway hazards along the PSA and SSA routes, and that includes a communications and best practices training, monitoring and reporting program, will reduce traffic safety risks along these roads.</li> </ul>	
174.	Accidents, Malfunctions and Unplanned Events – Fire	All phases	<ul style="list-style-type: none"> <li>Mitigation, prevention and response measures will be in place to reduce the potential risk of a fire and to minimize the environmental effects of a fire should one occur. This will include:               <ul style="list-style-type: none"> <li>maintaining equipment in good working order through regular inspection, repair and maintenance (e.g., power saw mufflers and vehicle exhaust systems);</li> <li>training personnel in proper procedures related to fuel transfers and handling and disposal of hazardous materials;</li> <li>maintaining proper vigilance when working with power equipment in forested areas;</li> <li>no burning of vegetated debris will be permitted during any phase of the Project;</li> <li>following precautions in accordance with the <i>Forest Fires Act</i> (i.e., no smoking while moving through forest, do not throw away burning substances, no accumulation of flammable debris allowed to accumulate in proximity to forest, railways or highways, all reasonable attempts made to extinguish any fires that might start, and avoiding careless behavior in relation to fire);</li> <li>having on-site fire-fighting equipment and water supplies available at the Project site and in good working order;</li> <li>training personnel in fire prevention and response, including fire drills;</li> <li>no camp fires will be permitted by Construction crews;</li> <li>all Project-related vehicles and heavy equipment on-site will have a fire extinguisher;</li> <li>co-ordinating fire response with local fire-fighting resources; and</li> <li>development of fire response procedures in the ESMS.</li> </ul> </li> </ul>	Section 8.17.3.8

