35 SUMMARY OF ENVIRONMENTAL MANAGEMENT PLANS

35.1 Environmental Management Framework

In this section of the EIS, the framework for the environmental management of the Project is discussed. The framework is consistent with existing BC Hydro policies and practices, and is based on standard environmental management principles.

The purpose of implementing an effective environmental management framework would be to protect the environment surrounding the Project. The objectives of the environmental management framework are to ensure that:

- Necessary mitigation measures are implemented
- The conditions upon which an Environmental Assessment Certificate may be issued, or upon which a decision under Section 53 of the *Canadian Environmental Assessment Act* is made, are met
- Any conditions of permits and authorizations are met
- Any other legal requirements are adhered to
- BC Hydro policies are complied with
- Monitoring and reporting requirements are fulfilled

The environmental management framework is illustrated in Figure 35.1. Environmental Management Plans and Safety Management Plans would be prepared by qualified professionals retained by BC Hydro to address key aspects of environmental and safety management. The Environmental Management Plans and Safety Management Plans would provide guidance to all contractors retained by BC Hydro regarding the environmental and safety management requirements and the performance expectations related to construction and operation. Detailed procedures of how work activities would be carried out in accordance with the requirements of management plans would be developed by contractors prior to the start of work. BC Hydro would also develop an oversight program prior to construction that would describe the requirements for monitoring of contractor performance.

Prior to construction, BC Hydro would identify the management structure and human resources required to implement and manage this framework. All supervisors and workers would be required to be aware of, and competent to carry out, their responsibilities associated with the environmental management framework.

35.1.1 Environmental Management Plans

Environmental Management Plans and Safety Management Plans would be developed according to the following outline:

- **Objectives** – Each management plan would outline the objectives specific to that plan. The objectives of each proposed management plan are described in the subsections that follow.

- Statutory Requirements – Each management plan would describe the relevant statutory policy requirements, including:
  - The applicable conditions upon which an Environmental Assessment Certificate may be issued or upon which a decision under Section 53 of the *Canadian Environmental Assessment Act* is made
  - Any applicable conditions of permits and authorizations
  - Other applicable legislation

  Applicable guidelines adopted by the Canadian Council of Ministers of the Environment (CCME) would also be taken into account.
- **BC Hydro Policies** – Each management plan would describe the relevant BC Hydro policy requirements. Corporate policies are subject to change from time to time. Any particular management plan would be developed in consideration of the relevant corporate policy in effect at the particular time.
- **Voluntary Commitments** – Each management plan would describe the relevant standard practices and voluntary commitments
- **Project Effects, Mitigation, and Environmental Protection** Measures – Each management plan would describe the applicable potential Project effects and clearly document all measures to be implemented and actions to be taken to mitigate those potential effects. Documentation would include:
  - Relevant Restricted Activity Zones (areas of the project where construction activities are restricted to a specified list) and Environmental Protection Zones (areas of the project where no construction activities are allowed)
  - Standard codes of practice and management practices applicable to the plan
- **Training and Human Resource Planning** – Each management plan would describe the worker qualifications and training requirements pertaining to the plan
- **Monitoring and Reporting** – Each management plan would describe the requirements for tracking, monitoring and reporting pertaining to the plan

Contingency planning for accidents would be addressed in the construction phase Emergency Response Plan (Section 35.2.1.1) and the operations phase Emergency Response Plan (Section 35.3.1.1).

35.1.2 Environmental Oversight

An Environmental Oversight Program would be developed by BC Hydro prior to beginning construction activities. The environmental obligations of contractors would be included in contract documents.

BC Hydro's roles and responsibilities would include:

- Preparing and maintaining Environmental Management Plans
- Reviewing and assessing draft contractor work plans, worker training programs, and supervision plans
- Monitoring contractor performance and compliance with requirements

- Conducting environmental monitoring as required
- Reviewing and assessing contractor monitoring reports
- Reporting monitoring results as required
- Reporting and investigating incidents, and ensuring corrective actions are implemented

Contractor roles and responsibilities would include:

- Preparing and maintaining work plans
- Ensuring workers are trained, competent, and adequately supervised
- Retaining qualified environmental monitor(s) with the authority to stop work in the event of non-compliance with conditions and requirements of commitments, regulatory approvals, management plans, or applicable legislative requirements
- Conducting environmental monitoring and reporting of the results as required
- Reporting and investigating incidents, and implementing corrective actions

The oversight program would also contain the following elements:

- Incident (events of non-compliance with the requirements of a management plan) response: the requirements for responding to, reporting, documenting, investigating, and correcting incidents
- Plan maintenance: the requirements for reviewing and updating management plans to ensure that they remain current

35.2 Construction Phase

Prior to construction, BC Hydro would develop Environmental Management Plans and Safety Management Plans that would provide performance-based requirements to be met by contractors in conducting work on the Project. These requirements would be included as part of the contract tender process. Contractors would be required to develop work plans that specify how the contractor would meet the requirements established in Environmental Management Plans. Sections 35.2.1 and 35.2.2 provide more detail on the management plans that would be developed for the construction phase of the Project.

35.2.1 Construction Safety Management Plans

35.2.1.1 Emergency Response Plan

Objectives

The objective of the Emergency Response Plan would be to provide a framework for effectively managing emergencies involving chemical or fuel spills, fire, medical, flood, or other emergencies.

Statutory Requirements

Emergency response is regulated under a variety of provincial legislation, including the B.C. *Emergency Program Act*, B.C. *Environmental Management Act*, B.C. Fire Code, B.C. *Wildfire Act*, B.C. *Workers Compensation Act* and B.C. Spill Reporting Regulation. Applicable federal legislation includes the *Canadian Environmental Protection Act* and the Environmental Emergencies Regulation.

BC Hydro Policies

The applicable corporate policies are the Environmental Responsibility Policy (BC Hydro 2010a) and Safety Policy (BC Hydro 2006b).

Voluntary Commitments

Relevant practice guidelines include the Guidelines for Industry Emergency Response Plans (B.C. Ministry of Environment 2002) and the Guidelines for Public Safety Around Dams (CDA 2011).

Project Effects, Mitigation, and Safety Measures

The Emergency Response Plan would include the requirements for the following:

- Emergency response procedures, including first response, containment, evacuation, and cleanup
- Emergency response equipment
- Groundwater and surface water protection
- Response to a hazardous materials spill
- Notification and communication procedures
- Emergency contact information

Training and Human Resource Planning

All project workers would be trained on the procedures for reporting emergencies. All personnel with identified responsibilities in the emergency command structure would be trained and competent to carry out the assigned tasks. First responders would receive appropriate first response training.

Monitoring and Reporting

Protocols for reporting of emergencies would be established in accordance with applicable legislation.

35.2.1.2 Fire Hazard and Abatement Plan

Objectives

The objective of the Fire Hazard and Abatement Plan would be to identify the requirements for fire prevention during construction. Fire prevention requirements would be based on the risk associated with construction activities.

Statutory Requirements

Fire hazard and abatement management is regulated under a variety of legislation, including the B.C. Building Code, B.C. Fire Code and B.C. *Wildfire Act*.

BC Hydro Policies

The applicable corporate policies are the Environmental Responsibility Policy (BC Hydro 2010a) and Safety Policy (BC Hydro 2006b).

Voluntary Commitments

Not applicable.

Project Effects, Mitigation, and Safety Measures

The Fire Hazard and Abatement Plan would include requirements for:

- Assessing the fire risks of construction activities
- Work procedures to minimize fire risk
- Fire prevention equipment

The requirements for responding to and suppressing a fire would be addressed in the Emergency Response Plan (Section 35.2.1.1).

Training and Human Resource Planning

Project workers tasked with assessing fire risks would be appropriately qualified. All project workers would be trained in the appropriate procedures to reduce the risk of fire associated with the tasks they are performing. Qualified workers would install and maintain fire prevention equipment.

Monitoring and Reporting

Fire prevention equipment would be inspected regularly in accordance with supplier recommendations.

35.2.1.3 Public Safety Management Plan

Objectives

The objective of the Public Safety Management Plan would be to minimize and manage public safety risks.

Statutory Requirements

Not applicable.

BC Hydro Policies

The applicable corporate policies are the Safety Policy (BC Hydro 2006b), the Policy Statement on Dam Safety (BC Hydro 2011) and OSH 701 Public Safety Management Standard (BC Hydro 2006a).

Voluntary Commitments

The Public Safety Management Plan would describe relevant management practice guidelines such as the Guidelines for Public Safety Around Dams (CDA 2011).

Project Effects, Mitigation, and Safety Measures

Various construction activities have the potential to affect public safety, including vehicles, Highway 29 realignment, clearing, blasting, and reservoir filling. The plan would define the communication requirements, communication methods, timing, and information distribution methods to ensure that the public is aware of ongoing project activities as well as of specific activities that may directly affect them.

Public safety aspects of blasting would be addressed in the Blasting Management Plan (Section 35.2.2.3). Public safety aspects of increased traffic volumes would be addressed in the Traffic Management Plan (Section 35.2.1.4). Public safety aspects of ice management would be addressed in the Ice Management Plan (Section 35.2.2.15).

Training and Human Resource Planning

Employees responsible for reporting to the public would receive appropriate training regarding the communications protocols and procedures.

Monitoring and Reporting

The effectiveness of the communications protocols would be monitored regularly and adjusted as needed.

35.2.1.4 Traffic Management Plan

Objectives

The objective of the Traffic Management Plan would be to ensure that traffic is managed in and around the construction sites in a manner that protects wildlife, maximizes worker and public safety, and minimizes effects on productivity.

Statutory Requirements

Traffic management is regulated under a variety of legislation and bylaws, including the federal *Transportation of Dangerous Goods Act,* the B.C. *Transportation of Dangerous Goods Act* and the B.C. *Workers Compensation Act*.

BC Hydro Policies

The applicable corporate policy is the Safety Policy (BC Hydro 2006b).

Voluntary Commitments

Relevant management practice guidelines include the Traffic Management Guidelines for Work on Roadways (B.C. Ministry of Transportation 2001).

Project Effects, Mitigation, and Safety Measures

Increased traffic volumes as a result of the Project have the potential to affect wildlife and the public. There is also a potential for increased fog on the Taylor Bridge. The Traffic Management Plan would include the following topics:

- Site-specific training regarding potential wildlife conflicts (e.g., deer crossings) and reporting of wildlife sighting
- Public safety measures (including requirements for flagging)
- Transportation and access routes

- Speed limits
- Traffic control measures
- Management of Project-induced traffic delays
- Brake checks
- Runaway lanes
- Lighting and signage on the Taylor Bridge
- Access restrictions

Communication with the public regarding traffic-related subjects would be addressed in the Public Safety Management Plan (Section 35.2.1.3).

Training and Human Resource Planning

Drivers of vehicles and equipment would receive appropriate site-specific training. Flaggers would require appropriate certification. Qualified engineers or technologists would implement traffic control programs.

Monitoring and Reporting

A program to monitor compliance with speed limits and traffic control measures would be established. A program to monitoring of traffic delays at intersections would be implemented, and appropriate control changes made as required.

35.2.1.5 Worker Safety and Health Management Plan

Objectives

The objective of the Worker Safety and Health Management Plan would be to minimize and manage risks to workers' safety and health.

Statutory Requirements

Worker Safety and Health is regulated by *Workers Compensation Act* and its associated regulations.

BC Hydro Policies

The applicable corporate policy is the Safety Policy (BC Hydro 2006b).

Voluntary Commitments

Not applicable.

Project Effects, Mitigation, and Safety Measures

The Worker Safety and Health Management Plan would outline specific procedures and protocols for working in and around the active construction site. Required personal safety devices, proper protocols for working in and around machinery, and the location of existing structures, utilities, and potential hazards associated with the work site would be addressed.

Worker safety aspects of blasting would be addressed in the Blasting Management Plan (Section 35.2.2.3).

Training and Human Resource Planning

All Project workers would receive appropriate training on the risks and hazards of the work they would be involved in and the required measures to reduce the risks, including the use of personal protective equipment.

Monitoring and Reporting

BC Hydro would implement a program to audit compliance with safety requirements.

35.2.2 Construction Environmental Management Plans

35.2.2.1 Acid Rock Drainage-Metal Leachate Management Plan

The Acid Rock Drainage-Metal Leachate Management Plan is provided in Part 4 of Volume 2 Appendix B Geology, Terrain Stability and Soil Reports.

35.2.2.2 Air Quality Management Plan

Objectives

The objectives of the Air Quality Management Plan would be to minimize emissions to air of criteria air contaminants and greenhouse gases from project activities, ensure that project emissions meet applicable standards, and control construction activities that produce dust.

Statutory Requirements

Air quality protection is regulated under a variety of legislation, including the provincial *Environmental Management Act* and *Greenhouse Gas Reduction Targets Act.*

Other non-statutory guidance developed by governments includes the Air Quality Guidelines for the Protection of Human Health and the Environment (CCME 1998) and the British Columbia Air Quality Objectives and Standards (B.C. Ministry of Environment 2009).

BC Hydro Policies

The applicable corporate policy is the Environmental Responsibility Policy (BC Hydro 2010a).

Voluntary Commitments

Air quality objectives and guidelines relevant to the project include the Best Management Practices for the Reduction of Air Emissions from Construction and Demolition Activities (Cheminfo Services Inc. 2005).

Project Effects, Mitigation, and Environmental Protection Measures

Emissions of criteria air contaminants from project activities have the potential to affect human health. Topics that would be addressed in the plan include:

- Reduction and control of emissions and dust from clearing
- Reduction and control of emissions and dust from operating vehicles and equipment
- Reduction and control of emissions and dust from extracting, transporting, stockpiling, processing, and placing construction materials

- Road dust control
- Reduction of greenhouse gas emissions through reduced fuel use and increased fuel efficiency

Burning and incineration controls would be addressed in the Smoke Management Plan (Section 35.2.2.18). Dust from blasting would be addressed in the Blasting Management Plan (Section 35.2.2.3).

Training and Human Resource Planning

All Project workers would receive training in the sources of criteria air contaminants from the work they are undertaking and the appropriate control measures. Air quality monitoring and modelling would be done by qualified professionals.

Monitoring and Reporting

Monitoring of fine particulate matter (PM_{10} and $PM_{2.5}$), wind speed, and wind direction would take place on the north and south banks of the dam construction site. The locations of the monitors would be determined based on air dispersion modelling. Particulate monitoring would also take place near the Hudson's Hope shoreline protection construction area. Results would be reported to stakeholders in accordance with the Construction Communication Plan and to regulators on a regular basis.

35.2.2.3 Blasting Management Plan

Objectives

The objective of the Blasting Management Plan would be to ensure that blasting is done safely and to minimize the effects associated with blasting during construction. These effects may include noise, ground vibration, air blast overpressure, fly rock, and dust.

Statutory Requirements

Potential blasting-related effects are regulated under a variety of legislation. For example, blasting carried out near water is regulated by the *Fisheries Act*.

Voluntary Commitments

Relevant management practice guidelines include Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters (Wright and Hopky 1998).

BC Hydro Policies

The applicable corporate policies are the Environmental Responsibility Policy (BC Hydro 2010a), Safety Policy (BC Hydro 2006b).

Project Effects, Mitigation, and Environmental Protection Measures

Dust, noise, and vibration from blasting have the potential to affect human health. The plan would address the following topics:

- Worker safety
- Public safety
- Explosive storage
- Control of blast debris and dust

- Control of blasting-induced noise and vibration

Training and Human Resource Planning

Workers involved with blasting would be appropriately qualified. They would also receive training on Project-specific controls and protocols.

Monitoring and Reporting

Monitoring of dust from blasting would be included in the particulate monitoring described in the Air Quality Management Plan (Section 35.2.2.2). Noise and vibration from blasting would be included in the monitoring described in the Noise and Vibration Management Plan (Section 35.2.2.16).

35.2.2.4 Borrow and Quarry Sites Reclamation Plan

Borrow and quarry site reclamation would be incorporated into the Soil Management, Site Restoration, and Revegetation Plan (Section 35.2.2.19).

35.2.2.5 Construction Communication Plan

The Construction Communication Plan is described in ~~Chapter~~ Section 9.1.4.

35.2.2.6 Contaminated Sites Management Plan

Objectives

The objective of the Contaminated Site Management Plan would be to provide a framework for managing contaminated, or potentially contaminated, sites that may be affected by the Project. Potentially contaminated sites within the Project activity zones have been identified in the Contaminated Sites Report (in Part 3 in Volume 2 Appendix B Geology, Terrain Stability, and Soil Reports).

Statutory Requirements

In British Columbia, a contaminated site is defined as an area of land in which the soil or underlying groundwater or sediment contains a hazardous waste or substance in an amount or concentration that exceeds provincial environmental quality standards. Contaminated sites are regulated under a variety of legislation, including the provincial *Environmental Management Act* and the Contaminated Site Regulation.

BC Hydro Policies

The applicable corporate policy is the Environmental Responsibility Policy (BC Hydro 2010a).

Voluntary Commitments

Relevant management guidelines and standards include Develop with Care 2012: Environmental Best Management Practices for Urban and Rural Land Development in British Columbia (B.C. Ministry of Environment 2012).

Project Effects, Mitigation, and Environmental Protection Measures

Contaminated sites may affect groundwater quality and surface water quality when the reservoir is inundated. Five out of 40 of the identified potentially contaminated sites' properties may experience adequate water table rise to potentially influence groundwater quality. The Contaminated Site Management Plan would include:

- The requirements for sampling and testing programs for the five properties to determine the level of contamination, if any
- Procedures for sampling and handling potentially contaminated soil
- Procedures for identifying contaminated site safety hazards
- Procedures for determining site remediation methods
- Procedures for determining disposal methods of contaminated soil
- Directions for monitoring a site once remediation measures are in place
- Procedures to be followed if additional potentially contaminated soils are discovered during construction

Training and Human Resource Planning

Qualified professionals would be retained to evaluate potentially contaminated sites and, if required, to develop and implement remediation plans.

Monitoring and Reporting

Soil sampling and testing programs would be developed as part of any site remediation plan. Groundwater quality monitoring and surface water quality monitoring would be described in the Groundwater Protection Plan (Section 35.2.2.12) and the Fisheries and Aquatic Habitat Management Plan (Section 35.2.2.10) respectively.

35.2.2.7 Dust Control Plan

The Dust Control Plan would be incorporated into the Air Quality Management Plan (Section 35.2.2.2).

35.2.2.8 Environmental Training Management Plan

The requirements for worker training and qualifications would be addressed in each management plan. These requirements would be compiled into a project environmental training plan. The objective of this plan would be to provide the necessary training to all workers so that they are competent to carry out their work with minimum effect on the environment.

35.2.2.9 Erosion Prevention and Sediment Control Plan

Objectives

The objective of the Erosion Prevention and Sediment Control Plan would be to avoid or minimize adverse effects of erosion and sedimentation on land uses (such as agriculture) and on receiving waters.

Statutory Requirements

Erosion and sediment control are addressed in a variety of legislation, including the federal *Fisheries Act* and provincial *Water Act*.

Other non-statutory guidance developed by governments includes the Water Quality Guidelines for the Protection of Aquatic Life (CCME 2012).

BC Hydro Policies

The applicable corporate policy is the Environmental Responsibility Policy (BC Hydro 2010a).

Voluntary Commitments

Relevant guidelines include the Land Development Guidelines for the Protection of Aquatic Habitat (Fisheries and Oceans Canada 1992) and A Users' Guide to Working In and Around Water: Understanding the Regulation under British Columbia's *Water Act* (B.C. Ministry of Environment 2005b).

Project Effects, Mitigation, and Environmental Protection Measures

Sediment would be released during construction of the Site C dam. Other Project construction activities such as relocation of Highway 29, clearing, and transmission line construction may also release sediment to watercourses. Sediment has the potential to affect fish and riparian habitat and surface water quality. The Erosion Prevention and Sediment Control Plan would include:

- Identification of erosion and sedimentation-prone areas
- Construction-related activities prone to erosion or sedimentation
- Erosion and sediment control measures
- Removal and disposal of temporary erosion and sediment control measures
- Storm event protection
- Site drainage management
- Required setbacks from riparian areas and surface water bodies

Revegetation of eroded areas would be addressed in the Soil Management, Site Restoration, and Revegetation Plan (Section 35.2.2.19).

Training and Human Resource Planning

All Project workers would receive training in the sediment control measures appropriate for the work they would be undertaking. Qualified professionals would be retained to evaluate the erosion and sedimentation risks of work areas.

Monitoring and Reporting

Four turbidity sensors have been installed in the Peace River, two upstream of the Site C dam site, and two downstream. These monitors would assist in determining the magnitude of sediment releases from dam construction activities. A sampling program for monitoring sediment releases from construction activities would be implemented. Results would be reported to regulators on a regular basis.

35.2.2.10 Fisheries and Aquatic Habitat Management Plan

Objectives

The objective of the Fisheries and Aquatic Habitat Management Plan would be to avoid or minimize adverse effects of construction activities on fish and aquatic habitat.

Statutory Requirements

Fisheries and aquatic habitat protection is regulated under a variety of legislation including the federal *Fisheries Act* and provincial *Fish Protection Act*.

BC Hydro Policies

The applicable corporate policy is the Environmental Responsibility Policy (BC Hydro 2010a).

Voluntary Commitments

The Fisheries and Aquatic Habitat Management Plan would describe relevant management guidelines, including the Land Development Guidelines for the Protection of Aquatic Habitat (Fisheries and Oceans Canada 1992), the Fish-stream Crossing Guidebook (Fisheries and Oceans Canada, B.C. Ministry of Environment, and B.C. Ministry of Forests, Lands and Natural Resource Operations 2012), the Protocol Agreement for Work in and Around Water (BC Hydro, Fisheries and Oceans Canada, and B.C. Ministry of Environment 2009) and the Approved Work Practices for Managing Riparian Vegetation (BC Hydro, Fisheries and Oceans Canada, and B.C. Ministry of Water, Land and Air Protection 2003).

Project Effects, Mitigation, and Environmental Protection Measures

Construction activities may affect aquatic habitat and riparian areas. The plan would include the following topics:

- Aquatic habitat and riparian areas avoidance plans and mitigation methods
- Criteria for watercourse crossings
- In-stream works
- Timing windows
- Work area isolation
- Fish salvage and relocation

Erosion and sedimentation would be addressed in the Erosion Prevention and Sediment Control Plan (Section 35.2.2.9). Vibration would be addressed in the Blasting Management Plan (Section 35.2.2.3) and in the Noise and Vibration Management Plan (Section 35.2.2.16). Clearing in and near riparian areas is addressed in Volume 1 Appendix A Project Vegetation, Clearing, and Debris Management Plan.

Training and Human Resource Planning

All Project workers would receive training in the aquatic habitat and riparian area protection measures appropriate for the work they would be undertaking. Qualified professionals would be retained to design watercourse crossings and for fish salvage and relocation.

Monitoring and Reporting

Monitoring programs that would be implemented during the construction phase include:

- Monitoring of habitat compensation measures upstream and downstream of the dam site
- Monitoring fish passage during diversion
- Collection of baseline physical environment information – water temperatures and flows
- Collecting of baseline aquatic productivity information – water quality, nutrients, and primary and secondary productivity
- Collection of additional baseline fisheries information to confirm fish community trends during construction

35.2.2.11 Fuel Handling and Storage Management Plan

Objectives

The objective of the Fuel Handling and Storage Management Plan would be to minimize the risk of fuel spills through the implementation of appropriate preventive measures.

Statutory Requirements

Fuel handling and storage is regulated under a variety of legislation, including the federal *Transportation of Dangerous Goods Act*, *Canadian Environmental Protection Act* and Environmental Emergencies Regulation. Provincial legislation includes the *Transportation of Dangerous Goods Act*, the *Environmental Management Act,* and Spill Reporting Regulation.

Other non-statutory guidance developed by governments includes the Environmental Code of Practice for Aboveground Storage Tank Systems Containing Petroleum Products (CCME 1994).

BC Hydro Policies

The applicable corporate policies are the Environmental Responsibility Policy (BC Hydro 2010a), Safety Policy (BC Hydro 2006b).

Voluntary Commitments

Relevant management guidelines include A Field Guide to Fuel Handling, Transportation & Storage (B.C. Ministry of Water, Land and Air Protection and B.C. Ministry of Forests 2002).

Project Effects, Mitigation, and Environmental Protection Measures

Mishandling of fuels could affect groundwater and surface water quality, and fish and wildlife habitat. Spilled fuels would create a fire hazard. The Fuel Handling and Storage Management Plan would include the following topics:

- Bulk storage
- Secondary containment
- Fuelling of vehicles and equipment

- Transportation on the construction site
- Distances to be maintained from riparian areas and watercourses
- Spill kits
- Inspection of storage tanks and transfer piping

Training and Human Resource Planning

All Project workers would receive training in fuel handling and storage appropriate for the work they would be undertaking. Qualified professionals would be retained to design fuel storage facilities. An inspection program for fuel storage tanks and transfer piping would be developed by a qualified professional.

Monitoring and Reporting

Fuel spills would be reported in accordance with the B.C. Spill Reporting Regulation.

35.2.2.12 Groundwater Protection Plan

Objectives

The objective of the Groundwater Protection ~~Quality Management~~ Plan would be to avoid or minimize impacts to groundwater quality and to protect groundwater quality resources that have the potential to be affected by the Project.

Statutory Requirements

Groundwater quality is regulated under a variety of legislation, including the Contaminated Sites Regulation within the *Environmental Management Act*.

BC Hydro Policies

The applicable corporate policy is the Environmental Responsibility Policy (BC Hydro 2010a).

Voluntary Commitments

Relevant management practice guidelines include Develop with Care 2012: Environmental Best Management Practices for Urban and Rural Land Development in British Columbia (B.C. Ministry of Environment 2012).

Project Effects, Mitigation, and Environmental Protection Measures

Groundwater quality could be affected by spills of fuel, chemicals, or hazardous materials; inundation of contaminated sites that have not been remediated; inundation of infrastructure such as septic fields; inundation of land on which residual pesticides and herbicides are present; and contact with new geologic units. Contaminated groundwater could affect drinking water and irrigation sources. Mitigation measures and management practices contained in the Groundwater Quality Management Plan would include the following topics:

- Identification and protection of springs and groundwater seepage sites
- Construction activities that may affect groundwater
- Potential Project-related groundwater contaminants

- Groundwater protection measures
- Managing infrastructure prior to inundation

Hazardous waste management would be addressed in the Hazardous Waste Management Plan (Section 35.2.2.13), response to spills that may affect groundwater quality would be addressed in the Emergency Response Plan (Section 35.2.1.1), and remediation of contaminated sites would be addressed in the Contaminated Sites Management Plan (Section 35.2.2.6).

Training and Human Resource Planning

All Project workers would receive training in groundwater protection appropriate for the work they would be undertaking. Qualified professionals would be retained to manage infrastructure that would be inundated and to develop a groundwater monitoring program.

Monitoring and Reporting

A groundwater monitoring plan would be developed and implemented, and results would be reported to stakeholders in accordance with the Construction Communication Plan and to regulators on a regular basis.

35.2.2.13 Hazardous Waste Management Plan

Objectives

The objective of the Hazardous Waste Management Plan would be to ensure that hazardous waste management is undertaken in a way that avoids potential effects on human health and the environment, and is compliant with environmental legislation.

Statutory Requirements

Hazardous waste is regulated under a variety of legislation, including the provincial Hazardous Waste Regulation in the *Environmental Management Act*.

BC Hydro Policies

The applicable corporate policies are the Environmental Responsibility Policy (BC Hydro 2010a), Safety Policy (BC Hydro 2006b).

Voluntary Commitments

Relevant management practices include the Hazardous Waste Legislation Guide (B.C. Ministry of Environment 2005a).

Project Effects, Mitigation, and Environmental Protection Measures

Hazardous waste that is spilled could affect surface water quality, air quality, fish habitat, or wildlife habitat. The Hazardous Waste Management Plan would include the following topics:

- Hazardous waste storage, labelling, containment, transport, and disposal
- Hazardous waste reduction initiatives and measures
- Tracking and documentation procedure for hazardous waste

Training and Human Resource Planning

All Project workers would receive hazardous waste training appropriate for the work they would be undertaking.

Monitoring and Reporting

Hazardous waste spill response and reporting procedures would be addressed in the Emergency Response Plan (Section 35.2.1.1).

35.2.2.14 Heritage Resources Management Plan

Objectives

The objective of the Heritage Resource Management Plan would be to ensure the proper management of archaeological, historical, and paleontological (heritage) resources during construction, including procedures for the inadvertent discovery of heritage resources (i.e., a chance find).

Statutory Requirements

In British Columbia, the management of archaeological and historical resources is governed under the *Heritage Conservation Act*, the *Coroner's Act* and the *Cremation, Interment and Funeral Services Act*. There is currently no provincial or federal legislation that protects paleontological resources.

BC Hydro Policies

Relevant BC Hydro policies include the Environmental Best Practices for Managing Heritage Resources (BC Hydro 2004).

Voluntary Commitments

Relevant management practices include the B.C. Fossil Management Framework (B.C. Ministry of Forests, Lands and Natural Resource Operations 2012).

Project Effects, Mitigation, and Environmental Protection Measures

Construction activities that disturb land could affect heritage resources. The Heritage Resource Management Plan would include the following topics:

- Mapping of high potential heritage areas overlapping Project activity zones
- Types of heritage resources that may be encountered (e.g., artifacts, culturally modified trees, human remains, fossils)
- Monitoring at known heritage sites
- Step-by-step chance find procedures, designed to avoid or mitigate disturbance of heritage resources

Training and Human Resource Planning

All Project workers would receive training in the types of heritage resources that may be found and chance find procedures appropriate for the work they would be undertaking. A qualified professional would be retained for any mitigation planning and implementation for chance finds.

Monitoring and Reporting

Shoreline erosion of heritage resources within the reservoir would be monitored for a period of not less than the first five years of operation. Predicted rates of sedimentation and erosion affecting shoreline heritage resources would be confirmed through shoreline monitoring.

35.2.2.15 Ice Management Plan

Objectives

The objectives of the Ice Management Plan would be to:

- Ensure that ice hazards such as ice jams, and ice accumulation on the construction headpond and downstream of the project are managed during construction in consideration of worker and public safety
- Establish protocols for managing ice on the construction headpond so that water levels are maintained at a safe level below the top of temporary cofferdams

Statutory Requirements

Not applicable.

BC Hydro Policies and Voluntary Commitments

BC Hydro operates its existing Peace River facilities under a joint agreement between the provinces of B.C. and Alberta. The Project would be operated in accordance with the agreement. One of the management objectives of the joint agreement is to control flows from BC Hydro's facilities in a way that avoids downstream flooding during ice formation and breakup. Existing ice management practices would continue during the construction phase of the Project.

Project Effects, Mitigation, and Environmental Protection Measures

The Ice Management Plan would discuss the protocols for managing releases from BC Hydro's upstream facilities to control the timing and rate of ice formation on the construction headpond and downstream of the Site C dam.

Training and Human Resource Planning

Not applicable.

Monitoring and Reporting

An ice monitoring program would be developed and implemented by a qualified professional.

35.2.2.16 Noise and Vibration Management Plan

Objectives

The objectives of the Noise and Vibration Management Plan would be to mitigate construction-related noise effects on sensitive receptors (i.e., residential developments, schools, hospitals, sensitive wildlife) and to mitigate potential vibration effects on infrastructure and other receptors near the Project site.

Statutory Requirements

Noise and vibration are regulated under a variety of legislation, including the federal *Fisheries Act* and the provincial *Wildlife Act*.

BC Hydro Policies

The applicable corporate policy is the Environmental Responsibility Policy (BC Hydro 2010a).

Voluntary Commitments

Relevant management practice guidelines include Develop with Care 2012: Environmental Best Management Practices for Urban and Rural Land Development in British Columbia (B.C. Ministry of Environment 2012).

Project Effects, Mitigation, and Environmental Protection Measures

Noise and vibration from Project activities may affect human health and disturb wildlife movement. The Noise and Vibration Management Plan would include the following topics:

- Identification of sensitive human and wildlife receptors
- Identification of Project activities that may affect noise and vibration at sensitive receptors, including blasting
- Identification of Project activities that produce noise and vibration that may affect fish and aquatic habitat
- Noise and vibration reduction controls
- Timing of noise- and vibration-related works

Noise and vibration aspects of blasting would be addressed in the Blasting Management Plan (Section 35.2.2.3).

Training and Human Resource Planning

All Project workers would receive training in noise and vibration controls appropriate for the work they would be undertaking. A qualified professional would be retained for the development of a noise and vibration monitoring program.

Monitoring and Reporting

A noise and vibration monitoring program would be implemented to measure noise levels at receptors near the 85th Avenue Industrial Lands, near construction of the Hudson's Hope shoreline protection, and near Highway 29 construction locations. Results would be reported to stakeholders in accordance with the Construction Communication Plan and to regulators on a regular basis.

35.2.2.17 Project Vegetation, Clearing, and Debris Management Plan

The Project Vegetation, Clearing, and Debris Management Plan is provided in Volume 1 Appendix A.

35.2.2.18 Smoke Management Plan

Objectives

The objective of the Smoke Management Plan would be to minimize smoke resulting from the burning of Project clearing debris.

Statutory Requirements

Burning of clearing debris and smoke management are regulated under the provincial *Environmental Management Act* and the Open Burning Smoke Control Regulation.

BC Hydro Policies

The applicable corporate policy is the Environmental Responsibility Policy (BC Hydro 2010a).

Voluntary Commitments

Not applicable.

Project Effects, Mitigation, and Environmental Protection Measures

Burning of clearing debris would release fine particulate and other air contaminants that may affect human health and wildlife. The Smoke Management Plan would include the following topics:

- Reduction of open burning activities
- Low-emission incineration technologies
- Burning pile construction and seasoning
- Burn plans
- Sensitive time periods
- Set back distances and sensitivity zones
- Venting index
- Ignition criteria

Training and Human Resource Planning

All Project workers involved in debris burning would receive training in smoke management appropriate for the work they would be undertaking.

Monitoring and Reporting

Throughout the burn season, air quality in and around the Project area would be monitored. Air quality advisories or burn bans would be implemented should particulate matter concentrations approach or exceed provincial objectives (based on provincial policy). If an advisory or burn ban is issued, burn operators would be required to adhere to the terms of the advisory or burn ban.

Monitoring of fine particulate matter (PM10 and PM2.5) would take place on the north and south banks of the dam construction site. The locations of the monitors would be determined based on air dispersion modelling. Results would be reported to

stakeholders in accordance with the Construction Communication Plan and to regulators on a regular basis.

35.2.2.19 Soil Management, Site Restoration, and Revegetation Plan

Objectives

The objective of the Soil Management, Site Restoration, and Revegetation Plan would be to effectively manage disturbed soils, and to reclaim and revegetate disturbed construction areas to a safe and environmentally acceptable condition. In areas with agricultural use or potential use, the objective would be to reclaim areas to an agricultural capability equivalent to or better than the pre-disturbance capability.

Statutory Requirements

Restoration of disturbed sites is governed under a variety of legislation, including the provincial *Environmental Management Act*, Contaminated Sites Regulation, and Hazardous Waste Regulation.

BC Hydro Policies

The applicable corporate policy is the Environmental Responsibility Policy (BC Hydro 2010a).

Voluntary Commitments

Relevant management practice guidelines include the Aggregate Operators Best Management Practices Handbook for British Columbia Volume II (B.C. Ministry of Energy and Mines 2002).

Project Effects, Mitigation, and Environmental Protection Measures

Excavation and site preparation would disturb natural vegetation and contouring, and may affect agricultural capability of the land. Unvegetated areas would be prone to erosion. The Soil Management, Site Restoration, and Revegetation Plan would include the following topics:

- Timing of restoration and reclamation activities
- Soil salvage, storage and reapplication
- Site drainage
- Decommissioning of temporary access
- Materials and waste removal
- Grading and re-contouring
- Re-establishment of ground cover and native vegetation
- Restoration of soils and drainage characteristics on agricultural lands
- Restoration of sensitive and listed ecosystems

Considerations in developing restoration plans would include rare plants and invasive plants.

Sediment and erosion control would be addressed in the Erosion Prevention and Sediment Control Plan (Section 35.2.2.9). Vegetation and invasive plant management would be covered in the Vegetation and Invasive Plant Management Plan (Section 35.2.2.22).

Training and Human Resource Planning

All Project workers involved in excavation and site preparation would receive training in soil management appropriate for the work they would be undertaking. Specific site restoration, revegetation and drainage plans would be developed by qualified professionals.

Monitoring and Reporting

Reporting of restored and revegetated sites would occur in accordance with Project approvals and permits.

35.2.2.20 Solid Waste Management Reduction and Recycling Plan

Solid Waste Management Reduction and Recycling would be addressed in the Waste Management Plan (Section 35.2.2.23).

35.2.2.21 Surface Water Quality Management Plan

Surface water quality management would be addressed in the Erosion Prevention and Sediment Control Management Plan (Section 35.2.2.9), Fisheries and Aquatic Habitat Management Plan (Section 35.2.2.10) and Emergency Response Plan (Section 35.2.1.1).

35.2.2.22 Vegetation and Invasive Plant Management Plan

Objectives

The objectives of the Vegetation and Invasive Plant Management Plan would be to protect ecosystems, plant habitats, plant communities, and vegetation during construction and to manage non-native invasive, noxious, or nuisance plants (invasive plants) during construction.

Statutory Requirements

Certain vegetation is afforded provincial and federal regulatory protection under a variety of legislation, including the federal *Species at Risk Act*. Invasive plants are regulated in British Columbia under the B.C. *Weed Control Act* and listed in the B.C. Weed Control Regulation.

BC Hydro Policies

The applicable corporate policy is the Environmental Responsibility Policy (BC Hydro 2010a). Applicable corporate management plans are the Pest Management Plan For Management of Vegetation at BC Hydro Facilities (BC Hydro 2009) and the Integrated Vegetation Management Plan For Transmission Rights-of-Way (BC Hydro 2010b).

Voluntary Commitments

Some invasive plants are designated by provincial and federal agencies such as the Invasive Plant Council of BC and targeted for control. Applicable management practice guidelines include Develop with Care 2012: Environmental Best Management Practices for Urban and Rural Land Development in British Columbia (B.C. Ministry of Environment 2012), Seven Steps to Managing Your Weeds: A Manual for Integrated Weed Management in British Columbia (B.C. Ministry of Agriculture, Food and Fisheries 2002) and the Northeast Invasive Plant Committee Plan and Profile (Northeast Invasive Plant Committee 2011).

Project Effects, Mitigation, and Environmental Protection Measures

Site preparation may affect rare plant species and habitats. Invasive plants may populate disturbed areas. Vehicles may transport seeds of invasive plants to a non-infested area. The Vegetation and Invasive Plant Management Plan would include the following topics:

- Protection of rare plants and rare plant habitats
- Invasive plant control measures, including equipment and vehicle cleaning and inspection

Training and Human Resource Planning

All Project workers would receive training in vegetation and invasive plant management appropriate for the work they would be undertaking. Invasive plant control plans would be developed by qualified professionals.

Monitoring and Reporting

Invasive plant surveys would continue for the duration of the construction period. Where invasive plant infestations have occurred, post-treatment inspections for efficacy would be done. Pesticide treatment would be reported as required. Annual reports would be prepared.

35.2.2.23 Waste Management Plan

Objectives

The objective of the Waste Management Plan would be to establish guidelines for the effective reduction, storage, management, and disposal of non-hazardous construction waste.

Statutory Requirements

Non-hazardous waste is regulated under a variety of legislation, including the provincial *Environmental Management Act*, and the associated Waste Discharge Regulation.

BC Hydro Policies

The applicable corporate policy is the Environmental Responsibility Policy (BC Hydro 2010a).

Voluntary Commitments

Applicable management practice guidelines include A Best Practices Guide to Solid Waste Reduction (Canadian Construction Association 2001).

Project Effects, Mitigation, and Environmental Protection Measures

Project waste could affect the life of landfills in the area. The Waste Management Plan would address the following topics:

- Expected sources and quantities of construction waste
- Waste reduction initiatives and measures
- Approved disposal methods and facilities
- Criteria for approving disposal facilities
- Waste storage, handling, recycling, and disposal procedures
- Tracking and documentation procedures for waste, recycling, and reuse
- Waste transportation

Hazardous waste management would be addressed in the Hazardous Waste Management Plan (Section 35.2.2.13).

Training and Human Resource Planning

All Project workers would receive training in waste management appropriate for the work they would be undertaking. Waste storage, handling, recycling, and disposal procedures would be developed by qualified professionals.

Monitoring and Reporting

Reporting of waste quantities would occur in accordance with Project approvals and permits.

35.2.2.24 Wildlife Management Plan

Objectives

The objective of the Wildlife Management Plan would be to protect wildlife species and ecosystems during the Project's construction phase.

Statutory Requirements

Wildlife species are afforded provincial and federal regulatory protection under a variety of legislation, including the federal *Migratory Birds Convention Act* and *Species at Risk Act* and the provincial *Wildlife Act*.

BC Hydro Policies

The applicable corporate policy is the Environmental Responsibility Policy (BC Hydro 2010a).

Voluntary Commitments

Applicable management practice guidelines include Develop with Care 2012: Environmental Best Management Practices for Urban and Rural Land Development in

British Columbia (B.C. Ministry of Environment 2012), Best Management Practices for Raptor Conservation during Urban and Rural Land Development in British Columbia (B.C. Ministry of Environment 2005c), and Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia (B.C. Ministry of Water, Land and Air Protection 2004).

Project Effects, Mitigation, and Environmental Protection Measures

Construction activities could alter or fragment wildlife habitat, disturb or displace wildlife, or directly or indirectly cause individual mortality. The Wildlife Management Plan would include the following topics:

- Identification and protection of sensitive wildlife habitats and important wildlife areas
- Wildlife hazards
- Wildlife protection
- Work timing windows
- Minimization of vehicle collisions with wildlife
- Storage and treatment of garbage
- Restrictions on hunting

Training and Human Resource Planning

All Project workers would receive training in wildlife management appropriate for the work they would be undertaking.

Monitoring and Reporting

For the duration of the construction phase, the following monitoring programs would be implemented:

- Evaluation of the effectiveness of mitigation measures for bald eagles and amphibians
- Ungulate movement pattern and habitat use
- Evaluation of the effect of the reservoir on fisher movement

35.3 Operations Phase

As BC Hydro's third dam on the Peace River, the Site C facilities would be operated in accordance with system management practices and agreements and policies. The facilities would be operated and maintained by BC Hydro in accordance with corporate policies, procedures, and standards. Conditions of Project certification and approval would be included in operating requirements.

Prior to commissioning, BC Hydro would develop Environmental Management Plans and Safety Management Plans that would provide performance-based requirements to be met by operators of the facilities. Sections 35.3.1 and 35.3.2 provide more detail on the management plans that would be developed for the operations phase of the Project.

35.3.1 Operations Safety Management Plans

35.3.1.1 Emergency Response Plan

Objectives

The objective of the Emergency Response Plan would be to provide a framework for effectively managing emergencies involving chemical or fuel spills, fire, medical, or other emergencies.

Statutory Requirements

Emergency response is regulated under a variety of provincial legislation, including the B.C. *Emergency Program Act*, B.C. *Environmental Management Act*, B.C. Fire Code, B.C. *Wildfire Act*, B.C. *Workers Compensation Act* and B.C. Spill Reporting Regulation. Applicable federal legislation includes the *Canadian Environmental Protection Act* and the Environmental Emergencies Regulation.

BC Hydro Policies

The applicable corporate policies are the Environmental Responsibility Policy (BC Hydro 2010a) and Safety Policy (BC Hydro 2006b).

Voluntary Commitments

Relevant practice guidelines include the Guidelines for Industry Emergency Response Plans (B.C. Ministry of Environment 2002) and the Guidelines for Public Safety Around Dams (CDA 2011).

Project Effects, Mitigation, and Environmental Protection Measures

The Emergency Response Plan would include requirements for the following:

- Emergency response procedures, including first response, containment, evacuation and cleanup
- Emergency response equipment
- Groundwater and surface water protection
- Response to a hazardous materials spill
- Notification and communication procedures
- Emergency contact information

Training and Human Resource Planning

All workers in the operations phase would be trained on the procedures for reporting emergencies. All personnel with identified responsibilities in the emergency command structure would be trained and competent to carry out the assigned tasks. First responders would receive appropriate first response training.

Monitoring and Reporting

Protocols for reporting of emergencies would be established in accordance with applicable legislation.

35.3.1.2 Public Safety Management Plan

Objectives

The objective of the Public Safety Management Plan would be to minimize and manage public safety risks.

Statutory Requirements

Not applicable.

BC Hydro Policies

The applicable corporate policies are the Safety Policy (BC Hydro 2006b), the Policy Statement on Dam Safety (BC Hydro 2011) and OSH 701 Public Safety Management Standard (BC Hydro 2006a).

Voluntary Commitments

The Public Safety Management Plan would describe relevant management practice guidelines such as the Guidelines for Public Safety Around Dams (CDA 2011).

Project Effects, Mitigation, and Environmental Protection Measures

Specific procedures and protocols for managing public safety risks would be developed prior to operation. In addition, the plan would define the communication requirements, communication methods, timing, and information distribution methods to ensure that the public is aware of specific operating activities that may directly affect them.

A key component of the Public Safety Management Plan would be the Reservoir Shoreline Monitoring and Management Plan. The objective of this plan would be to identify the requirements for regular monitoring of shoreline conditions, including groundwater levels, shoreline erosion rates and landslide activity.

Training and Human Resource Planning

Employees responsible for reporting to the public would receive appropriate training regarding the communications protocols and procedures. The Reservoir Shoreline Monitoring and Management Plan would be developed by a qualified professional.

Monitoring and Reporting

The Reservoir Shoreline Monitoring and Management Plan would include the following aspects:

- Geotechnical drilling and instrumentation to facilitate expanded baseline monitoring of groundwater conditions and slope movements. Priority would be given to locations where Highway 29 or other infrastructure is (or would be) located within the impact lines and to slopes where a potential landslide-generated wave hazard has been identified.
- Prior to diversion, installation and testing of the necessary instrumentation and telemetry at locations where real-time groundwater and slope movement data acquisition and transmission are required
- Prior to diversion, determination of the instrumentation monitoring and visual inspection frequency, based on predictions of the degree of change caused by river diversion and the impoundment of the reservoir. The frequency of instrumentation

monitoring and visual inspection would be adjusted based on the nature of the changes in collected data and shoreline conditions that are observed. The instrumentation monitoring and visual inspection program would be integrated into BC Hydro's system-wide operation and dam safety programs.

- Review of the reservoir impact lines would take place following the first five years reservoir operations and would consider all survey, monitoring and inspection data available at the time

35.3.1.3 Reservoir Shoreline Monitoring and Management Plan

The Reservoir Shoreline Monitoring and Management Plan would be described in the Public Safety Management Plan (Section 35.3.1.2).

35.3.1.4 Worker Safety and Health Management Plan

Objectives

The objective of the Worker Safety and Health Management Plan would be to minimize risks to workers' safety and health.

Statutory Requirements

Worker Safety and Health is regulated by the *Workers Compensation Act* and its associated regulations.

BC Hydro Policies

The applicable corporate policy is the Safety Policy (BC Hydro 2006b).

Voluntary Commitments

Not applicable.

Project Effects, Mitigation, and Environmental Protection Measures

The Worker Safety and Health Management Plan would outline specific procedures and protocols for working in and around the operating facilities. Required personal safety devices, proper protocols for working in and around machinery, and potential hazards associated with the work site would be addressed.

Training and Human Resource Planning

All workers in the operations phase would receive appropriate training on the risks and hazards of the work they would be involved in and the required measures to reduce the risks, including the use of personal protective equipment.

Monitoring and Reporting

BC Hydro would implement a program to audit compliance with safety requirements.

35.3.2 Operations Environmental Management Plans

35.3.2.1 Hazardous Waste Management Plan

Objectives

The objective of the Hazardous Waste Management Plan would be to ensure that hazardous waste management is undertaken in a way that avoids potential effects on human health and the environment, and is compliant with environmental legislation.

Statutory Requirements

Hazardous waste is regulated under a variety of legislation, including the provincial Hazardous Waste Regulation in the *Environmental Management Act.*

Voluntary Commitments

Relevant management practices include the Hazardous Waste Legislation Guide (B.C. Ministry of Environment 2005a).

BC Hydro Policies

The applicable corporate policy is the Environmental Responsibility Policy (BC Hydro 2010a).

Project Effects, Mitigation, and Environmental Protection Measures

Hazardous waste that is spilled could affect surface water quality, air quality, fish habitat, or wildlife habitat. The Hazardous Waste Management Plan would include the following topics:

- Hazardous waste storage, labelling, containment, transport, and disposal
- Hazardous waste reduction initiatives and measures
- Tracking and documentation procedure for hazardous waste

Training and Human Resource Planning

All workers in the operations phase would receive hazardous waste training appropriate for the work they would be undertaking.

Monitoring and Reporting

Hazardous waste spill response and reporting procedures would be addressed in the Emergency Response Plan (Section 35.2.1.1).

35.3.2.2 Ice Management Plan

Objectives

The objective of the Ice Management Plan would be to ensure that ice hazards such as ice jams, and ice accumulation on the reservoir itself and downstream of the Project are managed during operation in consideration of worker and public safety.

Statutory Requirements

Not applicable.

BC Hydro Policies and Voluntary Commitments

BC Hydro operates its existing Peace River facilities under a joint agreement between the provinces of B.C. and Alberta. The Project would be operated in accordance with the agreement. One of the management objectives of the joint agreement is to control flows from BC Hydro's facilities in a way that avoids downstream flooding during ice formation and breakup. Existing ice management practices would continue during the operation phase of the Project.

Project Effects, Mitigation, and Environmental Protection Measures

The Ice Management Plan would discuss the protocols for managing releases from BC Hydro's upstream facilities to control the timing and rate of ice formation on the reservoir and downstream of the Site C dam.

Training and Human Resource Planning

Not applicable.

Monitoring and Reporting

An ice monitoring program would be developed and implemented by a qualified professional.

35.3.2.3 Materials Management Plan

Materials management would be addressed in the Hazardous Waste Management Plan (Section 35.3.2.1) and the Waste Management Plan (Section 35.3.2.5).

35.3.2.4 Vegetation and Invasive Plant Management Plan

Objectives

The objectives of the Vegetation and Invasive Plant Management Plan would be to protect ecosystems, plant habitats, plant communities, and vegetation during operation and to manage non-native invasive, noxious, or nuisance plants (invasive plants) during operation.

Statutory Requirements

Certain vegetation is afforded provincial and federal regulatory protection under a variety of legislation, including the federal *Species at Risk Act*. Invasive plants are regulated in British Columbia under the B.C. *Weed Control Act* and listed in the B.C. Weed Control Regulation.

BC Hydro Policies

The applicable corporate policy is the Environmental Responsibility Policy (BC Hydro 2010a). Applicable corporate management plans are the Pest Management Plan For Management of Vegetation at BC Hydro Facilities (BC Hydro 2009) and the Integrated Vegetation Management Plan For Transmission Rights-of-Way (BC Hydro 2010b).

Voluntary Commitments

Some invasive plants are designated by provincial and federal agencies, such as the Invasive Plant Council of BC, and targeted for control. Applicable management practice

guidelines include Develop with Care 2012: Environmental Best Management Practices for Urban and Rural Land Development in British Columbia (B.C. Ministry of Environment 2012) and Seven Steps to Managing Your Weeds: A Manual for Integrated Weed Management in British Columbia (B.C. Ministry of Agriculture, Food and Fisheries 2002).

Project Effects, Mitigation, and Environmental Protection Measures

Maintenance of vegetation in the transmission line right-of-way may affect rare plant species and habitats. Invasive plants may populate disturbed areas. Vehicles may transport seeds of invasive plants to a non-infested area. The Vegetation and Invasive Plant Management Plan would include the following topics:

- Protection of rare plants and rare plant habitats
- Invasive plant control measures

Training and Human Resource Planning

All workers in the operations phase would receive training in vegetation and invasive plant management appropriate for the work they would be undertaking. Invasive plant control plans would be developed by qualified professionals.

Monitoring and Reporting

Pesticide treatment would be reported as required. Annual reports would be prepared.

35.3.2.5 Waste Management Plan

Objectives

The objective of the Waste Management Plan would be to establish guidelines for the effective reduction, storage, management, and disposal of non-hazardous operations waste.

Statutory Requirements

Non-hazardous waste is regulated under a variety of legislation, including the provincial *Environmental Management Act,* and the associated Waste Discharge Regulation.

BC Hydro Policies

The applicable corporate policy is the Environmental Responsibility Policy (BC Hydro 2010a).

Voluntary Commitments

Not applicable.

Project Effects, Mitigation, and Environmental Protection Measures

Waste from the operating facilities could affect the life of landfills in the area. The Waste Management Plan would address the following topics:

- Expected sources and quantities of operations waste
- Waste reduction initiatives and measures
- Approved disposal methods and facilities

- Waste storage, handling, recycling, and disposal procedures
- Tracking and documentation procedures for waste, recycling, and reuse
- Waste transportation

Hazardous waste management would be addressed in the Hazardous Waste Management Plan (Section 35.3.2.1).

Training and Human Resource Planning

All workers in the operations phase would receive training in waste management appropriate for the work they would be undertaking. Waste storage, handling, recycling, and disposal procedures would be developed by qualified professionals.

Monitoring and Reporting

Reporting of waste quantities would occur in accordance with Project approvals and permits.

35.3.2.6 Water Management Plan

Objectives

The objective of the Water Management Plan would be to manage water flows during operations within the constraints of regulatory requirements.

Statutory Requirements

Water flows at Site C would be regulated by the Project's water licence.

BC Hydro Policies and Voluntary Commitments

The Peace Water Use Plan, developed in 2007, guides BC Hydro in managing its existing operations on the Peace River, and would also provide guidance for the operation of Site C.

Project Effects, Mitigation, and Environmental Protection Measures

Considerations in the plan include:

- Minimum allowable discharges
- Spill management
- Reservoir operating range

Training and Human Resource Planning

Workers in the operations phase involved in water management would receive training appropriate with the work they would be undertaking.

Monitoring and Reporting

Reporting of water flows and releases would occur in accordance with Project water licence.

References

Literature Cited

BC Hydro. 2004. Environmental Best Practices for Managing Heritage Resources. Vancouver, B.C.

BC Hydro. 2006a. OSH 701 Public Safety Standard. Vancouver, B.C.

BC Hydro. 2006b. Safety Policy. Vancouver, B.C.

BC Hydro. 2009. Pest Management Plan for Management of Vegetation at BC Hydro Facilities. Vancouver, B.C.

BC Hydro. 2010a. Environmental Responsibility Policy. Vancouver, B.C.

BC Hydro. 2010b. Integrated Vegetation Management Plan For Transmission Rights-of-Way. Vancouver, B.C.

BC Hydro. 2011. Policy Statement on Dam Safety. Vancouver, B.C.

BC Hydro, Fisheries and Oceans Canada, and B.C. Ministry of Environment. 2009. Protocol Agreement for Work in and Around Water. Vancouver, B.C.

BC Hydro, Fisheries and Oceans Canada, and B.C. Ministry of Water, Land and Air Protection. 2003. Approved Work Practices for Managing Riparian Vegetation. Vancouver, B.C.

Canadian Dam Association (CDA). 2011. Guidelines for Public Safety Around Dams. Toronto, ON.

Internet Sites

B.C. Ministry of Agriculture, Food and Fisheries. 2002. Seven Steps to Managing Your Weeds: A Manual for Integrated Weed Management in British Columbia. Victoria, B.C. Available at: http://www.weedsbc.ca/pdf/7StepsToManagingYourWeeds.pdf. Accessed: November 15, 2012.

B.C. Ministry of Energy and Mines. 2002. Aggregate Operators Best Management Practices Handbook for British Columbia Volume II. Victoria, B.C. Available at: http://www.em.gov.bc.ca/Mining/MineralStatistics/MineralSectors/Construction Aggregates/ReportsandPublications/Documents/Vol-2-AOH-BMP.pdf. Accessed: November 14, 2012.

B.C. Ministry of Environment. 2002. B.C. Guidelines for Industry Emergency Response Plans. Victoria, B.C. Available at: http://www.env.gov.bc.ca/eemp/resources/guidelines/bc.htm. Accessed: November 14, 2012.

B.C. Ministry of Environment. 2005. Hazardous Waste Legislation Guide. Victoria, B.C. Available at: http://www.env.gov.bc.ca/epd/hazwaste/regs/pdf/haz_waste_leg_guide.pdf. Accessed: November 14, 2012.

B.C. Ministry of Environment. 2005a. A Users' Guide to Working In and Around Water: Understanding the Regulation under British Columbia's *Water Act*. Victoria, B.C. Available at: http://www.env.gov.bc.ca/wsd/water_rights/cabinet/working_around_water.pdf. Accessed: November 14, 2012.

B.C. Ministry of Environment. 2005b. Best Management Practices for Raptor Conservation during Urban and Rural Land Development in British Columbia. Victoria, B.C. Available at: http://www.env.gov.bc.ca/wld/documents/bmp/raptor_bmp_final.pdf. Accessed: December 14, 2012.

B.C. Ministry of Environment. 2009c. Air Quality Objectives and Standards. Victoria, B.C. Available at: http://www.bcairquality.ca/reports/pdfs/aqotable.pdf. Accessed: November 14, 2012

B.C. Ministry of Environment. 2012. Develop with Care 2012: Environmental Best Management Practices for Urban and Rural Land Development in British Columbia. Available at: http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare2012/index.html. Accessed: December 14, 2012.

B.C. Ministry of Forests, Lands and Natural Resource Operations, Land Tenures Branch. 2012. Fossil Management in British Columbia. Victoria, B.C. Available at: http://www.for.gov.bc.ca/Land_Tenures/fossil_management/index.html. Accessed: December 5, 2012.

B.C. Ministry of Transportation. 2001. Traffic Management Guidelines For Work On Roadways. Victoria, B.C. Available at: http://www.th.gov.bc.ca/publications/eng_publications/geomet/traffic_mgmt_guidelines.pdf. Accessed: November 14, 2012.

B.C. Ministry of Water, Land and Air Protection and B.C. Ministry of Forests. 2002. A Field Guide to Fuel Handling, Transportation & Storage. Victoria, B.C. Available at: http://www.env.gov.bc.ca/epd/industrial/oil_gas/pdf/fuel_handle_guide.pdf. Accessed: December 5, 2012.

B.C. Ministry of Water, Land and Air Protection. 2004. Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia. Victoria, B.C. Available at: http://www.env.gov.bc.ca/wld/documents/bmp/HerptileBMP_complete.pdf. Accessed: December 14, 2012.

Canadian Construction Association. 2001. A Best Practices Guide to Solid Waste Reduction. Ottawa, ON. Available at: http://www.cca-acc.com/pdfs/en/members-only/cca81.pdf. Accessed: November 14, 2012.

Canadian Council of Ministers of the Environment (CCME). 1994. Environmental Code of Practice for Aboveground Storage Tank Systems Containing Petroleum Products. Ottawa, ON. Available at: http://www.ccme.ca/assets/pdf/pn_1148_e.pdf. Accessed: November 15, 2012.

Canadian Council of Ministers of the Environment (CCME). 1998. Air Quality Guidelines for the Protection of Human Health and the Environment. Ottawa, ON. Available at: http://st-ts.ccme.ca. Accessed: November 14, 2012.

Canadian Council of Ministers of the Environment (CCME). 2012. Water Quality Guidelines for the Protection of Aquatic Life. Ottawa, ON. Available at: http://st-ts.ccme.ca. Accessed: November 14, 2012.

Cheminfo Services Inc. 2005. Best Practices for the Reduction of Air Emissions From Construction and Demolition Activities. Markham, ON. Available at: http://www.bieapfremp.org/Toolbox%20pdfs/EC%20-%20Final%20Code

%20of%20Practice%20-%20Construction%20%20Demolition.pdf. Accessed: November 14, 2012.

Fisheries and Oceans Canada. 1992. Land Development Guidelines for the Protection of Aquatic Habitat. Ottawa, ON. Available at: http://www.dfo-mpo.gc.ca/Library/165353.pdf. Accessed: November 14, 2012.

Fisheries and Oceans Canada, B.C. Ministry of Environment, and B.C. Ministry of Forests, Lands and Natural Resource Operations. 2012. Fish-stream Crossing Guidebook. Victoria, B.C. Available at: http://www.pac.dfo-mpo.gc.ca/habitat/docs/fish_stream_crossing_guidebook_2012.pdf. Accessed: November 14, 2012.

Northeast Invasive Plant Committee. 2011. Plan and Profile. Available at: http://prrd.bc.ca/services/environmental/weed_control/documents/NEIPC2011_Plan_Profile_000.pdf. Accessed: December 14, 2012.

Wright, D.G. and G.E. Hopky. 1998. Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters. Canadian Technical Report of Fisheries and Aquatic Sciences 2107: iv. Available at: http://www.dfo-mpo.gc.ca/Library/232046.pdf. Accessed: November 14, 2012.