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### 3.0 PROJECT PLANS

#### 3.1 Emergency Preparedness Programs

Specific guidelines and procedures have been established for:

- first aid and emergency equipment and services;
- corporate emergency response plans;
- district and facility emergency response plans;
- site-specific drilling and completion emergency response plans;
- site-specific construction emergency response plans;
- camp emergency response plans; and
- aerodrome emergency response plan.

The primary objectives of these programs are to:

- ensure an immediate, competent response and handling of emergencies;
- minimize danger to the public, Devon employees and contractors;
- maintain effective communications with all parties in an emergency; and
- maximize use of the combined resources of internal and external services.

##### 3.1.1 Emergency Response Plans

Devon has adopted a tiered-response system, based on the incident command system as the fundamental response structure for using Project resources and for interfacing with contractors, subcontractors, government agencies and technical specialists that could become involved during incident response. This incident command system can be expanded in an organized and consistent fashion to address individual, site, Project-wide or regional incidents. This approach facilitates the rapid and orderly expansion of resources, should this become necessary during an incident.

Devon has the following five types of emergency response plans (ERPs) that will either include, or be created for, the Project:

- *Corporate Emergency Response Plan* – contains information on Devon Canada's emergency response structure, responder roles, situational response information, program and plan administration, plan maintenance and response guidelines. This plan is approved by the Energy Resources Conservation Board (ERCB);
- *Field or Facility Emergency Response Plan* – includes site-specific operations information for a facility or area. Devon proactively develops plans for all sweet facilities in addition to sour facilities. Sour facility and Canadian *Environmental Protection Act* (CEPA) plans are updated at least annually; and sweet facility plans are updated every three years;

- *Well Drilling and Completion Emergency Response Plan* – is a comprehensive plan in place to protect the public living within a calculated, predetermined emergency planning zone. This plan is specific to only those operations and has a finite timeframe. Once the well is put on production, it is included in Devon's field or facility ERP;
- *Camp Emergency Response Plan* – is specific to the threats and situations for a Devon camp. It contains information that addresses risks specific to a camp environment and ensures worker and occupant protection; and
- *Aerodrome Emergency Response Plan* – is a comprehensive plan designed to address aerodrome-specific events and needs.

All of Devon's emergency response regulated plans are prepared to comply with ERCB Directive 071: *Emergency Preparedness and Response Requirements for the Petroleum Industry*, CSA Z1600 and Environment Canada's Canadian *Environmental Protection Act* (CEPA) Environmental Emergency Regulations. These regulations and guidelines provide guidance for public protection measures, including resident notification, evacuation and sheltering. Correspondingly, Devon outlines criteria for these items within all facility ERPs. Emergency response procedures are outlined in a facility-specific ERP.

Devon will submit a Field and Facility Emergency Response Plan for the Project to the ERCB and Lac La Biche County. The plan will be finalized for the Project one month before commissioning production operations. One month before any products exceeding the threshold quantities as defined in the CEPA Environmental Emergency Regulations are brought to site, the Project site will be added to the Devon divisional CEPA submission and an amendment will be sent to Environment Canada.

### **3.1.2 Local Residents**

The nature of an incident will dictate how local residents are contacted and the type of information communicated to them if an emergency occurs. The level of communication with all stakeholders will escalate as an incident escalates. Accordingly, specific media, public and community liaison personnel are identified and become involved in a response, if required. These individuals would be responsible for communicating with residents.

The type of information provided depends on the type of incident, the potential hazards presented by the incident, the status of the incident and the effect the incident may potentially have on residents. The manner of communication and contact with residents during an incident also depends on the nature of the incident, but could include telephone calls, direct visits to a residence, notice through the local public media (e.g., radio, newspaper) or a combination of these methods.

### **3.1.3 Construction Operations**

Recognizing that emergency preparedness must address construction operations, Devon will develop a site-specific emergency response plan for Project construction before initiating construction activities.

The Construction Emergency Response Plan will include the following:

- the common response structure;
- responder roles;
- emergency classification and notification procedures;
- media response guidelines;
- ERP administration;
- government roles;
- site-specific information;
- emergency classification and notification;
- first aid and medevac information; and
- emergency response actions for such events as fire, spills, power outages, mass casualties and evacuation.

This ERP will be reviewed, modified and updated annually.

### **3.1.4 Mutual Aid**

Along with Cenovus, StatOil, Nexen, MEG and the Leismer Aerodrome, Devon participates in the Mutual Emergency Assistance Agreement for the Southern Athabasca Oil Sands Area. Devon has been involved in this initiative since its inception, and the participants meet regularly to ensure that emergency assistance functions properly and that participants collaborate in emergencies and emergency planning. Participants confirm each organization's emergency response capabilities and the resources available to the member companies during a mutual-aid event to ensure appropriate response coverage and aid.

## **3.2 Fire Control Planning**

Devon has adopted a two-phased approach to fire control planning to enhance Devon's emergency response planning related to wildfires. Phase 1 addresses Devon's wildfire protection needs through a proactive standardized FireSmart process based on wildfire prevention best practices for industry. Phase 1 has been completed and includes a summary of landscape-scale wildfire management trends, FireSmart goals and objectives, a detailed wildfire threat assessment evaluation for the Pike mineral lease, and wildfire prevention compliance components. For details, see [Volume 1, Attachment A](#).

Phase 2 will identify site-specific FireSmart mitigation strategies for the individual facilities that will be developed within the Pike mineral lease, including, but not limited to, Project development. Phase 2 includes wildfire preparedness implementation strategies highlighting:

- measures taken to ensure continued access for firefighters to adjacent wildland areas;
- forest fire prevention, detection, reporting and suppression measures, including proposed fire equipment;
- measures for determining the clearing width of powerline rights-of-way (ROW); and
- required mitigation measures for areas adjacent to the infrastructure development based on the FireSmart wildfire assessment system.

Phase 2 mitigation strategies will be developed on a facility-by-facility basis along with surface disposition planning as part of ongoing Project planning. The mitigations strategies will be implemented during construction operations. Developing mitigation strategies in this manner will allow fire control and wildfire management to be a continual element of Project planning.

As part of Phase 2 wildfire preparedness planning, Devon will ensure that powerline ROW are assessed through the Powerline Hazard Assessment Plan as available through the Alberta wildfire system. The purpose of assessing powerline ROW is to determine the potential for trees to strike the line and the potential for fuses on poles to fail and ignite fine fuels on the ground. Field data will be gathered and an assessment made to determine the health of the trees within the striking distance, and identify those that are dead, damaged or in poor health and have the highest potential to strike the line. These trees, referred to as danger trees, would be flagged for removal.

To comply with the *Forest and Prairie Protection Act*, each year Devon files industrial wildfire control plans for facilities that are located within 1 km of public land. The Project industrial wildfire control plans will be developed and submitted according to the Alberta Sustainable Resources Alberta Sustainable Resource Development guidelines. This includes ensuring required fire suppression equipment is available during the specified periods as per the *Forest and Prairie Protection Act*.

Devon is also participating in a regional fire-prevention task group with other area operators and the Alberta Sustainable Resource Development. This task group's focus is to find ways to educate workers in the area on the impacts of human-caused wildfires and how to prevent them.

### **3.3 Regional Infrastructure Agreements**

#### **3.3.1 Traffic and Transportation**

For the Project, Sunday Creek Road and Kirby Road will be the main access corridor for all Pike development and operations. Sunday Creek Road provides access from Highway 881 to Kirby Road, and Kirby Road provides access to the Project. In addition, Kirby Road provides access to Kirby Aerodrome, which will be used for transporting workers for Devon's Pike 1 Project (the

Project) and Jackfish operations, as well as third parties that operate in the area and use the aerodrome. Third-party usage agreements are in place between Devon and third parties such as Cenovus, Harvest, MEG and CNRL for Sunday Creek Road, Kirby Road and Kirby Aerodrome.

### **3.3.2 Product Transportation**

Oil product (dilbit) shipping will use the planned 1 067 mm (42 inch) Access Pipeline from the Project to the Access Pipeline trim-blending facilities located near Redwater, Alberta. Diluent will be supplied by an existing 609.6 mm (24 inch) Access Pipeline. Access Pipeline is a joint venture between Devon and MEG Energy to ship oil product and supply diluent in the area.

### **3.4 Environmental Monitoring**

The foundation for Devon's Pike 1 environmental management programs will be the baseline environmental data collected during the environmental impact assessment for the Project and Devon's ongoing programs within its Jackfish operations immediately to the north of the Project. External monitoring and reporting requirements for the *Environmental Protection and Enhancement Act* (EPEA) approval, as well as internal reporting and performance evaluation requirements, will be the basis for developing formal programs that encompass all environmental disciplines. The adaptive management system to be applied at Project means data gathering, analysis and change are ongoing to ensure continuous improvement of Devon's environmental performance. The programs highlighted in this application will be applied to the Project.

Devon anticipates that the environmental management programs in place for Devon's Jackfish projects, which continue to evolve, will be expanded or replicated to include the Project. These programs include:

- *air quality* – emissions monitoring, energy management and human health;
- *water quality* – surface water quality, hydrology, groundwater and aquatics;
- *terrestrial systems* – footprint, vegetation, soils, reclamation, wildlife and historical resources;
- community involvement with environmental survey programs;
- *spill management* – controls, response and contingency planning;
- audits, inspections and reporting; and
- involvement in regional sustainable development initiatives.

The primary objectives of these programs will be to:

- ensure compliance with corporate requirements;
- ensure compliance with regulatory requirements;
- monitor performance and understand Project impacts;

- mitigate impacts and implement improvements;
- ensure that all incidents are reported and appropriately responded to;
- involve community members in the Project; and
- reduce the potential for cumulative effects.

### **3.4.1 Air Quality**

#### **3.4.1.1 Air Emissions Management Planning**

Devon strives for continuous improvement in air emissions management by developing corporate policies and strategies to address this important component of energy management. The public at large, corporate stakeholders, industry peers and regulators now look to upstream oil and gas companies to reach beyond complying with regulations by implementing systems that demonstrate effective emissions management and energy conservation.

To this end, Devon has developed and implemented a corporate policy on managing energy and emissions. This policy mandates that Devon will:

- maintain an inventory of emissions and energy consumption;
- develop an energy management plan, including measurable goals and targets;
- review and adopt new technology;
- support and participate in industry and government initiatives;
- design and operate facilities that have low emissions and energy consumption;
- conduct energy audits to identify opportunities;
- provide training to staff and encourage employees to share ideas; and
- report on successes and trends.

Devon is an active member of government, industry and volunteer programs aimed at improving corporate performance in many areas of environmental management, including air emissions.

Devon will monitor both direct emissions from specific equipment and ambient levels of certain parameters. Air quality measurements will be reported to Alberta Environment and Water (AEW) on a monthly and annual basis or as required in approvals for the Project and current regulation.

Devon's Management of Energy and Emissions Policy ensures that air emissions measurement and monitoring systems are in place. The policy ensures that emission trends are evaluated against operating limits, anomalies are identified, and corrective measures are identified and implemented, if required.

### 3.4.1.2 Specific Project Emissions Monitoring Programs

Devon anticipates that monitoring programs similar to those identified in [Table 3.4-1](#) will be required under the facility approval for Project. Air monitoring programs will be conducted according to AEW's Air Monitoring Directive and the Alberta Stack Sampling Code.

**Table 3.4-1: Air-Emissions Monitoring Programs**

Program	Details
Source Monitoring	<ul style="list-style-type: none"> <li>• Volumetric estimates or measurements of the combined flowrate for produced gas and fuel gas to the flare stack and steam generators.</li> <li>• Monthly and annual calculations on the sulphur dioxide emissions from both the flare stack and the steam generator stacks.</li> <li>• Completion of regular testing (gas analysis) for hydrogen sulphide, total hydrocarbons and lower heating value of the produced gas at the central processing facility (CPF).</li> <li>• Completion of manual stack surveys (NO<sub>x</sub>/NO<sub>2</sub>) once within six months of commissioning of the steam generators and annually on one of the steam generators.</li> <li>• Implementation of a fugitive emissions control program to detect, and control emissions and odours from equipment leaks – following the CCME Code of Practice for Measurement and Control of Fugitive VOC Emissions from Equipment Leaks.</li> </ul>
Ambient Monitoring	<ul style="list-style-type: none"> <li>• Passive monitoring will be conducted for sulphur dioxide and hydrogen sulphide using passive exposure monitoring stations as per the Air Monitoring Directive.</li> <li>• Cooperation and data sharing for one ambient air quality monitoring station in the area of the proposed Jackfish 3 Project.</li> </ul>

### 3.4.1.3 NPRI Reporting

It is anticipated that the Project will be required to report to the National Pollutant Release Inventory (NPRI). Reportable substances under the NPRI will primarily include substances released from liquid hydrocarbons (including bitumen and diluent) and chemicals such as benzene, toluene, ethylbenzene and xylenes, and other NPRI reportable hydrocarbons; criteria air contaminants as defined by Environment Canada will also be included.

### 3.4.1.4 Fugitive Emissions

Devon has developed a fugitive emissions measurement program for its Jackfish operations that will be applied to the Project. The program requires completing routine emission surveys that:

- quantify total hydrocarbon and greenhouse-gas (GHG) emissions from leaking components, pneumatic vents and process vents;
- determine cost-effective opportunities to reduce emissions; and
- evaluate opportunities for reductions and implement repairs.



### **3.4.1.5 Greenhouse Gas Management Strategy**

In 2009, a GHG strategy was developed specifically for Devon's steam assisted gravity drainage (SAGD) operations to manage and effectively reduce GHG emissions on an intensity basis starting in the year 2011 and continuing throughout the Project. The identified strategy incorporates a staged approach to achieve GHG reductions.

Devon is seeking technology-based solutions for real reductions of GHGs, including the following potential or pilot initiatives:

- steam-oil ratio improvement through potential solvent addition;
- more efficient steam generation, including waste heat recovery; and
- investment in research and development for carbon capture and storage with active participation in projects specifically aimed at reducing GHG emissions from SAGD facilities.

Other measures, such as offsets, will be considered as part of the GHG management strategy for oil sands projects as Devon's corporate energy-conservation and emissions-reduction plan progresses. Devon will comply with federal and provincial regulations.

### **3.4.2 Water Quality**

Devon recognizes the importance of water resources and has developed and implemented a corporate Freshwater Management and Usage Policy. Devon's commitment to responsible water management at the Project includes ensuring that:

- the use of freshwater resources is minimized (e.g., only saline water use for steam generators);
- water quality is maintained within the Project Area;
- Project operations have no negative impacts on downstream users;
- aquatic resources are maintained or enhanced as a result of Devon's operations; and
- a high level of operational control is maintained to prevent spills.

Devon has developed internal programs that contribute to maintaining water quality, and funds external programs, which include:

- surface-water discharge monitoring;
- surface-water quality and hydrology monitoring (wetland monitoring);
- groundwater monitoring;
- aquatics (watercourse crossings); and
- the Regional Aquatics Monitoring Program (RAMP).

### **3.4.2.1 Surface-Water Discharges**

Approval for water discharges will be requested for the CPF and well pads. Discharges will be sampled and monitored according to approval requirements and applicable regulations. Devon anticipates that annual reports summarizing CPF discharges will be required to be submitted to AEW.

### **3.4.2.2 Surface-Water Quality and Hydrology**

Devon has developed a wetland monitoring program for its Jackfish operations that includes water quality and hydrology monitoring of watercourses and waterbodies within the Jackfish project area. Sampling and measurements are made twice a year (spring and fall) and an annual report provided to AEW. Data are compared to the relevant surface-water guidelines and the environmental impact assessment (EIA) baseline. A complementary program is planned for the Project Area.

### **3.4.2.3 Groundwater Quality**

Devon anticipates developing a groundwater monitoring program for the Project according to the EPEA approval requirements. On the basis of other relevant programs, the Project program monitoring will most likely include twice-a-year sampling (spring and fall) from a network of shallow monitoring wells. The function and location of each monitoring well will be approved by AEW, and an annual monitoring report will probably be requested by AEW. Devon will build the Project groundwater monitoring program using its experience with groundwater monitoring, the existing groundwater monitoring program for Jackfish, and the current regulatory requirements.

### **3.4.3 Aquatics**

Devon's planned program for managing aquatic systems for the Project includes the surface-water-quality monitoring program, fish and fish habitat assessments, and watercourse crossing plans for watercourse crossings (roads and pipelines) constructed for each successive stage of development. These assessments will be completed by qualified aquatic environmental specialists and will be designed to address the requirements of:

- Fisheries and Oceans Canada, *Fisheries Act*, and
- Alberta Environment, Code of Practice for Watercourse Crossings (2000).

Protective measures and enhancements will be implemented during crossing construction. Devon will follow the Measures to Protect Fish and Fish Habitat found within the Department of Fisheries and Oceans Operational Statements.

In addition to monitoring water quality within the Project Area and constructing crossings to reduce potential impacts, Devon has become a member of RAMP. Devon will work with other insitu operators in the Christina Lake area to make RAMP's aquatic monitoring programs more relevant to Devon operations and local community stakeholders.

### **3.4.4 Terrestrial Systems**

Management of terrestrial systems was initiated during Project planning and will continue through operations and final reclamation of the Project.

Devon's program for managing terrestrial systems for the Project will likely address the following components similar to those addressed for Devon's Jackfish operations:

- Project footprint (planning soil disturbance and clearing);
- vegetation;
- soils;
- reclamation;
- wildlife; and
- historical and cultural resources.

#### **3.4.4.1 Project Footprint**

Disturbance (soils and vegetation) associated with the Project footprint will be reported to AEW through the anticipated EPEA approval requirement for submission of a conservation and reclamation report. Every Pike 1 construction project will be planned to reduce potential impacts to terrestrial ecosystems and minimize the Project's footprint by implementing the following steps:

- *Cumulative Constraints Planning* – Devon has created a cumulative environmental constraints map for the Project's terrestrial local study area. This map will be continuously updated and will be used to effectively locate disturbance and avoid areas of constraint ([Volume 2, Section 3.4](#));
- *Site Design* – sites will be designed to be as small as possible while providing the space required for construction work and subsequent production operations (ERCB and Occupational Health and Safety spacing requirements); and
- *Use of Existing Disturbances* – new sites will be situated to use existing disturbances as much as is possible.

#### **3.4.4.2 Vegetation and Soils**

When disturbance is required, a predisturbance assessment (PDA) will be used to manage potential impacts associated with construction. Devon's management process for PDAs is as follows:

- identify site-specific conditions, after soil and vegetation surveys are completed;
- develop mitigation measures, including a soil salvage plan and a rare plant mitigation procedure;
- monitor the Project;

- in the construction phase, have a soil monitor (third-party soils scientist) onsite during soil salvage;
- post-construction, ensure the monitoring identified in the PDA is completed; and
- modify new Project plans and operations based on the results of the monitoring.

### **3.4.5 Wildlife Management**

Environmental stewardship is evident in the comprehensive wildlife-related programs and plans Devon has developed for the Jackfish district, as well as those used in completing the Project EIA. These programs and plans include:

- wildlife monitoring;
- wildlife mitigation;
- wildlife enhancement;
- biodiversity monitoring; and
- regional monitoring.

#### **3.4.5.1 Wildlife Monitoring**

Wildlife monitoring activities were initiated adjacent to the Pike lands in 2002. These monitoring activities are ongoing and have been expanded to include the Project Area. The resulting data now comprise one of the most comprehensive wildlife monitoring data sets available for the insitu recovery area of northeastern Alberta. Devon's Jackfish area wildlife monitoring, which has been expanded to include the Project Area, specifically addresses the following:

- wildlife habitat use and responses to exploration activity;
- wildlife responses to existing aboveground pipelines;
- wildlife use of aboveground pipeline crossing structures, once constructed and placed;
- waterfowl use of process ponds, including evaluating effectiveness of mitigations; and
- amphibian mortality on Project roads.

#### **3.4.5.2 Wildlife Mitigation**

Devon will expand the existing Jackfish Wildlife Mitigation Plan to include the Project. This plan addresses mitigation strategies aimed at:

- facilitating wildlife movement across aboveground pipelines; and
- deterring water bird use of process ponds.

Many mitigation measures, such as avoidance of old-growth forests and environmentally sensitive areas, where possible, were implemented at the Project design and planning stage for the Project using cumulative constraints mapping.

### **3.4.5.3 Wildlife Enhancement**

The objective of wildlife habitat enhancement strategies is to enhance reclaimed areas and undisturbed habitats to facilitate habitat use and movement. Devon will try various enhancement techniques. The techniques that prove successful will be used for reclamation activities.

### **3.4.6 Historical and Cultural Resources**

Devon uses an adaptive management strategy (AMS) to manage historical and cultural resources. The AMS incorporates the use of a historical resources potential model that is reevaluated and updated throughout the life of the Project. The AMS provides the opportunity to monitor changes over time and address cumulative effects.

The historical resources potential model for the AMS is developed using information regarding known historic resources, existing surface disturbances, aerial photographs, topographic maps, digital elevation models and available environmental data, including thematic maps of vegetation data and moisture regimes. Devon will use the historical resources potential model for the Project Area as an ongoing Project planning tool in the cumulative constraints planning process.

### **3.4.7 Community Involvement in Environmental Survey Programs**

Involving local community members in projects helps to build capacity and develop positive working relationships. Local community members, Métis and First Nations people have been involved in the data-gathering processes for the Project EIA, as well as the environmental-monitoring components of Devon's Jackfish operations.

Local community members participate annually on the winter track counts conducted for the wildlife monitoring program throughout the Devon Jackfish and Pike lands. Community participants are also an essential component of the PDA vegetation surveys. The value added by community members in terms of local environmental knowledge is important to the success of the terrestrial monitoring program, and Devon will continue its efforts to have local community members participate.

Devon has conducted numerous historical resources studies in the Project Area. The approach has been to bridge the traditional-use component with historical resources such that First Nations and Aboriginal community members and Elders have been part of these combined Project studies. Consultation meetings, interviews and fieldwork (field observations and assessments) are completed to support the studies, and local community members provide invaluable insights to the overall process. These programs will continue to be applied and expanded as the Project moves forward.

Devon will continue to involve local community members in environmental management and monitoring projects. Devon will work with community organizations to seek community participants, and is always open to discussing the company's environmental performance with the community.

### **3.5 Regional and Multistakeholder Environmental Management Initiatives**

Devon is committed to improving environmental performance through adaptive management, a commitment that means being informed of, and involved with, various organizations and initiatives created for this purpose. Devon's involvement and sponsorship is focused on initiatives relevant to Devon's position as an insitu SAGD operator in the Conklin area. This section outlines how Devon is involved in regional and multistakeholder management programs.

#### **3.5.1 Cumulative Effects Management Association**

The Cumulative Effects Management Association (CEMA) develops management frameworks to ensure the potential environmental impacts of oil sands development are effectively managed. Devon is a CEMA member and involved in various working groups. Devon's level of involvement in these working groups is determined by the relevancy of the working group to insitu oil sands operations. CEMA involvement is evaluated annually.

##### **3.5.1.1 Land Working Group**

Devon is actively involved in CEMA working groups that address the terrestrial environment because these working groups have included a focus on insitu issues in addition to mining. The land working group (LWG) replaced the former sustainable ecosystems working group on which Devon had been a leading member for the previous five years. The newly formed LWG addresses land and biodiversity issues by developing tools and products, and by making recommendations. The LWG has a number of objectives, but its primary mandate is to provide input on the biodiversity and land-based components of the Lower Athabasca Regional Plan (LARP); this includes the Land Disturbance Plan and the Biodiversity Management Framework, both of which are referenced in the LARP as important contributors to caribou conservation in the region.

##### **3.5.1.2 Air Working Group**

Devon is a member of the air working group (AWG), which was formed with the merging of the NO<sub>x</sub> and SO<sub>x</sub> and trace metals working groups, both of which had largely completed their mandates. The current undertakings of the AWG are spread over six task groups with varying relevancy for Devon. Although the primary focus of CEMA and the AWG is related to impacts from oil sands mining and upgrading, Devon supports the work of the AWG and participates and engages with the AWG on issues that are pertinent to Devon's operations and Devon's stakeholders.

##### **3.5.1.3 Groundwater Working Group**

Devon participates in the CEMA groundwater working group (GWWG) initiated in 2011. The GWWG has a number of objectives, but its primary mandate is to address aspects of groundwater related to the insitu and mining industry through research and communication/education initiatives. The current focus of the GWWG is to better understand the potential for interaction of groundwater to surface water in the LARP region and how industrial

activities might affect this potential. Other initiatives have included developing a plain language document for groundwater, identifying best practice guidance for water-well sampling, and reviewing current and planned research initiatives related to groundwater in the region.

#### **3.5.1.4 CEMA Traditional Knowledge**

Aboriginal participation is an essential element for an oil sands, multistakeholder organization. Devon encourages the involvement of Aboriginal communities in CEMA. The CEMA traditional ecological knowledge (TEK) standing committee guides the efforts of the other CEMA working groups to integrate and use traditional knowledge in their undertakings. A Devon representative participates in TEK Elders' workshops and TEK coaching workshops, and in developing TEK guidelines for use by Aboriginal communities involved in CEMA.

### **3.5.2 Terrestrial Environment**

#### **3.5.2.1 Provincial Biodiversity Monitoring**

The Alberta Biodiversity Monitoring Institute (ABMI) was initiated in the late 1990s as a partnership between Alberta industries, governments and research institutes. The program was designed to measure and report on the status and temporal changes in species, habitats and land use in Alberta at the provincial and regional scales. Devon recognizes the importance of the ABMI as an arms-length entity (from both government and industry) that is dedicated to monitoring changes in Alberta's biodiversity. The ABMI is designed to be scientifically credible and transparent. As a testament to the company's recognition of ABMI, Devon has been a funding partner since 2007, and expects to continue in a funding role. By supporting the ABMI, Devon is meeting its obligations to monitor biodiversity (and any associated changes to it) on a provincial scale.

#### **3.5.2.2 Regional Wildlife and Biodiversity Monitoring**

In 2009, the Government of Alberta initiated discussions with industry to develop a framework for regional terrestrial and biodiversity monitoring in the oil sands. A regional terrestrial monitoring joint working group (JWG) was struck to develop a terms of reference, governance structure and workplan. The goal of this JWG was to improve the quality of monitoring done to fulfill clauses in EPEA approvals for oil sands developments, and to move beyond the current focus on individual developments to a more integrated regional monitoring program. The JWG evolved to its current format in 2010, as the joint industry-government Ecological Monitoring Committee for the Lower Athabasca (EMCLA). EMCLA currently addresses three primary areas: caribou movement, rare plants, and rare animals (owls, amphibians and yellow rails); these areas are not adequately addressed at the provincial scale of the ABMI. Devon is an active representative on the EMCLA, as well as on the committee's project teams.

### **3.5.2.3 Woodland Caribou**

Devon is leading a multioperator and multiyear research project to increase its understanding of caribou reproduction, habitat use, mortality, and predator and prey relationships in the region surrounding the Project. This information will be used to influence the planning and design of Project components (e.g., Project location, aboveground pipelines), seasonal timing of activities, reclamation of Project features, and implementation of specific mitigations.

The research program initiated by Devon will engage other operators in the region, the Government of Alberta, the University of Alberta, and local Aboriginal communities in the program. It is expected that this research program will feed directly into a range-specific action plan, which is required to be developed (or adopted) by the Government of Alberta as part of a provincial response to the federal Recovery Strategy for Boreal Woodland Caribou.

### **3.5.3 Air Quality – Wood Buffalo Environmental Association**

The Wood Buffalo Environmental Association (WBEA) monitors air quality and air quality-related environmental impacts to generate accurate and transparent information that enables stakeholders such as Devon to make more informed decisions. WBEA has three key mandates: ambient air quality monitoring, terrestrial effects monitoring, and human exposure monitoring.

Devon is an active member of WBEA and participates on several committees related to ambient monitoring, strategic planning and monitoring network expansion. Devon also has a representative who provides guidance as a member of the WBEA governance committee. Although WBEA's formation and history are strongly rooted in the minable oil sands area north of Fort McMurray, WBEA's monitoring network is spreading to cover all areas of the WBEA airshed, including the Project Area, through the activities and advocacy of stakeholders like Devon. Recent monitoring in the South Athabasca Oil Sands region includes multiple ambient air monitoring campaigns at the communities of Janvier and Conklin and compliance monitoring of one insitu oil sands operator.

With the implementation of the joint federal/provincial monitoring plan, changes are expected regarding how, where and by whom environmental monitoring is to be conducted in the oil sands area. Despite the changes, WBEA's role as the authority on air and terrestrial monitoring in the region will be unchanged. Devon will continue to support WBEA's science-based, practical and reputable methods.

### **3.5.4 Water Management**

#### **3.5.4.1 Regional Aquatics Monitoring Program**

Devon, a member of RAMP, has been working with other insitu operators in the Christina Lake area since 2008 to make RAMP's aquatic monitoring programs more relevant to Devon operations and community stakeholders. Although changes to the monitoring network were on hold during the federal and provincial oil sands monitoring reviews, plans are in place for 2012 to establish a climate station and monitoring sites relevant to Devon's Jackfish and Pike projects that could potentially affect Christina Lake drainages.



The current RAMP mandate is to address monitoring within the Regional Municipality of Wood Buffalo (RMWB). Changes to the boundaries effective in 2012 mean that Devon's Jackfish and Pike projects are no longer within the boundary of the RMWB. In addition, watercourses for the Project do not contribute to the Athabasca River watershed. However, Devon will continue to work through RAMP to best determine how regional impacts associated with the Project can be addressed through RAMP. Devon currently maintains Project-specific hydrology and water quality monitoring programs for watercourses potentially affected by the Project.

#### **3.5.4.2 Regional Groundwater Monitoring for the Athabasca Oil Sands**

The Athabasca Oil Sands Region is subdivided into three distinct groundwater management areas. The South Athabasca Oil Sands management area is relevant to Devon's Pike development, and Devon is actively engaged in developing a comprehensive regional groundwater monitoring network in this area. Devon is currently a member of the technical committees for the South Athabasca Oil Sands.

Devon has also worked collaboratively with other local oil sands operators in the Christina Lake area (subregional level) to ensure appropriate management is in place to maintain the integrity of groundwater systems. Devon initially developed the Christina Lake regional water model, which has been expanded to assess the Project. Devon, Cenovus and MEG Energy are partners in this detailed model.

#### **3.5.5 Ducks Unlimited**

In 2009, Devon entered into a formal long-term partnership with Ducks Unlimited to assist Project planning in wetland areas with the goal of minimizing impacts to habitat and waterfowl. Through this partnership, Devon and Ducks Unlimited are working together to gain a deeper understanding of wetlands, and develop knowledge and products that will help guide land-use decisions and enhance environmental and operational performance around wetlands. One of the important Ducks Unlimited products that Devon is using is a recently completed enhanced wetland inventory of the northern boreal forest, including the oil sands region. The wetland inventory project is part of Ducks Unlimited's Western Boreal Program, and classifies the landscape based on a suite of key boreal wetland characteristics, including type of wetland, distribution, inferred knowledge on hydrology, soil moisture and waterfowl productivity.

Devon also partners with Ducks Unlimited on specific conservation initiatives that are less regional in scope, but more local in their effect on the communities where Devon operates. In 2011 Devon initiated two projects in the Cold Lake-Bonnyville area that will contribute to sustaining wetlands and waterfowl populations in these areas. The two projects address the maintenance of 472 acres of highly productive wetland habitat.

Going beyond science and conservation, Devon and Ducks Unlimited are involved in Project Webfoot, a grassroots habitat program targeted at educating youth. In recent years, this program has been active within the communities potentially affected by Devon's oil sands projects.

### **3.5.6 Alberta Water for Life Strategy**

Water management is a key focus at Devon. In 2005, the company was awarded the Canadian Association of Petroleum Producers (CAPP) President's Award for Stewardship for its overall approach to the issue. Senior company representatives have been highly engaged in the development of Alberta's Water for Life strategy and many internal steps, such as developing a water management policy, tracking water usage and making operational changes, have also been implemented.

### **3.5.7 OSDG and CAPP**

Devon stays informed about regional issues affecting industry by being actively involved with industry organizations such as CAPP and the Oil Sands Development Group (OSDG). OSDG is an oil sands industry association that facilitates solutions to shared development issues related to the Alberta Athabasca Oil Sands, including the environment. Devon sits on the OSDG board of directors and is a member on a number of OSDG committees, including the environment committee. Devon also participates in a number of committees, taskforces and working groups within CAPP where they are relevant to the insitu industry.

### **3.5.8 Responsible Canadian Energy**

Devon understands that the respect and confidence of stakeholders must be earned. Through the demonstration of Devon's core values, people and the environment in the areas in which Devon operates are promoted. One way of putting these values into action is participating in the CAPP Responsible Canadian Energy Program. This program is the evolution of CAPP's long-standing Stewardship Program. Participation in this program involves monitoring and reporting on an expanded list of key performance measures related to safety and environmental stewardship.

### **3.5.9 Canada's Oil Sands Innovation Alliance**

Devon has recently become a part of the Canadian Oil Sands Innovation Alliance (COSIA). COSIA is a new, regional, environmental performance organization that has been created to encourage a greater focus on environmental outcomes by combining knowledge and information from existing industry organizations. It will amalgamate the work of the Canadian Oil Sands Network for Research and Development, the Oil Sands Leadership Initiative, the Oil Sands Tailings Consortium and elements of the Petroleum Technology Association of Canada into a single innovative entity to improve environmental performance across the oil sands industry.

Working individually, oil sands companies have been making great environmental progress. COSIA will accelerate the pace of environmental technology innovation through collaboration, and thus enable a significant shift in environmental performance. COSIA will capture and implement collaborative, cutting-edge thinking to address environmental challenges faced by all industry participants. This includes breaking down barriers, such as intellectual property, human resources and funding, that would otherwise impede improvements in environmental performance.

From a technical perspective, COSIA is structured into four environmental priority areas (EPAs) of tailings, land, water and GHG emissions, each of which has its own steering committee developing specific work scopes. Devon is actively involved on the steering committees of the land, water and GHG EPAs. The land EPA has identified opportunity areas relevant to Devon's activities that include:

- wildlife;
- vegetation;
- fisheries and aquatics;
- soils and terrain;
- ecosystem structure and function;
- landscape planning;
- avoidance or mitigation of habitat alteration, fragmentation, connectivity, toxicity; and
- planning tools for conservation offsets.

Areas relevant to Devon's activities for the GHG EPA are:

- projects that achieve direct GHG emission reductions, such as:
  - ♦ carbon capture and storage;
  - ♦ solvent SAGD to reduce SOR;
  - ♦ low-grade waste heat recovery for power generation;
  - ♦ heat integration and improved boiler efficiency;
- projects that achieve indirect GHG emission reductions, such as:
  - ♦ renewable energy generation; and
  - ♦ cogeneration.

Devon is one of 12 companies that is signatory to COSIA. The information generated through COSIA and other multistakeholder initiatives will be an important element in Devon's adaptive management approach to oil sands development and improving environmental performance.