FINAL TERMS OF REFERENCE
ENVIRONMENTAL IMPACT ASSESSMENT REPORT

FOR THE PROPOSED

SYNCRUDE CANADA LTD.
SOUTH WEST SAND STORAGE CONVERSION PROJECT

Approximately 40 km north of Fort McMurray, Alberta

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TABLE OF CONTENTS

1 INTRODUCTION ........................................................................................................................... 3
  1.1 BACKGROUND ........................................................................................................................ 3
  1.2 SCOPE ..................................................................................................................................... 3

2 PROJECT DESCRIPTION .............................................................................................................. 4
  2.1 THE PROPOONENT .................................................................................................................... 4
  2.2 THE PROJECT ........................................................................................................................... 4
  2.3 EVALUATION OF ALTERNATIVES ..................................................................................... 5
  2.4 CONSERVATION AND RECLAMATION .............................................................................. 5
  2.5 ENVIRONMENTAL MANAGEMENT SYSTEMS ..................................................................... 5

3 ENVIRONMENTAL ASSESSMENT ............................................................................................... 6
  3.1 MODELLING ............................................................................................................................ 6
  3.2 POTENTIAL IMPACTS ............................................................................................................... 6
  3.3 MITIGATION ............................................................................................................................. 7
  3.4 MONITORING .......................................................................................................................... 7

4 PUBLIC ENGAGEMENT AND ABORIGINAL CONSULTATION ........................................... 7

5 TRADITIONAL ECOLOGICAL KNOWLEDGE AND LAND USE ........................................... 7

6 HISTORIC RESOURCES ............................................................................................................. 7

7 PUBLIC HEALTH AND SAFETY ASSESSMENT ..................................................................... 8

8 SOCIO-ECONOMIC ASSESSMENT ............................................................................................... 9
1 INTRODUCTION

1.1 BACKGROUND
Syncrude will prepare and submit an Environmental Impact Assessment (EIA) report to explain the environmental effects of the construction, operation, decommissioning and reclamation of the proposed South West Sand Storage Conversion (the Project).

The Project is the conversion of the South West Sand Storage (SWSS) facility to an active tailings pond to permit interim storage of increased volumes of Mature Fine Tailings (MFT). The SWSS facility is located in the southwest corner of the Mildred Lake facility, bordered by the AOSTRA road on the south and southwest, with the MacKay River to the west of the facility. The SWSS facility was commissioned in 1993 with three coarse tailings systems and a fluid return system. The facility was designed to provide coarse tailings sand storage, returning water and thin fine tailings to other sites within the Mildred Lake facility.

An interim increase in containment capacity will be required in 2009 to contain mature fine tailings until in-pit tailings storage space becomes available in the North Mine in 2014. Syncrude proposes to utilize the SWSS facility to contain these interim mature fine tailings volumes. Changes to the design of the SWSS facility will be required to increase the fluid storage capacity of this facility.

Current approvals for the SWSS facility include the construction of the upstream dyke to a final crest elevation of 400 metres above sea level (masl), maintaining internal fluid levels at or below 385 masl. The redesign of the facility does not change the maximum dyke crest elevation but requires a design change from upstream to centerline dyke construction, extension of the dyke, and elevated fluid levels to attain the increase in containment capacity.

As fluid storage space becomes available in the North Mine, MFT transfer from the SWSS to in-pit tailings facilities will begin. Subsequent to the removal of fluids, the SWSS will be capped and reclaimed as a dry sand storage facility.

The purpose of this document is to identify for Syncrude and appropriate stakeholders the information required by government agencies for an Environmental Impact Assessment report prepared under the Environmental Protection and Enhancement Act (EPEA).

1.2 SCOPE

[A] Syncrude will prepare and submit an EIA report that examines the environmental and socio-economic effects of converting the existing approved SWSS area to allow interim storage of increased volumes of MFT.

[B] The Study Area for the EIA shall include the Project Area, as well as, the spatial and temporal limits of individual environmental components outside the Project Area boundaries where an effect can be reasonably expected. The Study Area includes both the Local Study Area and Regional Study Area.

[C] The EIA report shall be prepared with consideration to all applicable provincial legislation, codes of practice, guidelines, standards and directives. Syncrude must identify the legislation, policies, approvals and current multi-stakeholder planning initiatives applicable to the review of this Project.

[D] The EIA report shall be prepared in accordance with these Terms of Reference and the environmental information requirements prescribed under EPEA and associated regulations. The EIA report will form part of Syncrude’s application to the Energy Resources Conservation Board (ERCB). An EIA report summary will also be included as part of the ERCB Application.
The EIA report will include a glossary of terms and a list of abbreviations to assist the reader in understanding the material presented. It will also include concordance tables that cross-reference the report to the sub-section level of the EIA Terms of Reference.

2 PROJECT DESCRIPTION

2.1 THE PROPONENT

[A] Provide:
   a) a corporate profile; and
   b) the name of the legal entity that will develop, manage and operate the Project and hold the operating approvals.

[B] Describe Syncrude’s history in Alberta’s oil sands industry, with specific reference to development of the Mildred Lake site.

2.2 THE PROJECT

[A] Describe the current status of the SWSS, including:
   a) purpose of the SWSS;
   b) location, size (areal extent), and design (elevations, slopes and fluid levels);
   c) compliance with dam safety regulations;
   d) construction and operations history;
   e) source and type of construction materials, including pond lining materials;
   f) solid and liquid materials balance for inflows and outflows, including a description of the sources and disposal areas of the inflows and outflows, respectively;
   g) expected timeframes for operation, decommissioning and reclamation;
   h) source and type of soil and vegetation reclamation materials;
   i) planned reclamation outcomes (land use, capability, wildlife habitat);
   j) air, water and terrestrial monitoring programs; and
   k) wildlife deterrent programs.

[B] Describe the construction, operation, decommissioning and reclamation of the modified SWSS, including:
   a) purpose of SWSS;
   b) location, size (areal extent), and design (elevations, slopes and fluid levels);
   c) compliance with dam safety regulations;
   d) source and type of construction materials, including pond lining materials;
   e) volume of water that will be required;
   f) volume and type of waste that will be generated;
   g) solid and liquid materials balance for inflows and outflows, including a description of the sources and disposal areas of the inflows and outflows, respectively;
   h) expected timeframes for construction, operation, decommissioning and reclamation;
   i) volume, temporal and spatial changes to tailings management systems, timelines associated with interim storage of MFT and impacts to predicted reclamation scenarios;
   j) air, water and terrestrial monitoring programs; and
   k) Syncrude’s Waterfowl Protection Plan for the tailings pond. Include information on past monitoring efforts, studies of effectiveness of bird deterrent systems, what systems Syncrude plans to have in place for bird deterrents, how Syncrude plans to monitor the effectiveness of the Waterfowl Protection Plan and how results of this monitoring will be communicated to stakeholders.
[C] Discuss Syncrude’s tailings management system in the context of the project, and describe:
   a) the characteristics of Syncrude’s tailings including, but not limited to, quantity, quality, physical characteristics, generation and storage requirements, air and water discharges, toxicity, water and energy requirements, chemical and hydrocarbon waste streams and effects on reclamation programs;
   b) Syncrude’s tailings research program and how the results of the research program have been incorporated into the Project; and
   c) how the Project will comply with the ERCB’s draft tailings management directive (*Tailings Performance Criteria and Requirements for Oil Sands Mining Schemes, June 26, 2008*).

2.3 EVALUATION OF ALTERNATIVES

[A] Discuss the need for the Project addressing:
   a) the suitability of the SWSS site as an active tailings management facility;
   b) any alternative means of carrying out the Project that are technically and economically feasible and where applicable indicate their potential environmental effects and impacts;
   c) the reasons for not selecting any identified alternatives;
   d) contingency plans if the Project does not perform as expected; and
   e) implications resulting from a delay in proceeding with the Project, or any phase of the Project.

[B] Discuss the implications of not going ahead with the Project.

2.4 CONSERVATION AND RECLAMATION

[A] Provide a conceptual conservation and reclamation plan for the Project with consideration to:
   a) pre-development information;
   b) integration of operations, decommissioning, reclamation planning and reclamation activities. Discuss timeframes for completion of reclamation stages and release of lands back to the Crown including an outline of key milestone dates for reclamation and how progress to achieve these targets will be measured;
   c) discuss any constraints to reclamation;
   d) post-development land capability;
   e) a re-vegetation plan;
   f) reclamation material salvage, storage areas and handling procedures;
   g) pre-development and final reclaimed drainage plans;
   h) integrating surface and near-surface drainage within the Project Area; and
   i) promotion of biodiversity.

[B] Provide:
   a) a conceptual ecological land classification (ELC) map for the post-reclamation landscape;
   b) if the reclamation plan includes wetland ecosystems, a discussion of issues related to the design of a self sustaining and productive aquatic ecosystem for a range of end users and uses; and
   c) a discussion of uncertainties related to the conceptual reclamation plan.

2.5 ENVIRONMENTAL MANAGEMENT SYSTEMS

[A] Summarize key elements of Syncrude’s existing or proposed environmental, health and safety management system.

[B] Describe adaptive management plans that minimize the impact of the Project. Describe the flexibility built into the plant design and layout to accommodate future modifications required by any change in environmental standards, limits and guidelines.
[C] Provide a conceptual plan to monitor reclamation performance and success.

[D] Discuss how the results of monitoring programs and publicly available monitoring information will be integrated with the environmental management system for the Project.

3 ENVIRONMENTAL ASSESSMENT

3.1 MODELLING

[A] For each model used in the assessment, provide:
   a) justification for the model used;
   b) documentation of the assumptions used to obtain the modeling predictions; and
   c) a discussion of the limitations of the models used and how these limitations were addressed, including sources of error and relative accuracy.

3.2 POTENTIAL IMPACTS

[A] Summarize expected changes to the Project Area arising from the Project, including:
   a) impact significance in terms of magnitude, extent, duration, frequency and reversibility;
   b) the approved footprint (areal extent, elevations and slopes);
   c) operating life, time of decommissioning and time of reclamation;
   d) reclamation outcomes (land use, capability, wildlife habitat);
   e) surficial aquifers, waterbodies and watercourses immediately adjacent to or downstream from the Project; and
   f) fish and fish habitat.

[B] Summarize expected changes to the area outside the Project Area, including:
   a) expected flows in reclaimed watercourses and waterbodies, including need for new watercourses or waterbodies or removal of planned watercourses or waterbodies;
   b) changes in air emissions (type, rate, source, distribution); and
   c) changes to other parts of the Mildred Lake operation including water balances, sand/fines balances, CT production, water recycling rates (water use efficiency), reclamation material balances and timing and outcomes of reclamation.

[C] Describe the potential environmental impacts arising from the modified SWSS at the Project, local and regional scales, with specific reference to:
   a) air quality;
   b) groundwater quality;
   c) hydrology;
   d) surface water quality;
   e) aquatic ecology (including fish and fish habitat);
   f) vegetation;
   g) wildlife; and
   h) biodiversity.

[D] Describe how the impacts were assessed, including a discussion on how the Local Study Area and Regional Study Area for each impact were determined, and the confidence in the assessments.

[E] Describe potential cumulative impacts to and by other current and planned activities in the region, with particular reference to adjacent activities.
3.3 MITIGATION
[A] Discuss measures planned to mitigate the impacts of construction and operation of the modified SWSS at the Project, local and regional scales.
[B] Describe the residual impacts of the Project and Syncrude’s plans to manage those effects.

3.4 MONITORING
[A] Discuss any changes to existing monitoring programs or additional monitoring programs Syncrude will conduct to evaluate project impacts and mitigation efforts.
[B] Discuss Syncrude’s regional monitoring activities and involvement in regional and cooperative efforts to address environmental and socio-economic issues associated with oil sands development.

4 PUBLIC ENGAGEMENT AND ABORIGINAL CONSULTATION
[A] Document the public engagement program implemented for the Project, including:
   a) description and documentation of concerns and issues expressed by the public, Syncrude’s analysis of those concerns and issues, and the actions taken to address those concerns and issues; and
   b) how public input was incorporated in the Project development, impact mitigation and monitoring.
[B] Document the aboriginal consultation program implemented for the Project, including:
   a) description and documentation of concerns and issues expressed by aboriginal communities and groups, Syncrude’s analysis of those concerns and issues, and the actions taken to address those concerns and issues;
   b) how aboriginal input was incorporated into the Project development, impact mitigation and monitoring; and
   c) consultation undertaken with aboriginal communities and groups with respect to Traditional Ecological Knowledge and traditional use of land.
[C] Describe plans to maintain the public engagement and aboriginal consultation process following completion of the EIA review to ensure that the public and aboriginal peoples have an appropriate forum for expressing their views on the ongoing development, operation and reclamation of the Project.

5 TRADITIONAL ECOLOGICAL KNOWLEDGE AND LAND USE
[A] Describe the extent of traditional use of land in the Local Study Area. Discuss vegetation and wildlife used for traditional, food, ceremonial, medicinal and other purposes, and any potential effects the Project may have.
[B] Identify how Traditional Ecological Knowledge was gathered and incorporated into the assessment.
[C] Determine the impact of the Project on traditional uses and identify possible mitigation strategies.

6 HISTORIC RESOURCES
[A] Summarize existing historic resource issues for the Project.
[B] Assess potential for further historic resource issues for the Project.
[C] Recommend management of historic resource issues for the Project.
Describe consultation with Alberta Culture and Community Spirit concerning historic resource requirements for the Project.

Document any stakeholder concerns with respect to the development of the Project based on the historic significance of the Study Area.

7 PUBLIC HEALTH AND SAFETY ASSESSMENT

[A] Describe those aspects of the Project that may have implications for public health or the delivery of regional health services. Determine whether there may be implications for public health arising from the Project. Specifically, where appropriate:

a) assess the potential health implications of the compounds that will be released to the environment from the proposed Project in relation to exposure limits established to prevent acute and chronic adverse effects on human health;
b) provide the data, exposure modeling calculations, and describe the methods Syncrude used to assess impacts of the Project on human health and safety;
c) provide information, including chemical analyses and modeling results, on samples of selected environmental media (e.g., soil, water, air, vegetation, wild game, etc.) used in the assessment;
d) discuss the potential for changes to water quality, air quality and soil quality to increase human exposure to contaminants taking into consideration all Project activities;
e) identify the human health impact of the potential contamination to country foods and natural food sources taking into consideration all Project activities;
f) document any health concerns raised by stakeholders during consultation on the Project;
g) document any health concerns identified by aboriginal communities or groups due to impacts of existing development and of the Project specifically on their traditional lifestyle and include an aboriginal receptor type in the assessment;
h) assess the cumulative human health effects to receptors, including First Nations and Métis receptors;
i) as appropriate, describe anticipated follow-up work, including regional cooperative studies. Discuss how such work will be implemented and coordinated with ongoing air, soil and water quality initiatives;
j) describe the potential health impacts due to higher regional traffic volumes and the increased risk of accidental leaks and spills; and
k) discuss mitigation strategies to minimize the potential impact of the Project on human health.

[B] Describe those aspects of the Project that may have implications for public safety. Determine whether there may be implications for public safety arising from the Project. Specifically:

a) describe Syncrude’s emergency response plan, including public notification protocol and safety procedures, that will be used to minimize adverse environmental effects, while protecting the safety of personnel;
b) document any safety concerns raised by stakeholders during consultation on the Project;
c) describe how local residents will be contacted during an emergency and the type of information that will be communicated to them;
d) describe the existing agreements with area municipalities or industry groups such as safety cooperatives, emergency response associations, regional mutual aid programs and municipal emergency response agencies;
e) describe the potential safety impacts due to higher regional traffic volumes; and
f) discuss mitigation plans to ensure workforce and public safety during the life of the Project from accidental release or spill of chemicals to the environment and failures of structures retaining water or fluid wastes.
8 SOCIO-ECONOMIC ASSESSMENT

[A] Describe the socio-economic effects of construction and operation of the Project, including:
   a) impacts related to:
      i) employment,
      ii) regional and provincial economic benefits; and
      iii) effects on First Nations and Métis (e.g., traditional land use and culture);
   b) estimated total Project cost, including a breakdown for engineering and project management, equipment and materials, and labour for both construction and operation stages. Indicate the percentage of expenditures expected to occur in the region, Alberta, Canada outside of Alberta, and outside of Canada; and
   c) the impact on local and regional infrastructure and community services, including consideration of municipal “hard services”, education/training services, social services, urban and regional recreation services, law enforcement, affordable housing, health care services and emergency services.

[B] Describe anticipated changes to traffic (e.g., type, volume) on highways during the life of the Project. Consider other existing and planned uses of the same highways. Identify needs to upgrade existing roads and intersections or construct new roads.

[C] Identify components of the Project that have the potential to increase noise levels and discuss the implications. Present the results of a noise assessment. Include:
   a) potentially-affected people and wildlife;
   b) an estimate of the potential for increased noise resulting from the development; and
   c) the implications of any increased noise levels.

[D] Discuss options for mitigating impacts including:
   a) Syncrude’s policies and programs regarding the use of regional and Alberta goods and services;
   b) plans to work with First Nations and Métis communities and groups and other local residents and businesses regarding employment, training needs, and other economic development opportunities arising from the Project;
   c) the potential to avoid overlap with other Projects that are reasonably anticipated during the life of the Project; and
   d) strategies to mitigate socio-economic concerns raised by the local municipality and other stakeholders in the region.

[E] Describe the residual effects of the Project on socio-economic conditions and Syncrude’s plans to manage those effects.

[F] Discuss monitoring plans proposed to measure the success of mitigation activities.