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Our File: Notre dossier: 2-143280

Your file: Votre dossier:

August 3, 2012

BY FAX (613) 957-0941 and Email: Shell.Reviews@ceaa-acee.gc.ca

Joint Review Panel Secretariat
Canadian Environmental Assessment Agency
160 Elgin Street, 22nd Floor
Ottawa, ON K1A 0H3

Attention: Secretariat, Joint Review Panel

RE: Jackpine Mine Expansion Project - Joint Review Panel

On June 4, 2012, the Joint Review Panel announced the beginning of a comment period on the additional information provided by the proponent, Shell Canada Energy. The Panel asked for all comments on the additional information in writing by August 3, 2012.

In response to this opportunity of comment, I attach responses of the following Federal Government Departments: Transport Canada, Environment Canada, the Department of Fisheries and Oceans, Natural Resources Canada and Health Canada.

Yours truly,

<original signed by>

Kirk N. Lambrecht, Q.C.
General Counsel
Prairie Region
Department of Justice Canada

KNL/pr
Encl.

Canada

Fisheries and Oceans Canada | Pêches et Océans Canada

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July 30, 2012

Jim Dilay
Chair, Joint Review Panel
Canadian Environmental Assessment Agency,
160 Elgin Street, 22nd Floor, Place Bell Canada,
Ottawa, ON, K1A 0H3

Energy Resources Conservation Board,
9915 Franklin Avenue, Provincial Building,
2nd Floor,
Fort McMurray, AB,
T9H 2K4

Subject: Fisheries and Oceans Canada's reply to the Joint Review Panel's June 4, 2012 request for public comments on Additional Information for Shell's proposed Jackpine Mine Expansion Project

The letter below is Fisheries and Oceans Canada's (DFO) assessment on the adequacy of the May 15, 2012 information provided by Shell Canada on the proposed Jackpine Mine Expansion project.

ASSESSMENT OF ADDITIONAL INFORMATION ON PREVIOUSLY IDENTIFIED POTENTIAL GAPS AND CONCERNS:

Aboriginal Concerns

DFO previously acknowledged that Aboriginal representatives have indentified concerns related to the concepts outlined in Part III of the Panel's Terms of Reference. Recent Jackpine Mine Expansion aboriginal consultation by the Government of Canada, including DFO, identified general lack of satisfaction with the consultation processes undertaken by the Proponent and the Crown. DFO expects that those groups will review the additional information and identify outstanding concerns directly to the Panel.

Cumulative Effects

As DFO has previously expressed, uncertainty remains as to how the proposed No Net Loss plans will compensate for indirect and cumulative impacts to the fisheries resource and whether surrounding habitats are as productive as before. The effects to fisheries productivity may include habitats in proximity to, as well as downstream of, the proposed development including the Athabasca River Delta. Shell has undertaken an assessment of potential effects of the project, in combination with other developments, on sediment and water quality and an

assessment of incremental and cumulative effects on the Peace-Athabasca Delta. Although the information provided by Shell is valuable DFO is of the view that this assessment may require additional field monitoring and cooperation at a regional level amoung all stakeholders. Pending such a regional assessment, however, DFO believes that the potential for cumulative environmental effects on the Athabasca River Delta remain uncertain.

Pre-Industrial Case

DFO understands that the Joint Review Panel's Terms of Reference with respect to cumulative effects assessment directs the Panel to consider a pre-industrial case that takes into account effects that may have already been experienced and to consider future foreseeable projects or activities as of the issuance of the Panel's Terms of Reference. DFO applauds Shell's effort to consider Pre-Industrial Case (PIC) in their assessment and, considering the limited information available, appreciate the results; however, DFO is of the opinion that the assessment could have considered Traditional Environmental Knowledge from Aboriginal People.

Future Projects

DFO is of the view that the requested additional information was provided by Shell and the assessment of potential cumulative effects on fish, fish habitat and other aquatic resources of all operating, approved and applied for in-situ, as well as mineable oil sands projects, and other projects such as quarries, satisfy information requirements related to the Joint Review Panel's Terms of Reference.

Conclusion

Considering that previously identified gaps were addressed in the Shell's submission from May 15, 2012, DFO is of the view that, with respect to its mandate concerning fish and fish habitat, there is sufficient information to proceed to a public hearing. DFO will be maintaining correspondence with Shell to clarify details associated with the development of the No Net Loss plan and other fish and fish habitat considerations.

Should you have any questions, please contact Brian Makowecki, Manager Northern Alberta District and Oil Sands Major Projects in Edmonton at 780-495-3889.

Sincerely,

for Brad Parker
Director, Prairies Area

Cc
Brian Makowecki, Edmonton
Marek Janowicz, Edmonton
Stuart Dean, Ottawa

Natural Resources Canada | Ressources naturelles Canada

July 31, 2012

CEAR #10-05-59540

VIA EMAIL: Shell.Reviews@ceaa.gc.ca

Joint Review Panel
Jackpine Mine Expansion Project
Canadian Environmental Assessment Agency
160 Elgin Street, 22nd Floor, Place Bell Canada
Ottawa, Ontario, K1A 0H3

RE: Natural Resources Canada's Submission to the Joint Review Panel for the Shell Jackpine Mine Expansion Project

Attention: Jim Dilay, Chair, Joint Review Panel

This letter is in response to the Joint Review Panel's June 4, 2012 announcement, inviting interested parties to review the additional information provided to the Panel by Shell Canada on May 16, 2012, and to provide comments on the adequacy of this information.

NRCan has reviewed the additional information provided by Shell Canada and is of the view that their responses have adequately addressed the Supplemental Information Requests submitted by the Panel of interest to Natural Resources Canada. However, NRCan does have two minor comments, which are presented in the attached document.

NRCan appreciates the opportunity to comment on Shell Canada's additional information. Should you require additional information or clarification on the comment provided by NRCan, please contact Shelley Ball, Senior Environmental Assessment Officer at 613-995-2848 or Shelley.Ball@nrcan.gc.ca.

Sincerely,

for Mark Pearson
Director General, External Relations
Natural Resources Canada

c.c.: Dr. Hassan Hamza, Director General, Canmet ETC - Devon
Tim Sheldan, Director General, Canadian Forest Service
Donna Kirkwood, Director General, Geological Survey of Canada

Natural Resources Canada | Ressources naturelles Canada

Natural Resources Canada's Submission to the Joint Review Panel for the Jackpine Mine Expansion Project

Comments on additional information provided by Shell Canada

NRCan has reviewed the additional information provided by Shell Canada and is of the view that they have adequately addressed the additional information request submitted by the Panel on January 30, 2012.

NRCan does have two observations regarding additional information that Shell provided.

1) In Tailings SIR#38, Table 38-1 (page 3-119), Shell Canada has listed the percentage of total fines that are sequestered annually (column heading Annual % Fines Seq. (%)) as 114%. There is no explanation provided for the greater than 100% sequestration; the value of 114% cannot be explained by rounding errors.

2) The table captions for Tables 38-2 and 38-3 (pp. 3-120 and 3-121) appear with the wrong tables.

Transport Canada | Transports Canada

Programs Branch
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Winnipeg, Manitoba R3C 0P6

Groupe des programmes
344, rue Edmonton 3e etage
Winnipeg Manitoba R3C 0P6

July 31, 2012

RDIMS: 7734039

Jim Dilay
Chair, Joint Review Panel
Jackpine Mine Expansion Project
Canadian Environmental Assessment Agency
160 Elgin Street, 22nd Floor
Place Bell Canada
Ottawa, Ontario, Alberta
K1A 0H3

Subject: Sufficiency Review – Jackpine Mine Expansion Project

Dear: Mr. Dilay

In response to the Joint Review Panel (JRP) public notice invitation dated June 4, 2012, Transport Canada is providing, the following comments on the adequacy of the additional information Shell Canada Energy's (Shell) provided in response to the Joint Review Panel's (JRP) Supplemental Information Request.

Transport Canada is the federal department responsible for most of the transportation policies, programs and goals of the Government of Canada. It ensures that air, marine, road and rail transportation are safe, secure, efficient and environmentally responsible.

With respect to the Jackpine Mine Expansion Project proposed by Shell, Transport Canada's mandate is to ensure the public right of navigation under the *Navigable Waters Protection Act* (NWPA). Transport Canada may have to issue approvals under the NWPA that would permit this project to be carried out in whole or in part, and thus will participate in the environmental assessment process as a Federal Authority under the *Canadian Environmental Assessment Act, 2012.*

In consideration of the current information provided by Shell in its *Environmental Impact Statement* (EIS) and its responses to Supplemental Information Requests including the document *Submission of Information to the Joint Review Panel*, dated May 16, 2012, the following approvals to be issued under the NWPA will likely be required:

- An approval under subsection 5(2) or a prohibition under section 22, requiring a Governor In Council Proclamation of Exemption under section 23, for the proposed diversion of the Muskeg River

- An approval under subsection 5(2) for the proposed Muskeg River Diversion Alternative Mine Plan
- An approval under subsection 5(3) for the proposed bridge over the Muskeg River to access the north overburden dump
- An approval under subsection 10(2) for the proposed modifications to the existing Muskeg River mine water intake system

As such, Transport Canada has identified the following gaps in the information received:

With respect to SIR #27 f) on navigation and specific activities affecting navigation, the JRP requested Shell to ensure in its updated cumulative effects assessment, it takes into account influences such as: overall water withdrawals, climate trends, water diversion, natural river fluctuation, sand movement and dredging. Shell's updated cumulative effects assessment in Appendix 2 Section 3.3 does not include consideration of potential impacts on navigation as per the JRP's request. While Shell's updated cumulative effects assessment in Appendix 2 Section 3.3 includes consideration of some of the influences, it does not consider the impacts on navigation.

Transport Canada looks forward to continued dialogue and cooperation with Shell in order to obtain additional clarification and detailed construction plans of the proposed Jackpine Mine Expansion Project.

Sincerely,

Harvey Nikkel
Regional Director
Programs, Prairie and Northern Region

c: Dale Kirkland
Jo-Anne Foy

Environment Canada Environnement Canada

Prairie and Northern Region
#200, 4999 – 98th Avenue
Edmonton, Alberta T6B 2X3

August 2, 2012

EC file no.: 4194-10-3/6035
CEAA reference no.: 10-05-59540

Jim Dilay
Chair, Joint Review Panel
Established to review the Jackpine Mine Expansion Project
Joint Review Panel

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160 Elgin Street, 22nd Floor, Place Bell Canada
Ottawa, Ontario K1A 0H3

Energy Resources Conservation Board
9915 Franklin Avenue, Provincial Building, 2nd Floor
Fort McMurray, Alberta T9H 2K4

RE: Shell Canada's Jackpine Mine Expansion Project
Adequacy review of Shell Canada's May 15, 2012 updated information

On June 4, 2012, the Joint Review Panel (JRP) requested intervenor comment on the adequacy of information provided on May 15, 2012, by Shell Canada in response to the JRP's January 30 Supplemental Information Request (SIR).

For matters relating to our mandate, Environment Canada (EC) is of the opinion that there is sufficient information to proceed to the hearings. However, while Shell Canada has provided comprehensive responses to many of the JRP's SIRs, several matters will require further discussion to fully understand potential project affects and ensure suitable mitigation can be implemented.

Attachment 1 summarizes these matters to assist parties in their preparation for the hearings. For additional clarity, Attachment 2 summarizes matters raised by EC in our December 16, 2011 SIR document filed with the JRP, but not reflected in the JRP's January 30 SIR to Shell. EC will be seeking further detail on these matters at the hearings.

In the meantime, we remain available to further explain our concerns with Shell Canada or the JRP.

Sincerely,

for / Cheryl Baraniecki
Regional Director

Attachments:
Attachment 1: EC's review of Shell Canada's May 15, 2012 information

Canada

Attachment 2: Summary of EC's outstanding issues from the December 16, 2011 adequacy review

ATTACHMENT 1

EC'S REVIEW OF SHELL CANADA'S MAY 15, 2012 INFORMATION

INTRODUCTION

In September 2011, the Minister of the Environment and the Energy Resources Conservation Board (ERCB) announced the Joint Review Panel (JRP) for the Shell Jackpine Mine Expansion (JPME) hearings. On December 16, at the request of the JRP, EC filed 14 Supplemental Information Request (SIRs) outlining additional information that the department requires to fulfill our mandate as it relates to this project. On January 30, the JRP amalgamated SIR requests from intervenors into a common SIR package for Shell Canada. Shell Canada replied on May 15 with a comprehensive document addressing the JRP SIRs.

While EC is of the opinion that, for matters within our mandate, the new information filed by Shell Canada in conjunction with the exiting environmental impact statement (EIS) documents is sufficient for the JRP to conduct hearings; however, there are several matters where the methods of analysis or inherent assumptions will require further discussion to quantify potential impacts and ensure appropriate mitigation is implemented.

WILDLIFE AND BIODIVERSITY

JRP SIR 8: Determination of Jackpine Mine Expansion Project Effects
In its December 16, 2011 adequacy review, EC argued that insufficient information has been provided to evaluate significance of cumulative effects to species at risk, migratory birds and wetlands, suggesting that the assessment be augmented to look at additional criteria related to changes in natural range of variation. EC requested Shell provide habitat loss estimates for Jackpine Mine Expansion independent from other proposed and/or approved mines.

The JRP in its January 30, 2012 Supplemental Information Request (SIR) to Shell Canada, made the following request:

In order to determine the significance of effects from the Jackpine Mine Expansion Project, the Panel requires information on effects of the Jackpine Mine Project only, without inclusion of the Pierre River Mine Project. The environmental consequences for some components of the EIS were determined from the effects of both the Jackpine and Pierre River Projects combined. To determine the effects of only the Jackpine Mine Expansion Project, the environmental consequences should be calculated for each Key Indicator Resource (KIR) using the effects within the Jackpine Mine Expansion LSA or some such reasonable spatial area as determined and rationalized by the proponent. The Panel requests that Shell:

- *provide the Jackpine Mine Expansion Project's effects for the above sections' KIRs.*
- *provide the environmental consequences for each KIR of the Jackpine Mine Expansion Project.*

Separation of Effects
Although Shell Canada did separate the mine effects in its updated responses, it has, in a number of instances, combined the effects of the JPME Project with the existing and approved Jackpine Mine – Phase 1 Project (e.g., Table 4.3-1: Ecosite Phases and Wetlands Types to be Cleared and Reclaimed in the Local Study Area). It is unclear whether this approach was used

when evaluating the effects of the JPME Project on all terrestrial indicators (e.g., species at risk, including woodland caribou and wood bison). Although understanding combined effects is important, this approach does not allow for an accurate assessment of additional habitat loss as a result of the expansion project alone (above that already approved for the Jackpine Mine – Phase 1 Project), or the determination of appropriate mitigation measures for any additional habitat loss.

EC's Position
EC suggests that, in order to more accurately assess the potential effects of the JPME Project on habitat and terrestrial indicators, Shell Canada be prepared to provide clarity on where Jackpine Mine – Phase 1 effects have been combined with potential effects of the JPME Project and to be able to quantify the extent of the incremental effects of the JPME project.

Key Resource Indicator – Woodland Caribou
Shell Canada evaluated the *direct* effects of the JPME Project on woodland caribou habitat. Mikisew Cree First Nation (MCFN) traditional knowledge indicates that winter caribou habitat occurs north of Kearl Lake in the JPME Project Local Study Area (LSA) (MCFN Indigenous Knowledge and Use Report for JPME, PRM, and RCL 2012). The JPME Project also occurs adjacent to provincially designated woodland caribou range and core habitat identified by the Athabasca Chipewyan First Nations (ACFN Integrated Knowledge and Use Report for the JPME and PRM 2011).

Shell Canada did not evaluate *indirect* effects of the JPME Project on caribou populations that occur in adjacent core caribou habitat and provincially designated caribou ranges. Specifically, wolves, bears and other predators that occur in the LSA may be displaced into adjacent core caribou habitat and range during Project construction and operations, resulting in increased predation pressure on caribou populations occupying these ranges. The Richardson caribou range occurs approximately 5 km north-east of the LSA and the population in this range is not considered self-sustaining.

EC's Position
While Shell Canada evaluated the direct effects of the JPME Project on woodland caribou. EC suggests that Shell Canada be prepared to discuss the indirect effects of the JPME Project and indirect cumulative effects of other disturbances (including other oil sands mines) on woodland caribou populations in adjacent core habitat and designated ranges.

Key Resource Indicator – Wood Bison
Shell Canada modeled wood bison habitat throughout the LSA and Regional Study Area (RSA) and discusses environmental consequences within these study areas. However, traditional knowledge indicates that core bison range is currently largely restricted to the west-side of the Athabasca River (north of and including the Pierre River Mine LSA), as well as the lower Firebag River corridor on the east side of the Athabasca River (ACFN Integrated Knowledge and Use Report for the JPME and PRM 2011, MCFN Indigenous Knowledge and Use Report for JPME, PRM, and RCL 2012). In addition to modeling habitat potential in the LSA and throughout the RSA and determining potential JPME Project and cumulative effects throughout these areas, it is important to understand the direct and indirect effects of the JPME Project (including the proposed compensation lake) and other cumulative disturbances on bison in their current core range, as these results may differ substantially from those presented by Shell Canada for the LSA and particularly the RSA. For example, the MCFN indicate that the JPME Project is likely to disturb or destroy the range and possibly core habitat of wood bison west of

the Athabasca River (MCFN Indigenous Knowledge and Use Report for JPME, PRM, and RCL 2012).

EC's Position
EC suggests that Shell Canada be prepared to quantify the effects of the JPME Project and other cumulative disturbances on wood bison within their current core range as identified through traditional knowledge.

JRP SIR 11: Cumulative Effects
In its December 16, 2011 adequacy review, EC suggested that Shell has not met the TOR because it has provided neither a PIC, nor a PDC revised to include all projects disclosed prior to issuance of the TOR.

The JRP in its January 30, 2012 SIR to Shell Canada, made the following request:

At present, Shell's assessment does not include a pre-industrial baseline. Shell did include some future foreseeable projects and activities, however additional projects and activities have been disclosed and/or occurred since the cumulative effects assessment was completed, and thus an update is required to account for these projects. Shell provided a cumulative effects assessment for both the Jackpine Mine Expansion and Pierre River Mine Projects combined. If any KIR is affected by the Jackpine Mine Expansion Project and not by the Pierre River Mine Project and the outcome of any cumulative effects assessment would change as a result of this distinction, the Panel would require such information.

The Panel understands that Shell has committed to updating the cumulative effects assessment. The Panel requests that Shell:

- *update the cumulative effects assessments to take into account the above provisions.*

<u>*Terrestrial and Wildlife Indicators*</u>
Although Shell Canada has provided a PIC and has calculated changes between the PIC and the 2012 Base Case, it does not evaluate the environmental consequence of changes to key terrestrial indicators (e.g., habitat for species at risk) relative to this PIC (either for the 2012 Base Case or planned development case (PDC)). Instead, when determining the environmental consequence of cumulative effects, Shell Canada compares the PDC to the 2012 Base Case without reference to previous changes. The determination of environmental consequence of cumulative effects should include a consideration of past disturbances and be based on an evaluation of changes from the PIC to the PDC. This approach would correctly assess the cumulative effects of activities and disturbances that have already occurred, as well as those that are planned to occur, in the RSA.

EC's Position
EC suggests that Shell Canada be prepared to quantify the environmental consequences of cumulative effects based on changes from the PIC to the PDC for key terrestrial vegetation and wildlife indicators. In absence of receiving this information prior to the hearing, EC is prepared to, as Shell Canada has stated in its January 18, 2012 letter to the JRP, test the methodology of Shell's EIA during the hearing process.

<u>*Caribou Habitat*</u>
In its evaluation of cumulative changes in wildlife habitat from the PIC to the 2012 Base Case, Shell Canada indicates that the decline in high suitability habitat for woodland caribou is of low magnitude (pg. 3-40). However, in Table 1.3-2 in Appendix 3.7 (pg. 18), Shell Canada indicates

that there has been a 40% reduction in high quality habitat (-170,431 ha) for caribou in the 2012 Base Case relative to the PIC. The magnitude criteria developed by Shell Canada (December 2007, Section 1.3.6) indicate that a >20% change represents a high magnitude effect. Therefore, it is unclear how Shell Canada defines a 40% loss of high quality caribou habitat as a low magnitude effect.

EC's Position
EC suggests that Shell Canada be prepared to clarify the magnitude of cumulative habitat change for woodland caribou in the 2012 Base Case relative to the PIC.

JRP SIR 17: Waterfowl
EC had no specific SIR related to this issue in its December 16, 2011 adequacy review.

The JRP in its January 30, 2012 SIR to Shell Canada, made the following request:

Shell states that ducks and geese are CEMA Priority 2 species and KIRs for the LSAs. Baseline surveys were conducted by Shell for waterfowl (ducks and geese). However, the EIS contains no waterfowl KIR. In their technical review, the ACFN had concerns regarding the absence of waterfowl KIR, as waterfowl are harvested by aboriginal people. The Panel requests that Shell:

- *clarify and provide a rationale as to why a waterfowl KIR was not used in the EIS.*

In its response, Shell Canada indicated that "*horned grebe was considered a surrogate species for waterfowl in general and thus selected as a KIR*" (pg. 3-60). EC notes that horned grebe was selected as a KIR only after requests by EC to evaluate the effects of the JPME Project on all federally listed species at risk. EC also notes that the nesting habitat requirements of horned grebe differ from most ducks and geese, so it is unclear how horned grebe can be considered a surrogate species for evaluating effects on waterfowl nesting habitat use.

EC's Position
EC suggests that, in order to evaluate effects on waterfowl nesting habitat use, Shell Canada be prepared to provide additional rationale as to why waterfowl was not selected as a KIR and how horned grebe represents a surrogate species for evaluating effects on waterfowl nesting habitat.

WATER QUALITY AND WATER QUALITY MODELLING

JRP SIR 36 and 37 - Climate Change: Influence on Water Quality
In its December 16, 2011 adequacy review, EC stated that the assessment of future climate change on the Project did not consider the full range of predicted precipitation levels from global climate models.

The JRP in its January 30, 2012 SIR to Shell Canada, made the following request:

The Alberta Environment Terms of Reference require the environmental assessment to include information about ecological processes and natural forces that are expected to produce changes in environmental conditions (e.g. forest fires, flood or drought conditions). Consistent with the Canadian Environmental Assessment Act, the Panel will also consider any change to the Project that may be caused by the environment. The Panel finds that information related to these environmental changes is not provided in the EIA and that additional information is required. Discuss how the Project would be affected by stochastic large scale disturbances and

projected human caused disturbances as described below and how the Project is equipped to handle such events. The Panel requests that Shell:

- *provide an assessment on how the Project may be sensitive to forest fires.*
- *provide an assessment on potential drought in the area and how the Project may be sensitive to drought. Explain how the trends in air temperature and precipitation were used to estimate the expected range of future streamflows in the Athabasca River that will be used for the water requirements of the Project.*
- *provide an assessment of potential effects to the Project from possible flooding in the region.*

The Panel requests that Shell Canada:

- *indicate how changes in climate, particularly rainfall and recharge rates might impact revegetation and recolonization in the application case as presented in Table 7.5-11 for ecosite phases in the LSA (Volume 5, Section 7.5.2.2, p.7-62). Further discuss any impacts to wetlands and wildlife habitat.*
- *indicate how changes in climate, particularly rainfall and recharge rates might impact revegetation and recolonization in the Planned Development Case in Table 7.5-14 (Volume 5, Section 7.5.2.2, p.7-69) for regional land cover classes in the RSA. Further discuss any impacts to wetlands and wildlife habitat and incorporate this*

Shell Canada states that "*given the uncertainty surrounding future climate change scenarios, Shell Canada will use monitoring and adaptive management to account for alternative futures, increased vegetation growth, or increased vegetation stress, with specific regional patterns and timing associated with both.*" (Section 3-117, May 2012).

Shell Canada's use of a restricted range of climate model seasonal precipitation outputs underestimates potential precipitation changes predicted by current models by a fact of 2 to 3 fold. Given that the proponent has indicated that a 10% increase in precipitation could trigger a 400% increase in stream flow, Shell Canada's use of a restricted range of modeled precipitation significantly underestimates the range in contaminant concentrations and predicted biological effects. Similarly, Shell Canada's use of extrapolated trends of recorded annual air temperature at the Fort McMurray airport station increases the uncertainty of environmental changes linked to future temperature extremes.
Shell Canada's use of a restricted range of climate change assumptions affects key variables, such as modeled stream flows and contaminant dilutions, and thereby reduces the range and magnitude of predicted environmental effects, while increasing the uncertainty of the effects predictions.

EC's Position
EC suggests that Shell Canada be prepared to elaborate on the monitoring and adaptive management plans to be implemented to maintain site operations within the range of impacts predicted by their numerical modelling.

SIR 39 and 41 - Mature Fine Tailings (MFT)-free Pit Lake Alternative
In its December 16, 2011 adequacy review, EC stated that the pit lake models should be rerun to present the benefits of removing MFT from pit lakes. EC also states the potential for leachate generation from the dryland disposal area is also untested in the current models.

The JRP in its January 30, 2012 SIR to Shell Canada, made the following request:

Shell proposed using TT drying, MFT centrifuge and NST to comply with Directive 074. None of the technologies proposed have been commercially proven. Discuss the contingency plan if the proposed technology or technologies cannot comply with Directive 074.

Shell states, "...all legacy MFT at the Jackpine Mine Expansion will be centrifuged, dried and placed in dumps or in-pit for final disposal. Table 2-6 shows the Jackpine Mine Expansion MFT balance based on adjustment made for the Muskeg River Diversion Alternative Mine plan."

- *Provide the design parameters used for MFT centrifuge in this plan, including but not limited to: solids content and sand to fines ratio of centrifuge feed, centrifuge process used, and solids content and strength development of centrifuged cake.*
- *Provide a table showing the projected annual MFT centrifuged cake volumes, area needed and area available for MFT centrifuged cake placement.*
- *Provide the placement plan for MFT centrifuged cake, as well as a map indicating the locations.*

Shell Canada indicated that they would use storage within pit lakes until 2037 at which time they will be moved to external dumps. Shell Canada's May 2012 updated modeling of pit lake water quality indicated exceedances of Alberta's water quality criteria in pit lakes in 2065 and 2165 for selected metals, some PAHs, and nutrients. When Shell Canada applied an updated chronic effects benchmark (CEB) approach (see SIR 26 below), they concluded that only cadmium in pit lakes exceeded the CEB limits.

EC concludes although CEBs are based on sensitive biological changes in lab tests, there are limitations to the CEB approach since chemical mixtures are not evaluated and CEBs are based on relatively short term exposures.

EC's Position

EC remains concerned with Shell Canada's ability to predict and control effluent quality from the end pit lakes. EC suggests that Shell Canada be prepared to elaborate on contingency measures available to ensure effluent meets applicable water quality guidelines.

SIR 26 – Water Quality Modelling – Updated Chronic Effects Benchmarks (CEB)

In its December 16, 2011 adequacy review, EC stated that some of the chronic effects benchmarks used in the EIS did not incorporate appropriate safety factors.

The JRP in its January 30, 2012 SIR to Shell Canada, made the following request:

Shell states that chronic effect benchmarks (CEBs) were derived for all substances of special concern (SOPCs) with the exception of the major ions, nutrients, naphthenic acids and TDS. CEBs were developed to gauge the potential effects on downstream aquatic communities based on background water quality and anticipated discharge water quality. In its EIA sufficiency review (5.5 p. 9-10) Environment Canada states that since CEBs were at times developed from acute lethality data without adding a safety factor (thus inferring an elevated CEB) that the aggregated impact on aquatic ecosystems has not been estimated with sufficient confidence. The Panel requests that Shell:

- *discuss the repercussions associated with any aggregated effects on the environment from those CEBs developed without having a safety factor added to the computation and possible mitigation for addressing any aggregated effects identified.*

EC notes that the CEB approach is based on assessing the response to a single chemical and uncertainties exist with applying these values to future environmental protection including:

- extrapolation from lab organism responses to wild species;
- the relatively short lab exposure times; and
- the potential for additive, antagonistic or synergistic interactions between parameters in the complex mixtures found in the environment.

EC notes that Shell Canada did not develop CEBs for nutrients; instead water quality guidelines were used and indicated exceedance of this guideline. Eutrophication of receiving water bodies as result of nutrient loadings may be an issue that could cause significant environmental effects (algal growth, low dissolved oxygen). Shell Canada concludes that "negligible eutrophication effects on aquatic biota are expected in these watercourses under EIS application case conditions".

EC concludes there are limitations of the CEB approach to predict future biological effects to 2165 and the potential effects of nutrients have not been fully characterized within the EIS.

EC's Position
As with the MFT matter, EC remains concerned with Shell Canada's ability to predict and control effluent quality from the EPLs. EC suggests that Shell be prepared to elaborate on contingency measures available to ensure effluent meets applicable water quality guidelines.

AIR EMISSIONS AND GREENHOUSE GASES

Mine Fleet, Appendix 3.2 Air Emissions and Predictions
In its December 16, 2011 adequacy review, EC argued that an appropriate methodology has not been used to assess the mine fleet profile used in the air quality assessment for the EIA.

EC notes that Shell Canada, in its January 18, 2012 letter to the JRP regarding EC's SIRs, states: *this is a methodology issue that should be discussed as part of the public hearing and is not a factor for the sufficiency review. Shell's commitment is that vehicles in the mine fleet will meet applicable emission standards at the time of purchase. Although the Federal Government has established a transition period for Tier 4 trucks out to 2021, the U.S. transition period remains to 2015. If Tier 4 vehicles are available in the US before they are available in Canada, Shell will purchase any new mine fleet vehicles from the US.*

Shell Canada nevertheless provided updated information on its mine fleet in its May 15, 2012 response to the JRP.

EC's Position
EC suggests that Shell Canada be prepared to provide further clarification regarding the mine fleet profile over the lifespan of the mine and NOx, particulate and GHG emissions by year for the JPME facility.

ATTACHMENT 2

SUMMARY OF OUTSTANDING ISSUES FROM THE DECEMBER 16, 2011 ADEQUACY REVIEW

The following matters were identified by EC in our Dec 16 SIR to the JRP, but not included in the JRP's Jan 30 SIR to Shell. As these matters relate to project effects within our mandate, EC will be seeking additional detail, as outlined below, during the hearings in order to fully understand the potential effects of the project.

a. Habitat Mapping: EC requests the use of Alberta vegetation inventory data for delineating habitat classes and habitat parameters in the terrestrial regional study area to increase the predictive accuracy of wildlife habitat model output.

b. Water Quality Modeling - Sediment Transport: Regional sediment transport modeling should be completed for the EIS as the modeling do not account for sediment transport and, therefore, the movement of sediment born contaminants. It is unclear if a portion of this assessment was included as part of the CEB evaluation of PAHs and some metals, which assumed that suspended sediment remained in the water column.

c. Redclay Compensation Lake Effects: EC requests that Shell Canada provide a comparison of species at risk habitat at the Redclay Compensation lake location and at alternative compensation lake locations to demonstrate their relative value for species at risk.

d. Greenhouse Gas (GHG) Emissions: EC requests the following information from Shell Canada:
   - Planned or existing measures at Shell's oil sand facilities (including the JPME) that will contribute to minimizing or reducing GHG emissions in order to help Canada meet its 2020 target of a 17% reduction in GHG emissions below 2005 levels, and the expected GHG reductions associated with these measures.
   - Estimates of GHG emissions for the planned development case.

e. Fugitive Emission Calculations: EC requests that Shell Canada provide information on the methodology and calculations used to calculate fugitive emissions in order to adequately assess Shell Canada's emissions analysis. In addition, EC requests the upper and lower bounds for each category of sources within the fugitive category. EC also requests copies of the studies performed by the proponent or consultants related to estimating or measuring air emissions from tailing ponds and/or mine faces.

Health Canada Santé Canada

Environmental Health Program
Regions and Programs Bureau
Suite 730, 9700 Jasper Avenue
Edmonton, AB T5J 4C3

Aug 1, 2012

Joint Review Panel Secretariat
Canadian Environmental Assessment Agency
160 Elgin Street, 22nd Floor, Ottawa, ON K1A 0H3
Tel.: 1-866-582-1884
Fax: 613-957-0941

Subject: Health Canada's Comment on the Additional Information for the Proposed Jackpine Mine Expansion Project CEAR #59540

Dear Mr. Dilay:

Thank you for the request of June 4, 2012 for comment on the additional information provided by Shell Canada Energy on the Shell Jackpine Mine Expansion Project (dated May 2012). Health Canada (HC) is participating as a Federal Authority (FA) in accordance with Section 20 of the *Canadian Environmental Assessment Act, 2012* (the Act), providing expertise in its possession, with respect to human health, when requested to do so by the Joint Review Panel.

The objective of HC's review is to enable a more complete analysis and understanding of potential human health effects of the project. In some cases, failing to provide the suggested information may impact HC's understanding of the potential human health risks, and/or potentially lead to an under- and/or over-estimation of human health risks.

As per HC's advisory role under the Act, HC suggests that additional information be provided in the following areas: human health risk assessment and air quality effects. This information will better inform HC's review of the potential human health implications of the project and any mitigative and/or management options that could reduce potential human health impacts.

HC's comments are available in Attachment 1: Additional information for the Shell Jackpine Oil Sands Mine Project.

Should you have any questions concerning HC's response, please contact me at 780-495-3857.

Sincerely,

KW for A/RDG

for Ward Chickoski
Regional Director General
Prairie Region - Alberta
Ph# 780-495-3857
Fax # 780-485-5551
E-mail: ward.chickoski@hc-sc.gc.ca

cc: Bryan Haggarty, Health Canada, Alberta Region
Brenda Woo, Health Canada, Alberta Region
Kathleen Hedley, Health Canada, National Capital Region
Luigi Lorusso, Health Canada, National Capital Region

Attachment 1: Additional information for the Shell Jackpine Oil Sands Mine Project

#	Reference	Background	Rationale	Question
1	Appendix 3.3-Human Health Risk Assessment (HHRA) for the Shell Jackpine Mine Expansion Update (2012), Section 1, Page 1	The 2012 Base Case is defined to include existing and approved projects, some of which may not yet be built. There is no baseline air assessment scenario that details only current existing conditions without the inclusion of approved but not yet built projects.	Given continuing oil sands development, this information is necessary to allow for a more comprehensive understanding the current state of air quality in the First Nation communities in the oil sands region and its impact on the health of Aboriginals.	1. Provide a baseline air assessment scenario that includes only existing operating projects, without the inclusion of approved but not yet built projects.
2	Appendix 3.3-2012 HHRA, Section 2.2.2, Page 8- 10 and 2007 EIA, Volume III, Page 5-57	The original cabin, Aboriginal and community resident groupings from the 2007 EIA are now combined into a single Aboriginal receptor category, which is assumed to represent a subsistence receptor.	It is not clear whether the exposure assessment assumptions for the Aboriginal receptor category are consistent with the 2007 EIA, particularly with respect to time spent indoors.	1. Clarify whether the 2007 EIA assumption of 22.5 hr per day spent indoors is still applicable for the Aboriginal receptor group. If so, provide rational that this assumption is relevant for people engaged in a subsistence lifestyle.
3	Appendix 3.3-2012 HHRA, Section 2.3.2, Pages 14-17	Compared to 2007 EIA, the 2012 HHRA includes changes to the physical-chemical properties used to identify persistent COPCs (non-gaseous, potentially non-volatile) for inclusion in the multiple pathway assessment.	These changes, in addition to the exclusion of chlorinated VOCs, led to the exclusion of the aliphatic C5-C8 and C9-C16 groups and the inclusion of formaldehyde and pyrene. The proponent has not provided any rational for the changes. Given the continuous air emissions identified for the project (24 hr/day, 7 days/wk, 365 days/year), it is uncertain whether the screening process for persistent COPCs is appropriate for the assessment of potential Aboriginal health impacts.	1. Provide justification for changes in the properties used to identify persistent COPCs. 2. Provide justification for the exclusion of aliphatic C5-C8 and C9-C16 3. Given the continuous air emissions identified for the project, provide rational for the exclusion of chemicals with moderate to low persistence that may accumulate in media.
4	Appendix 3.3-2012 HHRA, Sections 3.1.2 and 3.2.1.4, Pages 32-33 and 39-40, respectively; 2007 EIA, Section	For acrolein, in both the acute and chronic air inhalation assessments (2007 EIA), the base case scenario already exceeds air quality standards and predicted exceedances are	In the 2007 EIA (Section 5.3.3.2), the acute and chronic acrolein inhalation RQ exceedances are attributed to conservative assumptions regarding indoor air concentrations. However, in the 2012 HHRA indoor air concentrations are not included	1. Clarify the source of acrolein exceedances in the 2012 HHRA. 2. Identify mitigation measures for the acrolein exceedances predicted. 3. Discuss the implications of the exclusion of assumptions used in the

	5.3.3.2, Page 5-112	widespread geographically. In the 2012 HHRA, the acute acrolein and consequently, nasal irritants mixture inhalation risk quotients (RQs) exceed 1 at Fort MacKay and the maximum cabin location. The chronic nasal irritants mixture RQ exceeds 1 at the maximum cabin location. These modelling predictions would appear to be in contradiction with the 2007 sampling data, which found ambient acrolein concentrations to be lower than the predictions.	in the air quality assessment but exceedances still remain, albeit lower. Therefore, it is uncertain what the source of the acrolein exceedances is in the 2012 HHRA for Fort MacKay and the cabin location.	2007 EIA for indoor air quality for the 2012 HHRA results.
5	2012 HHRA update, Section 2.1.1, Page 4	It is noted that consumption advisories are already in place for several fish species from lakes and rivers in the oil sands area.	Predicted increases in the mercury burden in local fish may result in greater potential human health impacts to First Nation peoples.	1. Identify what mitigation measures may be employed in order to minimize any further increase in Hg concentrations and to minimize the exposure of First Nation peoples to foods with elevated mercury levels.
6	2012 HHRA update, Section 3-4, Page 56	In the 2012 HHRA, exceedances are predicted for manganese, mercury (and liver, kidney, neurological and reproductive and developmental toxicants mixtures) in the pit lake scenario multiple pathway exposure assessment for aboriginal receptors.	The proponent states that ongoing water quality monitoring will ensure the protection of both environment and human health from these predicted exceedances.	1. Clarify whether there may be additional toxicants or toxicant mixtures not considered in the 2012 HHRA that could be found in the pit lakes. 2. Describe any long-term monitoring and risk management measures planned for the pit lakes.