



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

JUL 16 2010

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Economic, Energy, and Business Affairs  
U.S. Department of State  
Washington, DC 20520

ASSISTANT ADMINISTRATOR  
FOR ENFORCEMENT AND  
COMPLIANCE ASSURANCE

Ms. Kerri-Ann Jones  
Assistant Secretary  
Oceans and International Environmental and Scientific Affairs  
U.S. Department of State  
Washington, DC 20520

Dear Mr. Fernandez and Ms. Jones:

The Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (Draft EIS) for the Keystone XL project pursuant to our authorities under the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) NEPA regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act.

We appreciate the substantial efforts by the State Department to solicit broad expert and public input to analyze the potential environmental impacts of the Keystone XL project, and believe the Draft EIS provides useful information and analysis. However, we think that the Draft EIS does not provide the scope or detail of analysis necessary to fully inform decision makers and the public, and recommend that additional information and analysis be provided. The topics on which we believe additional information and analysis are necessary include the purpose and need for the project, potential greenhouse gas (GHG) emissions associated with the project, air pollutant emissions at the receiving refineries, pipeline safety/spill response, potential impacts to environmental justice communities, wetlands and migratory birds.

Project Purpose and Need/Alternatives

We are concerned that the Draft EIS uses an unduly narrow purpose and need statement, which leads to consideration of a narrow range of alternatives. The Draft EIS considers issuance of a cross-border permit for the proposed project and to a limited extent, the no-action alternative (i.e., denying the permit). By using a narrow purpose and need statement, the Draft EIS rejects other potential alternatives as not meeting the stated project purpose. While we recognize that an objective of the applicant's proposal is to construct a pipeline to transport oil sands from Canada to Gulf Coast refineries in the United States, we believe the purpose and need to which the State



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Department is responding is broader. Accordingly, EPA recommends that the State Department frame the purpose and need statement more broadly to allow for a robust analysis of options for meeting national energy and climate policy objectives.

In evaluating the need for the project and its alternatives, we also recommend that the discussion include consideration of different oil demand scenarios over the fifty-year project life. This would help ensure that the need for the project is clearly demonstrated. The Draft EIS uses one demand scenario that indicates that with permit denial, the demand for crude oil would continue at a rate such that U.S. refineries “would continue to acquire crude oil primarily from sources other than Canada to fulfill this demand and/or find alternative methods of delivery of Canadian oil sands.” We recommend that this discussion be expanded to include consideration of proposed and potential future changes to fuel economy standards and the potential for more widespread use of fuel-efficient technologies, advanced biofuels and electric vehicles as well as how they may affect demand for crude oil.

In addition, we are concerned that the Draft EIS does not fully analyze the environmental impacts of the no-action and other alternatives, making a comparison between alternatives and the proposed project more difficult. EPA believes it is important to ensure that the differences in the environmental impacts of non-Canadian crude oil sources and oil sands crude be discussed. Alongside the national security benefits of importing crude oil from a stable trading partner, we believe the national security implications of expanding the Nation’s long-term commitment to a relatively high carbon source of oil should also be considered.

#### GHG Emissions

The Draft EIS estimates GHG emissions associated with construction and operation of the pipeline itself and the refining process, although not the GHG emissions associated with upstream oil sands extraction intended for this pipeline or downstream end use. In order to fully disclose the reasonably foreseeable environmental impacts on the U.S. of the Keystone XL project, we recommend that the discussion of GHG emissions be expanded to include, in particular, an estimate of the extraction-related GHG emissions associated with long-term importation of large quantities of oil sands crude from a dedicated source. This would be consistent with the approach contemplated by CEQ’s recent Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions (February 18, 2010).

Extraction and refining of Canadian oil sands crude are GHG-intensive relative to other types of crude oil. Our calculations indicate that on an annual basis, and assuming the maximum volume of 900,000 barrels per day (bpd) of pipeline capacity, annual well-to-tank emissions from the project would be 27 million metric tons carbon dioxide equivalent (MMT<sub>CO<sub>2</sub>e</sub>) greater than emissions from U.S. “average” crude.<sup>1</sup> Accordingly, we estimate that GHG emissions from Canadian oil sands crude would be approximately 82% greater than the average crude refined in the U.S., on a well-to-tank basis. To provide some perspective on the potential scale of

<sup>1</sup> 900,000 bpd \* (181 kgCO<sub>2</sub>e/bbl – 99 kgCO<sub>2</sub>e/bbl) \*365 = 27 MMT<sub>CO<sub>2</sub>e</sub>/yr. Based on average 2005 crude oil lifecycle GHG emissions estimates in EPA’s Renewable Fuel Standard (RFS2) final rule (75 FR 14669); also see DOE/NETL. 2009. Petroleum-Based Fuels Life Cycle Greenhouse Gas Analysis - 2005 Baseline Model.

emissions, 27 million metric tons is roughly equivalent to annual CO<sub>2</sub> emissions of seven coal-fired power plants.<sup>2</sup>

Based on our review, there is a reasonably close causal relationship between issuing a cross-border permit for the Keystone XL project and increased extraction of oil sands crude in Canada intended to supply that pipeline. Not only will this pipeline transport large volumes of oil sands crude for at least fifty years from a known, dedicated source in Canada to refineries in the Gulf Coast, there are no significant current export markets for this crude oil other than the U.S. Accordingly, it is reasonable to conclude that extraction will likely increase if the pipeline is constructed. While we recognize that other pipeline projects are currently being planned that might bring additional pipeline capacity for oil transport should the Keystone XL project not be constructed, these other proposed pipelines appear to still be in the planning stages, and whether and when they will be approved or constructed appears uncertain. We also note that the Draft EIS discusses end use GHG emissions from combustion of refined oil, indicating they would not differ from those of conventional crude. Because they are easily calculated and are of interest to the public in obtaining a complete picture of the GHG emissions associated with the proposed project, it might be helpful to provide a quantitative estimate of these emissions.

In addition, we recommend that the State Department expand the discussion of alternatives or other means to mitigate the emissions. The analysis in the Draft EIS focuses primarily on carbon sequestration benefits that might accrue from re-vegetation measures proposed as mitigation for wetland losses associated with the pipeline. We believe there are a number of other mitigation opportunities to explore, including control of fugitive emissions, pumping station energy efficiency, and use of renewable power, where appropriate. In addition, we recommend that the State Department consider project alternatives that could significantly reduce extraction-related GHG emissions. For example, these alternatives could include a smaller-capacity pipeline or deferring the project until current efforts to reduce extraction-related GHG emissions through carbon capture and storage, improved energy efficiency, or new extraction technologies are able to lower GHG emissions to levels closer to those of conventional crude.

#### Air Quality Impacts - Refinery Emissions

We appreciate the efforts to predict pollutant emissions from refineries processing crude oil from the proposed project, and recognize that it is likely that some of the oil sands crude from the project would replace declining feedstock at existing refineries, and that some of the oil sands crude would supply newly upgraded or expanded facilities. We also agree with the Draft EIS's conclusion that there may be increases in air emissions from refineries in the area, and we recommend that additional information and analyses be presented to substantiate the conclusion that these increases "would not likely be major (Draft EIS, pp. 3.14-36)." Further, we recommend that additional information be provided concerning potential impacts from emissions associated with events such as start up, shut down, and malfunctions, which are not addressed by existing permits and which may have substantial adverse impacts.

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<sup>2</sup> See, <http://www.epa.gov/cleanenergy/energy-resources/calculator.html> (translating 27 MMTCO<sub>2</sub>e to annual coal plant CO<sub>2</sub> emissions).

## Pipeline Safety/Spill Response

We believe that additional efforts to evaluate potential adverse impacts to surface and ground waters from pipeline leaks or spills, including potential adverse impacts to public water supplies and source water protection/wellhead protection areas, are necessary.

First, we note that in order for the bitumen to be transported by the pipeline, it will be either "diluted with cutter stock (the specific composition of which is proprietary information to each shipper) or an upgrading technology is applied to convert the bitumen to synthetic crude oil." (Draft EIS, pp. 3.13-18). Without more information on the chemical characteristics of the diluent or the synthetic crude, it is difficult to determine the fate and transport of any spilled oil in the aquatic environment. For example, the chemical nature of the diluent may have significant implications for response as it may negatively impact the efficacy of traditional floating oil spill response equipment or response strategies. In addition, the Draft EIS addresses oil in general and as explained earlier, it may not be appropriate to assume this bitumen oil/synthetic crude shares the same characteristics as other oils. This is especially of concern in light of the Draft EIS's statement that "Some characteristics could not be described or distilled from assay data for the example oils for this EIS, including viscosity profiles, proportion of volatile and semi-volatiles compounds, the amount or proportion of PAHs, and toxicity to aquatic organisms based on bioassays." (Draft EIS, pp. 3.13-19)

We recommend that a more complete chemical/physical profile of the oil and details describing the processing activities be provided in order to accurately predict the potential impacts to aquatic environment from a spill event. We are also concerned that while the Draft EIS discusses the impacts of oil in general on dissolved oxygen in waters in the event of a spill, it does not emphasize the primary effect of an oil spill, i.e., acute toxicity to the aquatic environment or address the chronic impacts of the undefined polynuclear aromatic hydrocarbons (PAH). We recommend further information be provided regarding both acute and chronic impacts.

We are concerned that the Draft EIS only uses what the Department of Transportation's Office of Pipeline Safety (OPS) considers a "serious or significant" spill to assess risks, and did not estimate the number of spills that may have caused harm to the waters of the U.S. under the Oil Pollution Act. EPA recommends also using historical data regarding oil spills that caused harm using EPA's regulations (40 CFR 110) and that were required to be reported to the National Response Center. The risk assessment should also address spills from pipeline-related pump stations, breakout tanks and construction activities. In order to better assess the risks of spills, we also recommend that additional information be provided concerning the frequency of pipeline inspections and the methods for inspection by the OPS and Keystone.

We recommend that additional information be provided to describe the means by which small pipeline leaks would be detected (including those leaks that will not be detected by the proposed Supervisory and Control Data Acquisition System) and the time frames over which a small leak may occur prior to detection and control, as well as the potential volume of oil that would be released before shut-off could occur. We also recommend that information be

provided to describe what methods would be employed to patrol the pipeline in search of a possible leak, especially at times of severe weather.

We are concerned that the Draft EIS only provides a summary of the procedures likely to be included in yet to be developed Emergency Response Plan, and does not provide information about potential Facility Response Plans. We recommend that detailed information regarding these plans, including draft versions of the plans, be provided. More specifically, we also recommend that the draft plans (including the draft Spill Prevention Control and Countermeasure (SPCC) plans, include strategies for responding to bitumen that is mixed with a diluent, which may affect its behavior in water, as described above.

We recommend that more information be provided on proposed measures to reduce the risk of spills in "high consequence areas (HCA)" (49 CFR 195.450) (i.e., populated areas, designated zones around public drinking water intakes, and unusually sensitive ecologically resource areas). In particular, we recommend that the State Department and OPS work with Keystone to ensure that the Integrity Management Plans for these HCAs would be completed before the pipeline would begin operation.

In order to further reduce the risks of damage to water resources, we recommend including an analysis of the feasibility of increasing the number of mainline valves, which can shut down the pipeline in the event of an emergency, particularly where the pipeline would cross perennial streams or drinking water source aquifers.

We also recommend that a description be provided of Keystone's financial assurances for potential liability in the event of a spill, including potential bond amounts that would be necessary to protect both human health and the environment.

In addition, we recommend that the State Department more clearly outline the issues associated with the request for a special permit from OPS to operate portions of the pipeline at a greater pressure than allowed under current regulations. We recommend that the sulfur content of the oil sands crude be specifically considered in making the decisions on the pipeline wall thickness. Finally, we recommend that the State Department and the OPS work together to develop one NEPA analysis for all of the permits required for the project, including OPS's special permit.

#### Environmental Justice

We are concerned that the Draft EIS does not fully identify and address the potential for disproportionately high and adverse human health and environmental effects on minority, low-income and Tribal populations. Foremost, we believe the methodology for defining minority, low-income and Tribal populations may have underestimated the extent of these vulnerable populations in the project area. When examining the presence of minority and low-income populations that are potentially affected by the proposed project, the Draft EIS compared the percentage of minority and low-income residents in the counties along the proposed pipeline route with State-level percentages. First, we suggest that in addition to using county-level data, census tract data be used to determine the presence of minority, low income and Tribal

populations in the project area that may be potentially impacted. Second, we recommend comparing this community level data to national U.S. population data in order to ensure that the minority and low-income populations are properly identified. EPA believes that this approach will ensure that the presence of minority and low-income populations are not artificially "diluted" (as discussed in EPA Guidance for Consideration of Environmental Justice in Clear Air Act Section 309 Reviews (1999): pp. 12-13) and that the characteristics of the potentially affected communities are identified in order to evaluate potential impacts from the proposed action. We also note that the Draft EIS does not evaluate the environmental justice issues associated with potential impacts to communities in Port Arthur, Texas, where numerous industrial facilities, including chemical plants and a hazardous waste incinerator, are contributing to the residents' overall exposure to contaminants.

In addition, we believe that the potential human health impacts associated with both air emissions from refineries and the potential contamination of drinking water supplies from an oil spill have not been fully evaluated. We recommend that the State Department prepare a health risk assessment to specifically address these issues as they relate to low income, minority and Tribal populations.

#### Wetlands

The Draft EIS identifies 746 acres of aquatic resources that would be affected by pipeline construction and operations, but does not identify impacts associated with ancillary facilities and connected actions, including staging areas, work camps and storage locations. We recommend that additional information be developed to ensure that a complete estimate of potential impacts is provided. In addition, we recommend that the potential impacts of converting forested and scrub-shrub wetlands to herbaceous wetlands be evaluated, as well as appropriate mitigation measures to address these impacts. In general, the EIS should identify how wetland impacts would be avoided and minimized, to the maximum extent practicable, and how unavoidable wetland impacts would be compensated for through wetland restoration, creation, or enhancement.

#### Migratory Birds

EPA also recommends that the State Department assess the potential impacts to migratory bird populations in the U.S. from oil sands extraction activities associated with the proposed project. An estimated 30% of North America's landbirds breed in the boreal forests of Canada and Alaska (Saving Our Shared Birds: Partners in Flight Tri-National Vision for Landbird Conservation. Cornell Lab of Ornithology: Ithaca, NY: 2010). As recognized by this recently released study, sponsored in part by the U.S. Fish and Wildlife Service, effects on bird populations in the boreal forest can be felt throughout the birds' migratory range, including wintering grounds in the United States. While we appreciate that the Keystone has agreed to develop a "Migratory Bird Mitigation Plan" in consultation with U.S. Fish and Wildlife Service, it appears that this plan would only address potential impacts from construction activities in the U.S.

Conclusion

The additional information and improved analyses specified above are necessary to ensure the information in the EIS is adequate to fully inform decision makers and the public about the potential environmental consequences of the Keystone XL project. Given these concerns, we have rated the Draft EIS as Category 3-Inadequate Information. As with all projects that have not addressed potentially significant impacts, this proposal is a potential candidate for referral to CEQ. We recommend that the additional information and analysis be circulated for full public review in a revised Draft EIS. Additional detailed comments are also enclosed, as well as a "Summary of Rating Definitions and Follow-up Actions."

Thank you for the opportunity to comment on the Keystone XL Draft EIS. As a cooperating agency, EPA looks forward to continuing to work with the State Department as it revises the Draft EIS to respond to the comments received. Please feel free to contact me at (202) 564-2440, or have your staff contact Susan Bromm, Director, Office of Federal Activities, (202) 564-5400, if you have any questions or would like to discuss our comments.

Sincerely,



Cynthia Giles

Enclosures

cc: Stephen D. Mull, Executive Secretary, U.S. Department of State  
Michelle DePass, Assistant Administrator, Office of International and Tribal Affairs, EPA

**U.S. Environmental Protection Agency**  
**Detailed Comments – Keystone XL Project Draft EIS**

**Greenhouse Gas Emissions**

We appreciate the inclusion of estimates of GHG emissions from the pipeline construction and operation. With regard to GHG emissions from refining, we recognize that incremental GHG emissions will depend on the feedstock being replaced, and we appreciate the efforts to provide an estimate in the Draft EIS. Given the potential large volumes of emissions, we recommend that the State Department explain in more detail the reasons for the very large range (i.e., 1.3 to 17.2 million tons of CO<sub>2</sub>) of the estimate, and provide complete citations for the data and analyses used (i.e., the BP Whiting data, the Natural Resources Defense Council analysis, and the University of Toronto study). In addition, we recommend that the State Department provide information that would allow decision makers to understand the total, as well as incremental, GHG emissions expected from refining the oil sands.

**Air Quality Impacts**

EPA recommends that the revised Draft EIS provide additional information and analysis regarding potential emissions of pollutants at the receiving refineries and other associated facilities. EPA is prepared to assist the State Department in this analysis; as a first step, we recommend compiling the following information:

- 1) Describe the expected composition (crude slate) of the oil sands crude that will be transported through the pipeline, including sulfur and nitrogen content.
- 2) Describe whether the oil sands crude is pre-processed in Canada before shipment, and if so, describe the expected pre-processing and the expected characteristics of the crude before and after the pre-processing.
- 3) Indicate which of the following refineries are anticipated to have direct access to the proposed project, have contracted to receive the oil sands crude and in what quantities.

ConocoPhillips, Ponca City, OK  
Sinclair/Holly, Tulsa, OK  
Sunoco/Holly, Tulsa, OK  
Valero, Ardmore, OK  
Wynnewood Refining, Wynnewood, OK  
Motiva, Port Arthur, TX  
Total, Port Arthur, TX  
Valero, Port Arthur, TX  
ExxonMobil, Beaumont, TX  
Pasadena Refining, Pasadena, TX  
Houston Refining, Houston, TX  
Valero, Houston, TX  
Deer Park Refining, Deer Park, TX



ExxonMobil, Baytown, TX  
BP, Texas City, TX  
Marathon Oil, Texas City, TX  
Valero, Texas City, TX  
Calcasieu, Lake Charles, LA  
CITGO Lake Charles, LA  
ConocoPhillips, Lake Charles, LA

- 4) Indicate which of the refineries listed above are expected to receive oil sands crude from the proposed project but do not currently appear to have agreements in place.
- 5) Indicate whether the refineries that receive the oil sands crude from the project are expected to use it to replace existing supplies; if so, provide available information on the current crude slate utilized at these refineries, including sulfur and nitrogen content.
- 6) Indicate how many U.S. refineries already receive oil sands crude and whether they have been required to apply for new or modified permits; if so, indicate what type of refinery upgrades have been required and how have emissions been affected after they began processing the oil sands crude oil.

We also recommend that the revised Draft EIS provide information as to whether any new storage capacity would be required in Port Arthur or at the Moore Junction in Harris County, and whether any additional air permits for processing the crude oil would be required in Beaumont/Port Arthur, Texas and in Harris County, Texas. We recommend that the potential for air quality impacts associated with increased emissions from storage and processing be addressed in the revised Draft EIS.

With regard to air quality impacts from construction activities, while these emissions may be temporary, we do not believe it is appropriate to conclude that the construction activities would not significantly affect local or regional air quality without a full analysis. We appreciate the inclusion of an emission inventory for construction and operation of the proposed project; however, since the Draft EIS does not present an air quality impact analysis of these potential emissions, the potential for localized impacts or impairment on Class I areas is not clear. We note that the cumulative 3-year construction emissions depicted in Table 3.12.1-9 are significant (e.g., 1,142 tons NO<sub>x</sub>), but since these figures are presented at project-wide scale, the potential impacts to the individual Class I and Sensitive Class II areas are not apparent. We recommend that the revised Draft EIS provide emissions information on a more useful scale, such as per spread (the Draft EIS states that the project will be built in 17 spreads) and make clear what distance and time the emissions are spread over. EPA recommends that the revised Draft EIS include a detailed emissions control plan to address concerns related to the potential impacts of particulate matter emissions, as well as diesel emissions. The existing fugitive dust control plan presented in the Draft EIS contains some reasonable types of emission controls, such as water trucks; however, the level of detail currently provided may not ensure protection of air quality. We also recommend that the emissions control plan identify when mitigation measures would take effect, the duration of mitigation measures, and how compliance with the plan would be ensured.

We recommend that the revised Draft EIS clarify the time period used to quantify the estimated emissions associated with the electrical pumps that will be used at the pump stations – see Table 3.12.1-10 (Estimated Direct Emissions for the Project).

### **Pipeline Safety/Spill Response**

It is critical that surface and ground water protection, particularly protection of public water supplies and source water protection/wellhead protection areas, receive high priority in the NEPA analysis and decision making. In many areas of potential project routing, the shallow alluvial ground water systems may be the only sources of potable water for public and rural domestic use. All appropriate precautions and actions to reduce the probability of a spill or leak occurring, to reduce the magnitude of a spill or leak, and to otherwise mitigate the adverse consequences of such an event, should be taken.

Additional comments, specific to Section 3.13 of the Draft EIS (*OIL SPILL RISK ASSESSMENT AND ENVIRONMENTAL CONSEQUENCE ANALYSIS*), are provided below.

#### Section 3.13 Introduction

Footnote 1: The Federal Water Pollution Control Act and the Clean Water Act use the term “discharge” when referring to oil spills. Suggest adding “discharge” or “oil discharge” to terms that equate to a release. Additionally, oil products may be present in any water used to hydrostatically test the pipeline prior to being placed in service. We recommend that the revised Draft EIS provide information on the potential impacts, if any, from discharges of hydrostatic testing water, which may be used to pressurize the pipeline.

#### Section 3.13.1.3 Industry Standards

The revised Draft EIS should include the applicable standards from the list presented in 49 CFR 195.3 that are specific to breakout tanks.

#### Section 3.13.2.2 TransCanada Company-Specific Oil Pipeline Operating History

To properly characterize the operating history with respect to environmental impacts (and specifically to waters of the U.S.), we recommend that there be a discussion of enforcement cases/actions related to pipeline oil discharges (or pipeline related pump stations or construction activities) which caused harm, as defined by 40 CFR 110, and were required to be reported to the National Response Center. We recommend that the revised Draft EIS presents oil spills (discharges) in the context of both Department of Transportation (DOT) and EPA enforcement of oil spill cases.

#### Section 3.13.3.3 Construction Spills

We recommend that the revised Draft EIS clarify that there are a significant number of requirements in 40 CFR 112 in addition to the requirement for containment at

## **Summary of Rating Definitions and Follow-up Action**

### **Environmental Impact of the Action**

#### **LO--Lack of Objections**

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

#### **EC--Environmental Concerns**

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

#### **EO--Environmental Objections**

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

#### **EU--Environmentally Unsatisfactory**

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

### **Adequacy of the Impact Statement**

#### **Category 1--Adequate**

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

#### **Category 2--Insufficient Information**

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

#### **Category 3--Inadequate**

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

SPCC regulated facilities. In addition, we recommend that the revised Draft EIS clarify that the construction operations may require the development of SPCC plans per 40 CFR 112, and that a discussion of the reporting procedures for oil discharges under 40 CFR 110 for these construction activities be provided. Finally, please use 40 CFR 112 as the correct citation for EPA's regulation that applies for spill prevention.

#### Section 3.13.4 Impacts Related to Oil Spills

We recommend that analysis of the potential of impacts of oil spill discharges be revised to reflect information available in Natural Resource Damage Assessments (NRDAs) conducted by Federal Trustees in response to major pipeline incidents. The current discussion in the Draft EIS is limited with regard to actual documented impacts, and we suggest these NRDAs, several of which have been generated in response to major oil spills from pipelines, be reviewed and used as a source for information regarding the environmental impacts from pipeline oil spills.

#### Section 3.13.4.5 Keystone Actions to Prevent, Detect, and Mitigate Oil Spills

##### Spill Response Procedures

We recommend that the revised Draft EIS clarify that the SPCC plans only apply to the non-transportation related equipment and activities at pump stations and breakout tank farms and to pipeline construction activities. The SPCC plan employs measures to prevent spills and mitigate spills on the facility grounds in order to prevent oil discharges to waters of the US. The pipeline itself is regulated by DOT and response preparedness is addressed by the plans required by DOT under 49 CFR 194. It should be noted however, these plans should be shared with EPA response personnel (On Scene Coordinators) in the EPA Regions because EPA is typically the federal responder to inland pipeline spills and responsible for inland area planning required in the National Contingency Plan, 40 CFR 300. Finally, non-transportation related equipment and activities at pump stations/breakout tank farms may require the submission and some cases, approval, of a Facility Response Plan (FRP) as required under 40 CFR 112.20. In addition, the spill reporting procedures in the Draft SPCC plan should be expanded to include procedures to report to federal and local responders, in addition to the NRC and state responders.

##### Spill Response Equipment

As mentioned earlier, without the actual data explaining the oil's chemical and physical characteristics, the efficacy of traditional "floating oil" spill response equipment is in question. Again, this reflects the importance of obtaining all relevant information related to the bitumen oil/synthetic crude's chemical and physical characteristics.

### Section 3.13.4.6 Types of Oil Spill Impacts

#### Chemical and Toxicological Impacts

Because the exact composition of the PAH content of the oil is not documented, it is difficult to determine any long-term risks from a spill to the aquatic environment. In addition, there is no analysis of impacts to downstream water intakes (both industrial and municipal), nor recognition that oil spills reaching these intakes may impact fire-fighting capabilities at the facility or municipality.

#### **Environmental Justice**

EPA believes that additional work is needed to better identify and address potential adverse effects of the proposed project on low-income, minority and Tribal populations, and we offer the following summary comments.

**Air Emissions:** EPA recommends that the revised Draft EIS analyze whether minority, low income and Tribal populations, may be exposed to greater risks from air emissions from the project, with a specific focus on emissions from refineries receiving oil sands. We recommend that the revised Draft EIS include a health risk assessment to address these issues.

**Drinking Water:** We recommend additional analysis of whether minority, low income and Tribal populations may be especially vulnerable to drinking water contamination from oil spills because they often obtain their drinking water from private wells or small public water supply systems for which monitoring and treatment of contaminants may be limited or non-existent. In performing this analysis, we recommend that the same "region of influence" be used to evaluate potential impacts for both public and private water supplies.

**Local Emergency Response Capacity:** We recommend that information and data produced for Local Emergency Response Planning Committees, created pursuant to the Emergency Response Planning and Community Right to Know Act, be evaluated to determine available response capacity of those counties that have meaningfully greater minority, low income and Tribal populations.

**Access to Medical Services:** EPA is concerned that access to medical facilities for minority, low-income and Tribal populations may not have been fully evaluated; these populations may be especially vulnerable to human health impacts of oil spills due to their lack of access to medical care, combined with potential health disparities. EPA recommends that the revised Draft EIS evaluate these potential impacts and means to minimize or mitigate the impacts in those counties that are designated as medically underserved areas.

**Public Involvement:** We recommend that as the State Department continues the NEPA process it ensure that efforts are taken to provide meaningful opportunities for public involvement, including measures to address populations that are linguistically or culturally isolated, and ensuring full accessibility of NEPA documents to minority, low income and Tribal populations. Translation of selected documents may be important for public involvement and also for developing mitigation measures in those areas where a significant percentage of the

households speak a language other than English at home. We also recommend that the revised Draft EIS provide a summary of the efforts taken to inform and involve low income, minority and Tribal populations. In addition, we recommend that an Enhanced Public Participation Plan be developed that would provide up-to-date information to communities during project construction and operation.

### **Additional Issues Related to Impacts on Tribes**

EPA recommends that the State Department provide additional information regarding its efforts to consult with Tribal governments, along with measures to address issues raised by non-federally recognized Tribes. We also recommend that impacts to Tribal populations and communities that are associated with their conditions of poverty be further evaluated, including potential impacts due to subsistence consumption of fish, wildlife and vegetation that may be contaminated by oil spills, potential endangerment of drinking water sources, and language/cultural barriers which may impede capacity for public involvement in developing mitigation measures.

The Draft EIS discussion of impacts to Tribes is limited to an identification and count of the number of counties with a higher percentage of Native Americans than the state percentage, and a section on archaeological resources, historic resources (buildings, structures, objects, and districts), and properties of religious and cultural significance, including Traditional Cultural Properties (TCPs). The Draft EIS does not address potential impacts to Tribal members and communities along the pipeline, or to Tribal culture and traditional practices. We recommend a more rigorous analysis of potential for impact to Tribes be included in a revised Draft EIS.

For example, in some areas, impacts may be compounded by the presence of poverty and the high percentage of Native Americans. Coal, Hughes, Okfuskee, Seminole, and Pontotoc Counties in Oklahoma have both high percentages of Native American residents (in contrast with the state's percentage) and high poverty levels. Nacogdoches County in Texas also has a high percent of Native Americans compared with the State, as well as a relatively high poverty level. In these areas, a large portion of the population may rely on hunting, fishing, gathering and other means of subsistence due to both tradition and necessity. They may be disproportionately impacted by spills that reach waters and impact fisheries, or affect areas where food is traditionally obtained.

We recommend that the revised Draft EIS clarify the extent of Indian country lands potentially impacted by the proposed project, including Tribal trust and allotted Tribal member land. We also recommend that the revised Draft EIS address the potential impacts to areas where Tribes may have unadjudicated claims to water bodies that could be affected by spills from the proposed pipeline (e.g., Clear Boggy and its tributaries in Coal County, Oklahoma).

Finally, we recommend that additional information be provided regarding potential impacts to the Arbuckle Simpson aquifer in Oklahoma, which is located east of the proposed pipeline route. In particular, we recommend including specific information regarding the distance of the pipeline to the aquifer, the direction of groundwater flow in the area, and the potential for a plume from an underground leak to reach the aquifer.

## Wetlands

Pursuant to 33 CFR 332.4 and 40 CFR 230.94, *Compensatory Mitigation for Losses of Aquatic Resources (Mitigation Rule)*, a compensatory mitigation plan must be submitted and approved by U.S. Army Corps of Engineers (USACE) before issuance of an individual CWA Section 404 permit. EPA recommends that the USACE/EPA regulations that address compensatory mitigation for losses of aquatic resources be reviewed, and that compensatory mitigation consistent with these regulations (73 Fed. Reg. 19594, April 10, 2008, [http://www.usace.army.mil/CECW/Pages/final\\_cmr.aspx](http://www.usace.army.mil/CECW/Pages/final_cmr.aspx)) be developed that will adequately compensate for potential losses of wetland functions and services from pipeline construction and operation along the entire route be included in the revised Draft EIS. Additionally, we recommend that the revised Draft EIS include a conceptual wetland monitoring plan that would, throughout a period of time (normally five years), direct field evaluations of those wetlands crossed by the pipeline to assure wetland functions and values are recovering. The monitoring plan should also include the wetland mitigation sites. EPA prefers wetland mitigation take place in areas as close to the project site as practicable (i.e., in close proximity and, to the extent possible, the same watershed) in order to replace lost functions and services.

The Draft EIS states "Implementation of measures in Keystone's Construction, Mitigation and Reclamation (CMR) Plan (Appendix B) would avoid or minimize most impacts on wetlands associated with construction and operation activities, and would ensure that potential effects would be primarily minor and short term." Impacts to forested wetlands are long-term and would be considered permanent. We recommend that Keystone work with each EPA Region and USACE district to determine what kind of compensation would be required for the permanent conversion of forested wetland to herbaceous wetland, and Keystone continue to work with the EPA Regions and the USACE Districts to develop a Wetland Mitigation Plan for review and consideration in the revised Draft EIS.

We recommend that the revised Draft EIS provide additional information on the proposed widths of construction zones and right-of-ways for all wetland crossings, along with a clearer explanation of which wetland areas will be re-vegetated and which will not allow re-establishment of scrub-shrub and forested wetlands. In addition, we recommend including a clearer explanation of which wetlands are considered "of special concern and value" and which are considered "standard," as well as the management implications of those designations.

Of particular importance are impacts to prairie pothole wetlands and bottomland hardwood forested wetlands, as these resources are of generally high ecological importance and difficult to replace on the landscape. Whenever practicable, potential impacts to prairie pothole wetlands should be avoided using horizontal directional drilling (HDD) techniques, rather than trenching.

We recommend that the revised Draft EIS provide additional information on the status of the efforts to avoid locating specific mainline valves in wetland areas.

The Draft EIS indicates that there are nine forested wetland crossings in Oklahoma and 78 in Texas, and a total of 261 acres of forested wetlands will be affected during construction

and 137 acres will be affected by pipeline operation. However, these estimates do not include the number of acres disturbed by associated access roads or construction camps; we recommend that these estimates be revised to include all potential impacts.

We also recommend that the revised Draft EIS address compliance with E.O. 11990 (Protection of Wetlands), including the requirement to ensure mitigation of unavoidable impacts to all wetlands and waters of the U.S. on Federal lands and facilities.

Equal mitigation commitments should be made for connected actions, including transmission lines. EPA agrees with the suggestions provided on page 3.4-12 of the Draft EIS, and recommends that these suggestions be applied to all wetlands, including both non-jurisdictional and jurisdictional. These additional measures include a request that pre- and post-construction monitoring plans be developed for depressional wetlands of the prairie pothole region, and that wetlands that no longer pond water after the pipeline is installed should receive additional compaction, replacement, or at the landowner's or managing agency's discretion, compensatory payments should be made for drainage of these wetlands. Recommendations are also included that Keystone should develop a plan to compensate for permanent wetland losses in areas of concern to the National Park Service and Texas Parks and Wildlife.

### **Water Resources**

We recommend that further commitments to protect sensitive waterbodies be provided. The Draft EIS states that 341 perennial waterbodies would be crossed during the construction of the proposed project, and that four techniques would be used to cross perennial waterbodies: the open-cut wet method, the dry flume method, the dry dam-and-pump method, or, horizontal directional drilling (HDD). For each perennial waterbody crossing, a site specific engineering and geomorphologic analysis would determine the best method to use to avoid and reduce aquatic impacts. Based on available information, we understand that the open-cut wet method has the greatest potential for water quality impacts. Open-cut wet trench methods with a flowing river often require a wide ditch since the side walls of the ditch are likely to be unstable in alluvial material, and this often results in discharge of substantial quantities of sediment into the river. Such methods generally result in increased sediment production and transport, and increased risks of adverse effects to water quality and aquatic life. Directional drilling beneath waterbodies or constructing waterbody crossings using coffer dams and pumping to keep the construction work area dry are considered less damaging techniques than wet trench crossings. EPA recommends the revised Draft EIS evaluate potential impacts to water quality, aquatic species, riparian and wetland habitat from the various water crossing methods to determine which method would be both practicable and environmentally preferable.

To ensure protection of drinking water supplies, we recommend that private water wells within 1 mile of the pipeline be identified, rather than within 100 feet, as currently described in the Draft EIS. We recommend that Keystone be required to notify state source water protection officials and private well owners before construction would begin in a Source Water Protection Area (SWPA) or wellhead protection area. Pipeline routing alternatives that avoid Sole Source Aquifers, SWPAs, and wellhead protection zones are preferred; if the pipeline route is unable to avoid these areas, EPA recommends that specific mitigation measures be developed, including



installation of double lining, corrosion protection, cathodic protection, water quality monitoring, and state-of-the-art leak detection methods.

If public or private wells would be located within 100 feet of the proposed pipeline route, we recommend that Keystone be required to sample the wells for appropriate petroleum indicator compounds as part of baseline monitoring, and additional monitoring, as appropriate. We also recommend that water quality monitoring would need to be made available for well and/or spring owners, upon request. Moreover, we recommend that Keystone would mitigate impacts to wells that may occur during construction or by pipeline spills/leaks, by transporting potable water to the affected site, drilling a new well, or other appropriate measures. Applicable mitigation measures should be described in the revised Draft EIS.

EPA also notes that the Ogallala Aquifer is a critical resource that may be affected by the proposed project, as it is the drinking water source for almost 80% of Nebraska's residents, as well as a multi-state agricultural industry. We recommend that the revised Draft EIS provide additional information as to the potential for adverse impacts to this resource.

We are pleased that Keystone proposes to use horizontal directional drilling (HDD) for crossing the Niobrara River in Nebraska. However, we recommend that the revised Draft EIS include a discussion of the Niobrara River's status as a National Scenic River (<http://www.nps.gov/niob/index.htm>) and how the proposed crossing would not conflict with its status as a National Scenic River.

We appreciate the information provided in Appendix E-4 ("Waterbodies within 10 Miles Downstream of Proposed Water Crossings"). Based on our review of this appendix, we note that there are numerous proposed water crossings that are located upstream of water supply reservoirs. We recommend that the revised Draft EIS include an analysis of potential impacts to these reservoirs in the event of a spill. There are also many points where the potential alignment of the pipeline will cross stream or river segments which are not attaining the state Water Quality Standards and thus a Total Maximum Daily Load (TMDL) has been prepared; special considerations should be applied to prevent contributing to pollutant loads when crossing these sensitive resources.

The Draft EIS states (p. 3.3-29) that the Lower Brule to Witten 230-kV transmission line would have "negligible effects on water resources" - we recommend that additional information be provided to support this conclusion.

### **Ancillary Facilities**

Due to the large number of potential ancillary facilities, including 50 permanent access roads, 30 new pump stations, 74 mainline valves, two crude oil delivery sites and a tank farm, disclosure of the location of these facilities and evaluation of site-specific impacts should be provided to the maximum extent possible. EPA notes, for example, that impacts to wetlands from ancillary facilities and access roads outside of the 110-foot ROW have not yet been identified and assessed. While EPA recognizes that the exact locations of all the ancillary facilities required for support of construction and operation of the pipeline have not yet been

determined, their omission may result in underestimation of potential impacts of the proposed project. The locations, lengths, and designs for ancillary facilities should be identified and described as clearly and completely as possible in the revised Draft EIS to allow understanding of all site-specific impacts.

Additionally, the Draft EIS does not clearly describe where the right of way (ROW) would be reduced to protect "certain sensitive areas, which may include wetlands, cultural sites, shelterbelts, residential areas, or commercial/industrial areas" (Draft EIS, p. 2-3). EPA recommends that the revised Draft EIS clearly define, using maps and/or a table with milepost numbers, where the reduced ROW would be implemented. This information should be summarized in each of the resource chapters of Chapter 3 – Environmental Analysis to enable the reader to easily understand when extra protection would be provided to sensitive resources.

### **Hazardous Materials Sites**

We recommend that the revised Draft EIS identify any Hazardous Materials Sites that may be located within the proposed ROW or other areas associated with the project, and include plans for minimizing potential impacts from accidental disturbance during construction. The response plans should include measures to minimize impacts to communities from removal of any potential hazardous materials.