Keystone XL Pipeline Project: Key Issues

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Summary

Canadian pipeline company TransCanada has filed an application with the U.S. Department of State to build the Keystone XL pipeline, which would transport crude oil from the oil sands region of Alberta, Canada, to refineries in the United States. Keystone XL would have the capacity to transport 700,000 barrels per day, delivering crude oil to the market hub at Cushing, OK, and further to points in Texas. The project is expected to cost more than $7.0 billion, of which at least $5.4 billion would be spent on the U.S. portion. TransCanada is planning to build a short additional pipeline so that oil from the Bakken formation in Montana and North Dakota can also be carried on the Keystone XL pipeline.

The construction of petroleum facilities connecting the United States with a foreign country requires a Presidential Permit from the State Department based on a determination of national interest. An element of that determination for the Keystone XL project is the preparation of an Environmental Impact Statement (EIS) pursuant to the National Environmental Policy Act. On April 16, 2010, the State Department's draft EIS for the Keystone XL project was released for comment to the general public and interested state and local agencies. Subsequently, the U.S. Environmental Protection Agency determined the EIS to be inadequate. On March 15, 2011, the State Department announced that it expects to issue a supplemental draft EIS in mid-April 2011. It will be available for 45-day public comment. The State Department also announced that, following issuance of a final EIS, it will solicit additional public comment and host a public meeting before making a determination on granting a Presidential Permit. The State Department estimates that it will release a final EIS and final Record of Decision and National Interest Determination by the end of 2011. Whatever the State Department's decision, legal challenges appear likely.

Opponents to the Keystone XL pipeline project, primarily environmental groups and affected communities along the route, object to the project principally on the grounds that it supports "dirty" Canadian oil sands development, that it could pose an environmental risk to groundwater, and that it promotes continued U.S. dependency on fossil fuels. Arguments criticizing the greenhouse gas emissions of oil sands production are based to some degree on the belief that limiting pipeline capacity to U.S. markets may limit output from Canada's oil sands.

Proponents of the Keystone XL pipeline, including Canadian agencies and petroleum industry stakeholders, point to energy security and economic benefits, such as job creation. Some contend that the Keystone XL project secures growing Canadian oil supplies for the U.S. market, which could offset imports from other, less dependable foreign sources. They also claim that if oil sands output cannot flow to the United States, infrastructure to export it to Asia will develop. Further, having recently permitted the original Keystone pipeline, the State Department could face a consistency challenge if it were to come to a different conclusion on similar environmental issues for the Keystone XL permit.

International pipeline projects like Keystone XL are not subject to the direct authority of Congress, but numerous Members of Congress have expressed support for, or opposition to, the pipeline proposal because of its potential environmental, energy security, and economic impacts. Congress may have an oversight role stemming from federal environmental statutes that govern the pipeline's application review process.

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Introduction

In September 2008, TransCanada (a Canadian company) applied to the U.S. Department of State for a permit to cross the U.S.-Canada international border with the Keystone XL pipeline project. If constructed, the pipeline would carry crude oil produced from the oil sands region of Alberta, Canada, to U.S. Gulf Coast refineries. Because the pipeline would connect the United States with a foreign country, it requires a Presidential Permit issued by the State Department. Some Members of Congress have expressed support for the proposed pipeline's energy security and economic benefits while others have expressed reservations about its environmental impacts. Though Congress has no direct role in permitting the pipeline's construction,[1] it may have an oversight role stemming from federal environmental statutes that govern the pipeline's application review process.

This report describes the Keystone XL pipeline proposal and the process required for federal approval. It summarizes key arguments for and against the pipeline put forth by the pipeline's developers, federal agencies, environmental groups, and other stakeholders. The report discusses potential consistency challenges faced by the State Department in reviewing the pipeline application given its recent prior approvals of similar pipeline projects. Finally, the report reviews the constitutional basis for the State Department's authority to issue a Presidential Permit, and opponents' possible challenges to this authority.

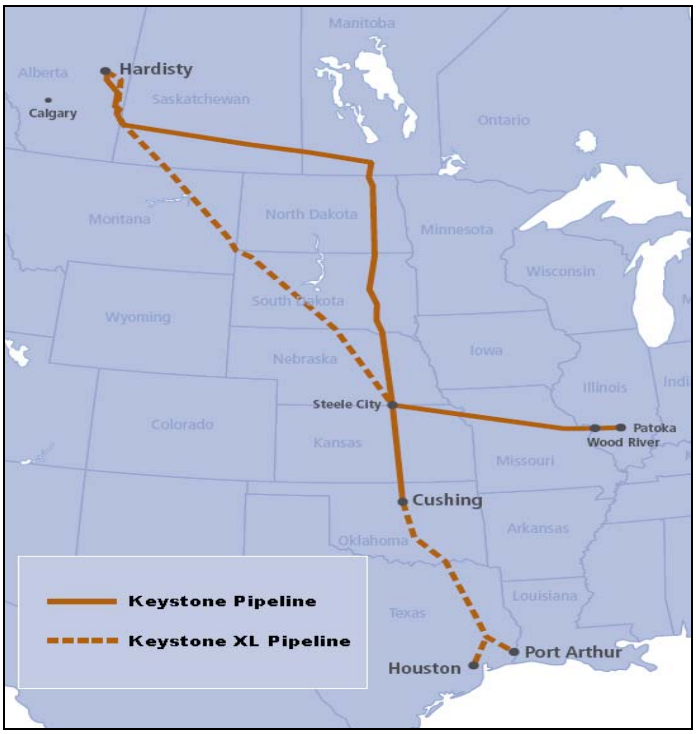
Pipeline Description and Status

The U.S. portion of the Keystone XL pipeline project would pass through Montana, South Dakota, Nebraska, Oklahoma, and Texas (**Figure 1**). The pipeline would consist of approximately 1,380 miles of 36-inch-diameter pipe and have the capacity to transport 700,000 barrels per day (bpd) of crude oil to the United States, delivering crude to an existing oil terminal in Oklahoma and further to points in Texas. By increasing its pumping capacity in the future, the pipeline could ultimately transport up to 900,000 bpd.[2]

[1] See, for example, U.S. Senator Max Baucus, Letter to Secretary of State Hillary Rodham Clinton, September 10, 2010, http://baucus.senate.gov/?p=press_release&id=179; U.S. Representative Henry A. Waxman, Letter to Secretary of State Hillary Rodham Clinton, July 2, 2010, http://democrats.energycommerce.house.gov/documents/20100706/State.070210.Clinton.Keystone.XL.pdf.

[2] U.S. Department of State, *Draft Environmental Impact Statement for the Keystone XL Oil Pipeline Project,* April 16, 2010. p. ES-2.

Figure 1. TransCanada Keystone Pipeline System Routes



Source: TransCanada, Inc., *Keystone Pipeline System*, May 2010, http://www.transcanada.com/docs/Key_Projects/keystone_may_2010.pdf.

Note: Figure 1 shows the preferred alternative for the Keystone XL pipeline route according to Presidential Permit application documents. For discussion of alternative routes, see the State Department EIS discussed below.

The Keystone XL project is expected to cost more than $7.0 billion, with the U.S. portion accounting for at least $5.4 billion of that total.[3] Current cost estimates include cost increases since the project's initial permit application was filed reportedly due to currency swings, changing regulatory requirements, and permitting delays.[4] The Keystone XL pipeline would be an extension of TransCanada's existing Keystone pipeline, which links the Alberta oil sands to refineries in Illinois and Oklahoma (**Figure 1**). The Keystone pipeline received State Department approval on March 17, 2008, and began commercial operation in June 2010.

Keystone XL Extension to Bakken Oil Production

The Bakken formation is an unconventional oil resource in the Williston Basin, which underlies parts of North Dakota, eastern Montana, and northwestern South Dakota.[5] Current Bakken

[3] TransCanada Keystone Pipeline, L.P., Application of TransCanada Keystone Pipeline L.P. for a Presidential Permit Authorizing the Construction, Operation, and Maintenance of Pipeline Facilities for the Importation of Crude Oil to be Located at the United States-Canada Border, U.S. Dept. of State, September 19, 2008, p. 10, http://www.keystonepipeline-xl.state.gov/clientsite/keystonexl.nsf/presidentialpermitapplication.pdf?OpenFileResource.

[4] "TransCanada Expects $1-Billion Cost Escalation for Keystone XL Pipeline," Canadian Press, February 17, 2011.

[5] Steven G. Grape, *Technology-Based Oil and Natural Gas Plays: Shale Shock! Could There Be Billions in the Bakken?*, Energy Information Administration, U.S. Department of Energy, November 2006, http://www.eia.doe.gov/ (continued...)

production is around 350,000 bpd, much of which is currently taken away by rail and truck.[6] In part, this is because infrastructure has not kept up with rapid production growth in the Bakken region in recent years. Output is expected to increase significantly in the future.[7]

TransCanada has signed contracts with Bakken oil producers to carry 65,000 bpd from the region via the Keystone XL pipeline. While not the full 100,000 bpd TransCanada had offered, this was enough to justify the Bakken Marketlink Project, a pipeline running from Baker, MT, to the Keystone XL pipeline, which can then carry crude to the oil hub at Cushing, OK, and on to the Gulf Coast.[8] The Bakken Marketlink would have a 100,000 bpd capacity and is estimated to cost $140 million. It could start operating in 2013 if it and the Keystone XL pipeline receive regulatory approvals.[9]

These new Bakken contracts also improve the economics for Keystone XL, raising its committed capacity from 75% to near 90%.[10] Lower transportation costs and access to new markets may support investment in the Bakken. And TransCanada is not the only company adding pipeline capacity. Notably, Enbridge, another Canadian pipeline company, is building a 145,000 b/d pipeline in the same time frame. According to Enbridge, sufficient pipeline capacity has been slow to emerge in the region because "they're smaller players in the Bakken. They are not able to make the 20-year commitments and it's been a lot of work to get them to commit to the level that [is] required to underwrite a major project out of the Bakken."[11]

Presidential Permit Application Requirements

Ordinarily, the U.S. government does not have permit authority for oil pipelines, even interstate pipelines. This is in contrast to interstate natural gas pipelines, which, under Section 7(c) of the Natural Gas Act, must obtain a "certificate of public convenience and necessity" from the Federal Energy Regulatory Commission (FERC).[12] However, the construction, connection, operation, and maintenance of a pipeline that connects the United States with a foreign country requires executive permission conveyed through a Presidential Permit. Since the Keystone and proposed Keystone XL pipelines are designed for the importation of oil from Canada, their facilities require a Presidential Permit from the State Department.[13]

(...continued)

pub/oil_gas/natural_gas/feature_articles/2006/ngshock/ngshock.pdf.

[6] Nathan Vanderklippe, "TransCanada to move U.S. crude through Keystone," *The Globe and Mail*, January 26, 2011.

[7] Energy Information Administration, U.S. Department of Energy, *Annual Energy Outlook 2011 Early Release*, December 16, 2010, p. 8, http://www.eia.gov/forecasts/aeo/pdf/0383er(2011).pdf.

[8] Jeffrey Jones, "TransCanada plans U.S. Bakken pipeline link," *Reuters*, January 20, 2011.

[9] TransCanada, "TransCanada to Transport U.S. Crude Oil to Market Bakken Open Season a Success," press release, January 11, 2011, http://www.transcanada.com/5631.html.

[10] Vanderklippe, 2011.

[11] Lauren Krugel, "TransCanada attracts support for Montana-to-Oklahoma crude pipeline," *The Canadian Press*, January 20, 2011.

[12] 15 USC § 717f(c).

[13] See Executive Order 13337, "Issuance of Permits With Respect to Certain Energy-Related Facilities and Land Transportation Crossings on the International Boundaries of the United States," 69 *Federal Register* 25299, as amended, and Department of State Delegation of Authority No. 118-2 of January 26, 2006. The source of Permitting Authority for relevant Executive Orders is discussed further in the **Appendix**.

To issue a Presidential Permit, the State Department must find that issuance would serve the national interest. In the course of processing such applications, the State Department consults extensively with concerned federal and state agencies, and invites public comment in arriving at its determination. With respect to the application submitted by TransCanada, the State Department concluded that the issuance of the Presidential Permit would constitute a major federal action that could have a significant impact upon the environment within the meaning of the National Environmental Policy Act (NEPA) of 1969.[14] For this reason, the State Department is preparing an Environmental Impact Statement (EIS) to assess the environmental impacts that could result if the Keystone XL Pipeline project were approved.[15]

Environmental Review Under the National Environmental Policy Act

Broadly, NEPA requires that federal agencies consider the environmental impacts of their actions before proceeding with them and that they inform the public of those environmental impacts. In processing Presidential Permit applications, the State Department is responsible for coordinating compliance with NEPA and other environmental requirements applicable to the pipeline (not just for the border crossing).[16] The EIS must identify any state, tribal, or federal licenses, permits, or approvals applicable to the project in the United States. The State Department is ultimately responsible for the content of the EIS, but relies on information provided by TransCanada. For example, TransCanada's permit application included an Environmental Report which was intended to provide the State Department with sufficient information to understand the scope of potential environmental impacts of the project.[17]

The EIS must include a statement of the purpose and need for action, a description of all reasonable alternatives to meet that purpose and need, a description of the environment to be affected by the alternatives under consideration, and an analysis of the impacts to each environment identified, including cumulative impacts of the project. It is prepared in two stages, resulting in a draft and a final EIS.[18] During preparation of the draft EIS, the State Department, as the "lead agency" under NEPA, requested input from any agency with jurisdiction by law or special expertise regarding any environmental impact involved in the project (referred to as "cooperating agencies").[19] Cooperating agencies for the Keystone XL project include the U.S. Environmental Protection Agency (EPA), the Army Corps of Engineers, and the U.S. Department of Agriculture's Farm Service Agency, among others. In addition to its role as a cooperating agency in the EIS process, the EPA is required to review the EIS itself to rate its adequacy and to

[14] 42 U.S.C. § 4321 et seq.

[15] For more analysis of oil sands and their environmental impacts, see CRS Report RL34258, *North American Oil Sands: History of Development, Prospects for the Future*, by Marc Humphries.

[16] Presidential Permits state that, by authorizing the permit, the State Department has considered requirements of Section 7 of the Endangered Species Act (16 U.S.C. 1536) and other statutes related to environmental concerns, the National Historic Preservation Act (NHPA) of 1966 (16 U.S.C. Section 470f), and Executive Order 12898 of February 11, 1994 (59 *Federal Register* 7629), concerning environmental justice.

[17] Documents submitted by TransCanada are available online at http://www.keystonepipeline-xl.state.gov/clientsite/keystonexl.nsf?Open.

[18] For more analysis of NEPA requirements, see CRS Report RL33152, *The National Environmental Policy Act (NEPA): Background and Implementation*, by Linda Luther.

[19] 40 C.F.R. § 1508.5. Also, Executive Order 13337 directs the Secretary of State to refer an application for a Presidential Permit to other specifically identified federal departments and agencies on whether granting the application would be in the national interest.

rate a project's environmental impacts on a range from "lack of objections" to "environmentally unsatisfactory."[20]

Both NEPA and the Presidential Permit approval process require that the public be informed of the environmental impacts of the project and be allowed to comment. Public involvement within the context of the Presidential Permit process may be more extensive than that required under NEPA, particularly for a high-profile or controversial project.

The State Department released for public comment its draft EIS for the proposed Keystone XL Pipeline project on April 16, 2010.[21] The public comment period officially closed on July 2, 2010. On July 16, 2010, the EPA issued its rating of the draft EIS, determining that it was "inadequate" and identifying a number of potential environmental impacts that had not been sufficiently addressed.[22] Among other concerns, EPA believed that the purpose and need of the project had been too narrowly crafted, that impacts to air and water quality were not fully analyzed, and that pipeline safety procedures were inadequate. In the wake of the EPA's comments and public comments, the State Department announced that it expects to publish a supplemental draft EIS in mid-April 2011.[23] The public will have 45 days to comment on the supplemental draft EIS. After consideration of public and relevant agency comments a final EIS may be issued.

A Record of Decision and National Interest Determination

In arriving at its final decision regarding a Presidential Permit, NEPA requires only that the State Department assess the environmental consequences of an action and its alternatives before proceeding. If the adverse environmental effects of the proposed action are adequately identified and evaluated, the agency is not constrained by NEPA from deciding that other benefits outweigh the environmental costs and moving forward with the action. The Presidential Permit requires a determination that the proposal is in the national interest. It is possible that, based on environmental impacts, a project may be deemed not in the national interest.

Once the final EIS is approved and the agency decides to take action, under NEPA, the State Department must prepare a public record of decision (ROD). Generally, once the ROD has been issued, an agency action may proceed (as long as approvals from relevant states are received and other statutory requirements are met). Under previous Presidential Permit applications for pipeline projects, the ROD and the National Interest Determination were issued in the same document.[24]

Providing for additional public comment after issuing a final EIS is not required under NEPA. However, following issuance of an EIS for the Keystone XL pipeline, the State Department has

[20] For more information on the EPA's role in the NEPA process, "Environmental Impact Statement (EIS) Rating System Criteria" at http://www.epa.gov/compliance/nepa/comments/ratings.html.

[21] Documents prepared by the U.S. Department of State related to its NEPA requirements are available online at http://www.keystonepipeline-xl.state.gov/clientsite/keystonexl.nsf?Open.

[22] U.S. Environmental Protection Agency, Letter to the U.S. Department of State on the draft EIS for the Keystone XL project, July 16, 2010, http://yosemite.epa.gov/oeca/webeis.nsf/%28PDFView%29/20100126/$file/20100126.PDF.

[23] U.S. Department of State, "State Department Announces Next Steps in Keystone XL Pipeline Permit Process," press release, March 15, 2011, http://www.state.gov/r/pa/prs/ps/2011/03/158402.htm.

[24] U.S. Department of State, "Department of State Record of Decision and National Interest Determination, TransCanada Keystone Pipeline, LP Application for Presidential Permit," February 25, 2008.

announced that it will solicit public comment and host a public meeting in Washington, DC, before it makes a determination under Executive Order 13337 on whether issuance of this permit is in the U.S. national interest.[25] This additional round of public comment is being provided apart from NEPA requirements. It is unclear how, or if, any public comments may be incorporated into a final ROD.

After the ROD is issued, legal challenges to the NEPA process may occur. Any element of the State Department's NEPA compliance may be challenged. Statements made by stakeholders opposed to the Keystone XL project indicate that challenges may include assertions that State Department officials did not consider all reasonable alternatives to meet their stated goals; that environmental impacts, including cumulative impacts, of the pipeline were not fully considered; or that the public was not provided sufficient opportunity for input. Another possible NEPA challenge relates to public statements made by Secretary Clinton in October 2010 that she was "inclined to" approve the pipeline. At the time, environmental groups charged that this statement indicated that a final decision had been made, before the NEPA process was complete.[26]

State Siting and Environmental Approvals

In the absence of federal government siting authority (apart from the border crossing), state laws establish the primary siting authority for the Keystone XL pipeline. These laws vary from state to state. South Dakota, for example, required TransCanada to apply for a permit for the Keystone XL pipeline from the state public utility commission, which issued the permit on April 25, 2010.[27] Montana requires a certificate from the state's Department of Environmental Quality, but has not yet granted one for the Keystone XL project. Nebraska does not appear to have any permitting requirements that apply specifically to the construction and operation of oil pipelines, although a state statute does include an "eminent domain" provision, which grants eminent domain authority to oil pipeline companies that are unable to obtain the necessary property rights from the relevant property owners.[28] A number of additional state and environmental approvals and permits required by the states along the proposed route are summarized in TransCanada's Presidential Permit application.[29] All of the aforementioned state approvals are in various stages of review along the proposed Keystone XL pipeline route.

Arguments For and Against the Pipeline

Proponents of the Keystone XL pipeline, including Canadian agencies and U.S. and Canadian petroleum industry stakeholders, base their positions primarily on increasing the diversity of the

[25] U.S. Department of State, "State Department Announces Next Steps in Keystone XL Pipeline Permit Process," press release, March 15, 2011, http://www.state.gov/r/pa/prs/ps/2011/03/158402.htm.

[26] Josh Funk, *Washington Post*, "Groups Ask Clinton to Recuse Self on Pipeline Bid," November 4, 2010.

[27] South Dakota Public Utilities Commission, Final Decision and Order; Notice of Entry Before the Public Utilities Commission of the State of South Dakota, In the Matter of the Application by Transcanada Keystone Pipeline, LP for a Permit Under the South Dakota Energy Conversion and Transmission Facilities Act to Construct the Keystone Pipeline Project, HP07-001, http://puc.sd.gov/commission/orders/HydrocarbonPipeline/2008/hp07-001.pdf.

[28] Neb. Rev. Stat. § 57-1101.

[29] TransCanada Keystone, L.P., *Keystone XL Project: Preliminary Environmental Report*, September 2008, Table 7, http://www.keystonepipeline-xl.state.gov/clientsite/keystonexl.nsf/preliminaryenvironmentalreport.pdf?OpenFileResource.

U.S. petroleum supply and economic benefits to the United States, including job creation. Opponents, primarily environmental groups and affected communities along the route, object to the project principally on the grounds that Canadian oil sands development has negative environmental impacts and that it promotes continued U.S. dependency on fossil fuels. These issues are further discussed below.

Impact on U.S. Energy Security

In its Presidential Permit application, TransCanada asserts that constructing the proposed Keystone XL pipeline is in the U.S national interest to maintain adequate crude oil supplies for U.S. refineries. The application argues that the pipeline will allow U.S. refiners to substitute Canadian supply for other foreign crude supply and to obtain direct pipeline access to secure and growing Canadian crude output. In particular, the application asserts that the pipeline would allow the United States to decrease its dependence on foreign crude oil supplies from Mexico and Venezuela, the two largest oil importers into the U.S. Gulf Coast.[30] In its draft EIS for the project, the State Department similarly finds that the Keystone XL pipeline "would counteract insufficient domestic crude oil supply while reducing U.S. dependence on less reliable foreign oil sources."[31] These arguments have taken on additional weight in light of the ongoing political unrest in the Middle East, which has disrupted oil production in Libya, a significant oil exporter, and has caused a spike in global crude oil prices.

Canadian Oil Imports in the Overall U.S. Supply Context

Gross U.S. imports of crude oil and petroleum products have averaged 11.7 million barrels a day (Mb/d) over the last 12 months.[32] Exports averaged 2.2 Mb/d, leaving net imports at 9.5 Mb/d.[33] U.S. imports declined each year between 2005 and 2010 as a result of lower total oil demand and higher domestic supply. Domestic demand has decreased by about 1.7 Mb/d versus 2005 levels due largely to the economic recession. Meanwhile, U.S. production of oil and oil alternatives (including crude oil, natural gas liquids, and biofuels) has increased by 1.4 Mb/d since 2005. As a result, net imports fell by roughly 3.1 Mb/d since 2005.[34] This decline could be mitigated in the near term as oil demand recovers from the recession or if domestic supply were to fall. However, there is increasing consensus among forecasters that U.S. net oil imports have passed their high water mark already and may remain relatively flat in the long run after the economic recovery.

Among the largest sources of U.S. gross oil imports are Canada (2.5 Mb/d), Mexico (1.2 Mb/d), and Venezuela (1.0 Mb/d). Imports from the last two have decreased in recent years (**Figure 2**). Mexican production peaked in 2004 and has fallen by about 0.9 Mb/d since then because new

[30] TransCanada Keystone Pipeline, L.P., September 19, 2008, pp. 6-8.

[31] U.S. Department of State, April 16, 2010. p. 4-2.

[32] All data in this section are from the U.S. Energy Information Administration's (EIA's) *Petroleum Navigator* (http://www.eia.gov/dnav/pet/pet_move_impcus_a2_nus_ep00_im0_mbbl_m.htm) and *International Energy Statistics* (http://tonto.eia.doe.gov/cfapps/ipdbproject/IEDIndex3.cfm).

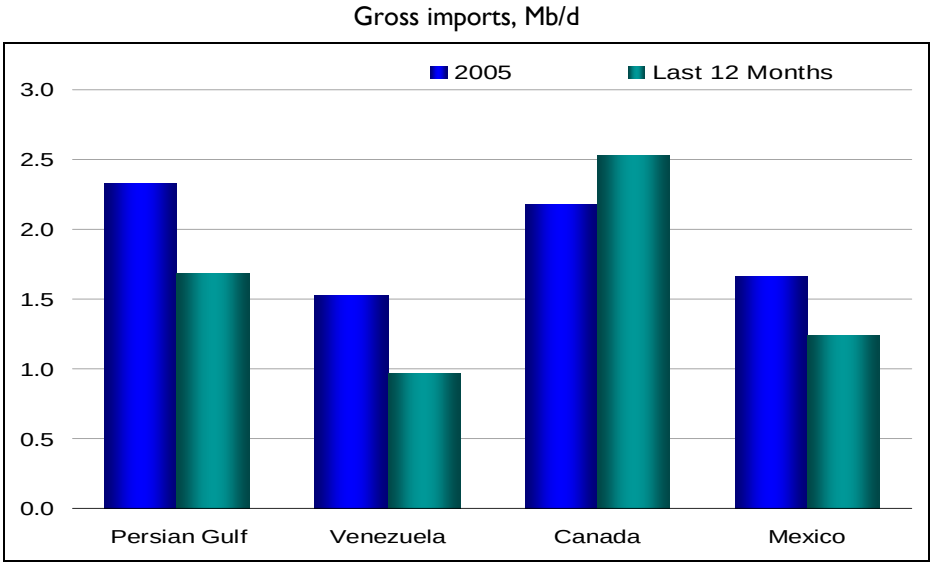
[33] For context, the United States consumes roughly 19 Mb/d, more than 20% of the world's oil market.

Net imports are gross or total imports less total exports. This section will focus on gross imports, though it should be noted that among U.S. petroleum exports about 0.2 Mb/d of petroleum products go to Canada and 0.4 Mb/d to Mexico.

[34] These data are based on full year 2010 estimates provided by the EIA's *Short Term Energy Outlook* (STEO), http://www.eia.doe.gov/emeu/steo/pub/contents.html. The STEO provides a balance of U.S. supply and demand.

projects have not been able to offset depletion at Mexico's giant Cantarell field. Venezuelan production never fully recovered after a strike at its national oil company, *Petróleos de Venezuela*, in 2002-2003. Venezuelan production today is nearly 1 Mb/d less than that achieved in 2001. In both countries, policies on private investment and a broad set of priorities—some of which are non-commercial—for national oil companies have made sustaining or increasing output difficult. In addition, Venezuela has been trying to diversify its export markets away from the United States, for example, by increasing exports to China.[35] Oil imports to the United States from the Persian Gulf have also decreased since 2008-2009. All major Persian Gulf exporters to the United States are members of the Organization of the Petroleum Exporting Countries (OPEC), which cut production in 2009. Venezuela is also an OPEC member, but according to U.S. Energy Information Administration (EIA) data, it did not join other members in voluntarily reducing output.

Figure 2. U.S. Oil Imports, Selected Sources



Source: U.S. Energy Information Administration, *"Petroleum Navigator: U.S. Imports by Country of Origin,"* U.S. Department of Energy, December 12, 2010. http://www.eia.gov/dnav/pet/pet_move_impcus_a2_nus_ep00_im0_mbblpd_m.htm.

Notes: Last 12 months of available data history runs from November 2009 to October 2010.

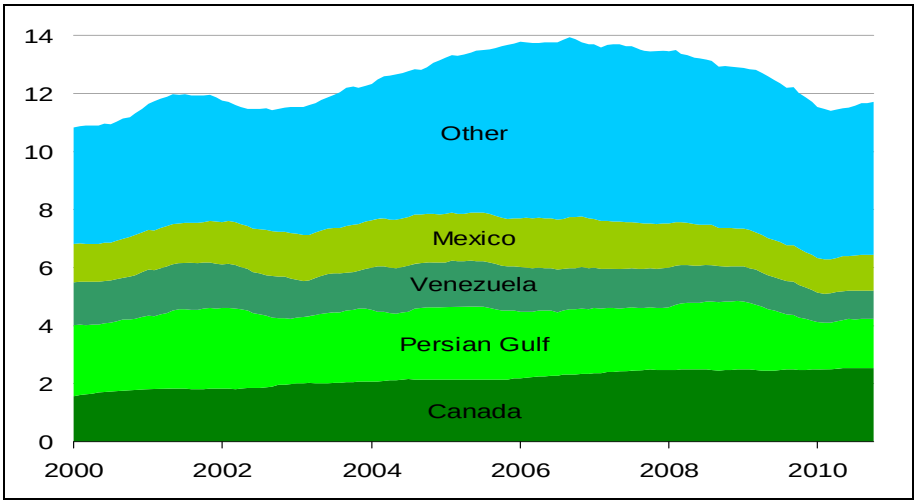
While Mexican and Venezuelan oil production has decreased, Canadian production has increased, primarily due to growing production from the Alberta oil sands region. Because production from Canada's oil sands currently lacks the infrastructure to be exported from Canada's west coast, increased oil sands output is necessarily directed south into the United States through existing and planned pipeline infrastructure, including the Keystone pipeline. Canadian production has increased about 0.2 Mb/d since 2005, and exports to the United States increased by 0.4 Mb/d (**Figure 3**).[36]

[35] U.S. Energy Information Administration, "Country Analysis Brief: Venezuela," February 2010, http://www.eia.doe.gov/emeu/cabs/Venezuela/Oil.html.

[36] As in the United States, Canadian consumption fell due to economic downturn. This allowed the increment in exports to be higher than the increment in production.

Figure 3. Total U.S. Oil Imports

Monthly imports in Mb/d on a 12 month moving average, Jan. 2000 to Oct. 2010



Source: U.S. Energy Information Administration, *"Petroleum Navigator: U.S. Imports by Country of Origin,"* December 12, 2010. http://www.eia.gov/dnav/pet/pet_move_impcus_a2_nus_ep00_im0_mbblpd_m.htm.

Impact of Increased Oil Sands Crude Supply to the United States

Oil sands (also referred to as tar sands) are a mixture of clay, sand, water, and heavy black viscous oil known as bitumen. Oil sands are processed to extract the bitumen, which can then be upgraded into "syncrude" that is suitable for pipeline transport. Canada's oil sands production is expected to be exported as either a light, upgraded synthetic crude or a heavy crude oil that is a blend of bitumen diluted with lighter hydrocarbons to ease transport. The bulk of oil sands supply growth is expected to be in the form of the latter.[37] Most oil sands imports into the United States currently go to the Midwest, where some refineries are investing in complex refining capacity to process growing volumes of heavy Canadian crude.[38] The U.S. Gulf Coast region already has a large amount of complex refining capacity and is considered to be potentially well suited for processing Canadian heavy crude oil.[39] Gulf Coast refiners currently process heavy crudes from Venezuela, Mexico, and elsewhere. Complex refineries in the Gulf Cost may be best equipped to handle a large increase of heavy oil sands crude, though they will still need to adjust processes and make new capital investments in equipment to accommodate particular crudes' characteristics,[40] especially if the new Canadian crudes will be used in large amounts.[41]

[37] Canadian Association of Petroleum Producers (CAPP), *Crude Oil: Forecast, Markets, and Pipelines*, June 2010, p. 7, http://www.capp.ca/getdoc.aspx?DocId=173003.

[38] CAPP, 2010, p. 13. According to CAPP, refineries adding capacity to process heavy oil in the Midwest include those in Roxana, IL; Whiting, IN, and Detroit, MI.

[39] CAPP, 2010, p. 14.

[40] Baker Hughes, *Planning Ahead for Effective Canadian Crude Processing*, Baker Petrolite White Paper, 2010, http://www.bakerhughes.com/assets/media/whitepapers/4c2a3c8ffa7e1c3c7400001d/file/28271-canadian_crudeoil_update_whitepaper_06-10.pdf.pdf&fs=1497549.

[41] For a description of which units refineries may need to add (or have added) to be able to process more Canadian oil sands supply, see Praveen Gunaseelan and Christopher Buehler, "Changing US Crude Imports Are Driving Refinery Upgrades," *Oil and Gas Journal*, August 10, 2009.

With expanded pipeline capacity, Canadian supplies are expected to compete with other heavy crudes such as those from Mexico, Venezuela, and elsewhere.[42] It is difficult to predict precisely how this competition will play out, but it may take place through shifting discounts or premiums on crude oils from various sources.[43] Because oil sands output can be transported only to Canadian and U.S. refiners currently, it could be possible for Canadian oil supplies to effectively "push out" waterborne shipments from other countries, although this depends on a wide range of market conditions. Waterborne crudes may more easily go to other destinations than Canadian crudes, though like Canadian crudes they can be tied to specialized refining capacity, as is true for Venezuelan heavy crudes.

Although Canada currently lacks pipeline capacity to transport oil sands production to the Pacific coast, there has been some interest in building such capacity. If this were to occur, Canadian crudes could access other markets by sea, especially in Asia, and would no longer be as tied to the United States. The commercial viability of such pipelines is unclear, but some have claimed a western pipeline could be economic if greater U.S. shipments were not possible.[44] Indeed, a study commissioned by the Department of Energy concluded that

> if pipeline projects to the BC [British Columbia] coast are built, they are likely to be utilized. This is because of the relatively short marine distances to major northeast Asia markets, future expected growth there in refining capacity and increasing ownership interests by Chinese companies especially in oil sands production. Such increased capacity would alter global crude trade patterns. Western Canadian Sedimentary Basin (WCSB) crudes would be "lost" from the USA, going instead to Asia. There they would displace the world's balancing crude oils, Middle Eastern and African predominantly OPEC grades, which would in turn move to the USA. The net effect would be substantially higher U.S. dependency on crude oils from those sources versus scenarios where capacity to move WCSB crudes to Asia was limited.[45]

Crude oil prices are generally set in a global market. Increased supply from anywhere can, therefore, contribute to keeping oil prices lower than they would otherwise be, all other things being equal. Accordingly, building any new pipeline can lower the cost of oil and oil products in associated markets if (1) it enables lower transport or refining costs and (2) not building the pipeline would reduce global supply. The latter assumes that without the pipeline, resources would be left stranded. Some have argued that Canadian oil sands production would be the same regardless of whether the Keystone XL pipeline is built.[46] Then, the pipeline itself may not make a significant contribution to increasing global oil supply. However, if an alternative transport route to market—for instance, via a west coast pipeline and then tanker to Asia—raises transport costs above an economic threshold, it could prevent certain marginal oil sands projects from being built. The validity of these alternative scenarios, as in most debates about proposed energy infrastructure projects, depends largely on complex assumptions about oil market structure and

[42] Center for Energy Economics and Bureau of Economic Geology, *Overview of the Alberta Oil Sands*, University of Texas at Austin, 2006, p. 16, http://www.beg.utexas.edu/energyecon/documents/overview_of_alberta_oil_sands.pdf.

[43] For more about the U.S. refining system, see CRS Report R41478, *The U.S. Oil Refining Industry: Background in Changing Markets and Fuel Policies*, by Anthony Andrews, Robert Pirog, and Molly F. Sherlock.

[44] Edward Welsch, "TransCanada: Oil Sands Exports Will Go to Asia if Blocked in U.S.," Dow Jones Newswires, June 30, 2010.

[45] EnSys Energy & Systems, Inc., *Keystone XL Assessment: Final Report*, Prepared for the U.S. Department of Energy, Office of Policy & International Affairs, December 23, 2010, p. 118.

[46] Welsh 2010; EnSys Energy & Systems 2010.

economics about which fair-minded analysts may disagree. Consequently, stakeholders evaluating the oil supply and price impacts of the proposed Keystone XL Pipeline may need to rely on their own judgment based on the best facts available at the time.

Economic Impact of the Pipeline

In addition to supply diversity arguments, some Keystone XL pipeline proponents support the project based on economic benefits associated with expanding U.S. pipeline infrastructure. A recent study by the Energy Policy Research Foundation, for example, concludes that "the Keystone expansion would provide net economic benefits from improved efficiencies in both the transportation and processing of crude oil of $100 million-$600 million annually, in addition to an immediate boost in construction employment."[47] A 2009 report from the Canadian Energy Research Institute (CERI) commissioned by the American Petroleum Institute similarly concludes that

> As investment and production in oil sands ramps up in Canada, the pace of economic activity quickens and demand for US goods and services increase rapidly, resulting in an estimated 343 thousand new US jobs between 2011 and 2015. Demand for US goods and services continues to climb throughout the period, adding an estimated $34 billion to US GDP in 2015, $40.4 billion in 2020, and $42.2 billion in 2025.[48]

These CERI estimates apply to the entire oil sands industry, however, not only the Keystone XL project, and they are derived from a proprietary economic analysis which has not been subject to external review. Some stakeholders point to State Department and other studies reporting much lower anticipated economic benefits.[49] Consequently, it is difficult to determine what specific economic and employment impacts may ultimately be attributable to the Keystone XL pipeline. Nonetheless, given the physical scale of the project, it could be expected to increase employment and investment at least during construction.

Canadian Oil Sands Environmental Impacts

Oil production from oil sands is controversial because it has significant environmental impacts, including emissions of greenhouse gases during extraction and processing, disturbance of mined land, and impacts on wildlife and water quality. Because bitumen in oil sands cannot be pumped from a conventional well, it must be mined, usually using strip mining or open pit techniques, or the oil can be extracted with underground heating methods.[50] Large amounts of water and natural gas are also required (for heating) during the extraction process.[51] The magnitude of the environmental impacts of oil sands production, in absolute terms and compared to conventional

[47] Energy Policy Research Foundation, Inc., The Value of the Canadian Oil Sands (….to the United States): An Assessment of the Keystone Proposal to Expand Oil Sands Shipments to Gulf Coast Refiners, Washington, DC, November 29, 2010, p. 2, http://www.eprinc.org/pdf/oilsandsvalue.pdf.

[48] Canadian Energy Research Institute, *The Impacts of Canadian Oil Sands Development on the United States' Economy, Final Report*, Calgary, Alberta, October 2009, p. vii.

[49] National Wildlife Federation, "TransCanada Exaggerating Jobs Claims for Keystone XL," November 9, 2010, http://www.dirtyoilsands.org/files/Keystone_XL_Jobs_11-09-10.pdf.

[50] U.S. Bureau of Land Management, "About Tar Sands," web page, January 11, 2011, http://ostseis.anl.gov/guide/tarsands/index.cfm.

[51] Cecilia Jamasmie, "The Challenges and Potential of Canada's Oil Sands," *Mining*, September-October 2010, pp. 7-8.

oil production, has been the subject of numerous, and sometimes conflicting, studies and policy papers.[52] Some stakeholders who object to oil sands projects oppose the Keystone XL pipeline because it expands access to new markets for the oil produced by those projects, thereby encouraging what they consider to be further environmentally destructive oil sands development. As discussed earlier, however, if oil sands production can be diverted to other markets (e.g., Asia), preventing the Keystone XL project may not necessarily limit oil sands development.[53]

Possible Risks to the Ogallala Aquifer

The proposed route of the Keystone XL pipeline passes across significant portions of the Ogallala Aquifer (**Figure 4**), one of the world's largest known aquifers and the primary source of groundwater for approximately 20% of U.S. agricultural production.[54] Because the aquifer is relatively close to the surface, some stakeholders are concerned that a release from the pipeline could potentially contaminate the aquifer with oil, jeopardizing its use for farming and drinking water and causing significant ecosystem damage. These concerns have been heightened in the wake of the 2010 spill from an Enbridge oil pipeline in Marshall, MI, which released 819,000 gallons of crude into a tributary of the Kalamazoo River. Furthermore, a recent report by the Natural Resources Defense Council (NRDC) argues that the Keystone XL pipeline could be more likely to fail and cause environment damage than other crude oil pipelines because the bitumen mixture it would carry is "significantly more corrosive to pipeline systems than conventional crude," among other reasons.[55] Canadian officials and other stakeholders have rejected these arguments, however, citing factual inaccuracies and a flawed methodology in the analysis, which compares pipeline spill rates in Canada to those in the United States.[56]

In its draft EIS for the Keystone XL pipeline project, the State Department states that "there is the possibility that a release could migrate through the overlying surface materials and enter a groundwater system."[57] Nonetheless, the department concludes that "the probability of a large spill occurring is very low, and, consequently, risk of environmental impacts is minimal."[58] Because the probability of a pipeline spill and subsequent groundwater contamination cannot be known with certainty, however, debate as to the groundwater risk potentially posed by the Keystone XL pipeline will likely continue.[59]

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[52] For an example of contrasting views, see IHS CERA Inc., *Oil Sands, Greenhouse Gases, and US Oil Supply, Getting the Numbers Right*, 2010; and Natural Resources Defense Council, "Setting the Record Straight: Lifecycle Emissions of Tar Sands," November 2010.

[53] For more analysis of oil sands and their environmental impacts, see CRS Report RL34258, *North American Oil Sands: History of Development, Prospects for the Future*, by Marc Humphries.

[54] Jane Braxton Little, "The Ogallala Aquifer: Saving a Vital U.S. Water Source," *Scientific American*, March 30, 2009.

[55] Anthony Swift, Susan Casey-Lefkowitz, and Elizabeth Shope, Tar Sands Pipelines Safety Risks, Natural Resources Defense Council, February 2011, p. 6.

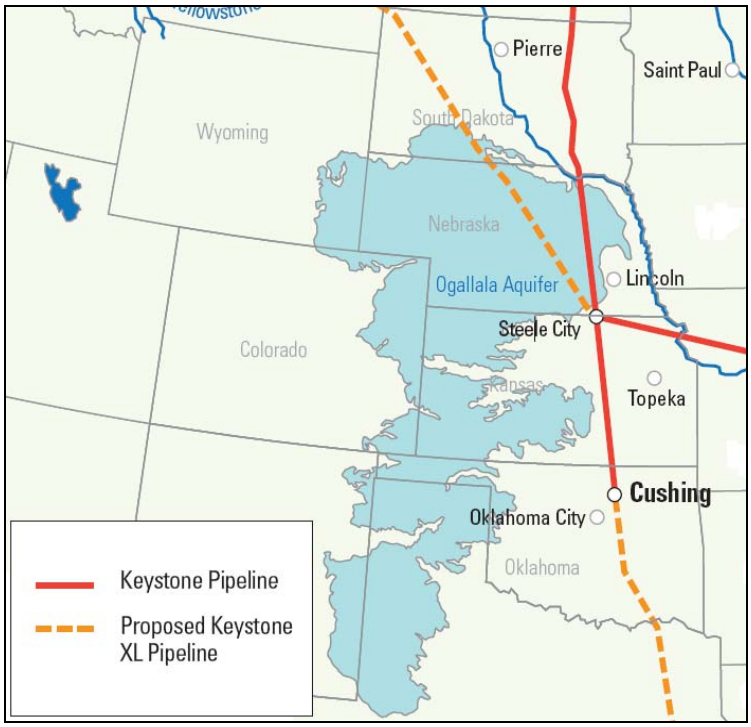
[56] Canadian Energy Resources Conservation Board, "ERCB Addresses Statements in Natural Resources Defense Council Pipeline Safety Report," Press release, Calgary, Alberta, February 16, 2011.

[57] U.S. Department of State, *Draft Environmental Impact Statement for the Keystone XL Oil Pipeline Project*, Appendix P, "Risk Assessment," April 16, 2010. p. 4-6.

[58] Ibid. p. 6-1.

[59] For more analysis of pipeline safety issues, see CRS Report R41536, *Keeping America's Pipelines Safe and Secure: Key Issues for Congress*, by Paul W. Parfomak.

Figure 4. Keystone XL Pipeline Route Across the Ogallala Aquifer



Source: Natural Resources Defense Council, *Say No to Tar Sands Pipeline*, November, 2010, p. 3.

Fossil Fuels Dependence

Some stakeholders object to the Keystone XL pipeline because it would increase U.S. supplies of oil, and thereby perpetuate the nation's dependence on imported fossil fuels and increase carbon emissions from the transportation sector.[60] Acknowledging this concern, in a public forum on October 20, 2010, Secretary of State Clinton reportedly remarked that "we're either going to be dependent on dirty oil from the [Persian] Gulf or dirty oil from Canada … until we can get our act together as a country and figure out that clean, renewable energy is in both our economic interests and the interests of our planet."[61] Critics of the State Department's draft EIS assert that the environmental review overlooks the pipeline project's overall impact on greenhouse gas emissions, for example, from the extraction and refining processes. However, others have argued that whether the Keystone XL Pipeline is constructed would have little bearing on greenhouse gas emissions as there are likely to be other export routes available for Canadian oil sands crude, and therefore, the same crude oils would still be transported and refined, albeit in different geographies (e.g., China).[62]

[60] See, for example: Natural Resources Defense Council, *Tar Sands Invasion: How Dirty and Expensive Oil from Canada Threatens America's New Energy Economy*, May 2010.

[61] Darren Goode, "Clinton Seems Poised to Approve TransCanada Pipeline," *The Hill*, October 20, 2010.

[62] EnSys Energy & Systems 2010, p. 116.

Consistency of State Department Review

In addition to the specific arguments surrounding the Keystone XL pipeline project summarized above, the State Department faces a consistency issue in reviewing the Presidential Permit application. As **Figure 1** and **Figure 4** show, the Keystone XL pipeline follows a similar route, starting in the Alberta oil sands and crossing the Ogallala aquifer, as the earlier Keystone pipeline, which the State Department approved. In 2009, the State Department also approved the Alberta Clipper pipeline, designed to carry crude oil from the Alberta tar sands region to Wisconsin. Because of its prior approvals of the Keystone and Alberta Clipper pipelines, it might be difficult for the State Department to reach different conclusions on certain environmental issues in its review of the Keystone XL pipeline, and reject the permit application on that basis. Doing so could create political, and potentially legal, challenges to either its earlier environmental review, or the current one. Some observers maintain that, in its ultimate decision whether to grant the Keystone XL pipeline a Presidential Permit, the State Department may, to some extent, be constrained by its recent precedents approving similar projects.

Appendix. Presidential Permitting Authority

The executive branch has exercised permitting authority over the construction and operation of "pipelines, conveyor belts, and similar facilities for the exportation or importation of petroleum, petroleum products" and other products at least since the promulgation of Executive Order 11423 in 1968.[63] Executive Order 13337 amended this authority and the procedures associated with the review, but did not substantially alter the exercise of authority or the delegation to the Secretary of State in E.O. 11423.[64] However, the source of the executive branch's permitting authority is not entirely clear from the text of these Executive Orders. Generally, powers exercised by the executive branch are authorized by legislation or are inherent presidential powers based in the Constitution. E.O. 11423 makes no mention of any authority, and E.O. 13337 refers only to the "Constitution and the Laws of the United Sates of America, including Section 301 of title 3, United States Code."[65] 3 U.S.C. Section 301 simply provides that the President is empowered to delegate authority to the head of any department or agency of the executive branch.

The legitimacy of this permitting authority has been addressed by federal courts. In *Sierra Club v. Clinton*,[66] the plaintiff Sierra Club challenged the Secretary of State's decision to issue a Presidential Permit authorizing the Alberta Clipper pipeline. Among the plaintiff's claims was an allegation that issuance of the permit was unconstitutional because the President had no authority to issue the permits referenced in E.O. 13337 (in this case, for the importation of crude oil from Canada via pipeline).[67] The defendant responded that the authority to issue Presidential Permits for these border-crossing facilities "does not derive from a delegation of congressional authority ... but rather from the President's constitutional authority over foreign affairs and his authority as Commander in Chief."[68] The U.S. District Court for the District of Minnesota agreed, noting that the defendant's assertion regarding the source of the President's authority has been "well recognized" in a series of Attorney General opinions, as well as a 2009 judicial opinion.[69] The court also noted that these permits had been issued many times before and that "Congress has not attempted to exercise any exclusive authority over the permitting process. Congress's inaction suggests that Congress has accepted the authority of the President to issue cross-border permits."[70] Based on the historical recognition of the President's authority to issue these permits and Congress's implied approval through inaction, the court found the Presidential Permit requirement for border facilities constitutional.

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[63] *Providing for the performance of certain functions heretofore performed by the President with respect to certain facilities constructed and maintained on the borders of the United States*, 33 Fed. Reg. 11741 (August 16, 1968).

[64] *Issuance of Permits With Respect to Certain Energy-Related Facilities and Land Transportation Crossings on the International Boundaries of the United States*, 69 Fed. Reg. 25299 (May 5, 2004).

[65] Ibid.

[66] 689 F.Supp.2d 1147 (D. Minn. 2010).

[67] Ibid. at 1162.

[68] Ibid.

[69] Ibid. at 1163 (citing 38 U.S. Atty Gen. 162 (1935); 30 U.S. Op. Atty. Gen. 217 (1913); 24 U.S. Op. Atty. Gen. 100; and Natural Resources Defense Council (NRDC) v. U.S. Department of State, 658 F.Supp.2d 105, 109 (D.D.C. 2009)). The court in *NRDC* held that the State Department's issuance of a presidential permit under Executive Order 13337 was not subject to judicial review under the Administrative Procedure Act for abuse of discretion because "the issuance of presidential permits is ultimately a presidential action." 658 F. Supp. 2d at 109, 111-12. The court said that to allow judicial review of such decisions would raise separation of powers concerns. Ibid. at 111.

[70] Ibid; see also Youngstown Sheet and Tube Co. v. Sawyer, 343 U.S. 579 (1952) (establishing a three-part test for analyzing the validity of presidential actions in relation to constitutional and congressional authority).

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