The Trans Alaska Pipeline
A Struggle For Balance

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The saga of the trans-Alaska pipeline is at once one of the most remarkable and regrettable of this decade. And in it there are lessons for us all. Morris K. Udall, July, 1973 (US Congress 57).

Oil is a vital international commodity responsible for much of the growth and expansion of the United States economy since the beginning of the twentieth century (Yergin 13). Because of the importance of oil to the economy, the discovery in 1968 of the Prudhoe Bay oil field and the subsequent building of the Trans Alaska pipeline became a major turning point in the struggle for balance between the nation's need for low cost energy and environmental protection. In addition, building of the pipeline created turning points in the Alaskan economy and domestic oil production, permanently changing major project construction and design and impacting the relationship between economic development and the environment. The oil companies embarked on the largest privately funded operation in American history for its time (This Week) and the budding environmental movement discovered new tools to assure their involvement in development decisions.

In 1955, a study conducted by M. King Hubbert, a distinguished geologist who worked for Shell Oil Company, showed that the United States was on a path where the growth of domestic oil production would peak between 1965 and 1970 (Hubbert 24). Production then would begin to decline (Hubbert 8) and "pose a national problem of primary importance" (Hubbert 27). Hubbert's prediction was uncannily accurate as peak United States production occurred in 1970 (Yergin 567).

In 1968 a spectacular oil field, Prudhoe Bay, was discovered by Atlantic Richfield Company (ARCO) on the North Slope of Alaska (Alaska Pipeline). Daniel Yergin, a renowned scholar, calls the Prudhoe Bay oil field "the Alaskan elephant" (Yergin 569) as the field is the

largest oil field in North America and the eighteenth largest field ever discovered world wide (British Petroleum). ARCO estimated that it could recover approximately 9.6 billion barrels of oil from the field (Department of the Interior 9). At the time, the total U.S. oil reserve was only 30 billion barrels (EIA Crude) so the discovery increased the U.S. oil reserves by one third overnight. The problem was that Prudhoe Bay is 250 miles north of the Arctic Circle (British Petroleum) and a means to transport the oil to the lower 48 states easily and in large amounts did not exist.

Multiple ideas were proposed to transport the oil including a system of highways for trucks, a railroad, ice breaking tankers, jumbo jet oil tankers, and even a fleet of nuclear powered submarines (Yergin 572). The oil companies agreed on the use of a pipeline and considered two different routes. The first route started at the North Slope and proceeded through Canada and terminated in Chicago, Illinois. The second route would cross Alaska from Prudhoe Bay to the ice free shipping port at Valdez, Alaska, where a series of oil tankers would transport the oil to the West Coast (Allen 11). The oil companies decided to build the pipeline to Valdez.

The three oil companies that owned the majority of the field formed a committee called TAPS (Trans Alaska Pipeline System) to design and build the pipeline (Allen 69). Not only was the idea of building a 800 mile pipeline forty-eight inches in diameter through the remotest parts of Alaska bold, but TAPS wanted to construct the pipeline rapidly. The first step was procuring the necessary pipe, all 100,000 sections of it (Facts 41). The precision and accuracy required to manufacture pipe of that size made every American steel company refuse to fabricate it (Naske 252). TAPS eventually convinced three Japanese steel corporations to manufacture the pipe

required to build the pipeline and placed a 100 million dollar order in April, 1969 (TAPS Planning). The pipe began arriving in Valdez in September, 1969 (Facts 81).

The original design of the pipeline called for the pipe to be buried and to cross rivers by tunneling under the river beds (Alaska Pipeline), techniques commonly used in Oklahoma and Texas (Coates 178). However, Arctic soils experts for the United States Geological Survey quickly questioned this design because the hot oil the pipeline transports would have melted the permafrost in which the pipeline would be buried (Kenworthy). When the permafrost melted, the pipe would lose support causing the pipe to bend and then potentially break creating a devastating oil spill (Kenworthy).

TAPS applied to the Department of the Interior in June, 1969 for rights of way for the pipeline and a haul road needed for its construction (Stone 180). Due to the lack of engineering details, the Department responded with a long list of questions that set in motion extensive engineering studies (Stone 181). Walter Hickel, Secretary of the Interior, supported the pipeline but stated, "I can guarantee that we will not approve any design based on the old and faulty concept 'build now, repair later'"(Sullivan).

At the time, Alaska's economy was primarily supported by the Federal Government (Tussing 6). Numerous Native Tribes lived in Alaska subsisting in the remote rural areas, the state's overall population was low, and the state lacked a broad self sustaining economic base (Morehouse and Harrison). Six out of every ten dollars spent in Alaska came from the federal government (Zelnick). It appeared that significant new oil production was the only thing that could save Alaska's economy from turmoil. With the discovery of Prudhoe Bay, "Alaska seems about to be transformed from a frozen Appalachia to a frozen Kuwait" (Zelnick).

As the pipeline idea gained in popularity, concerns grew among many environmentalists and Alaska Natives about the environmental footprint of the pipeline and whether it would cross over Native land, the ownership of which was disputed (Oil Expansion). The main argument environmentalists proposed was that the United States' last great wilderness was at stake (Brown). Although advocates for the pipeline claimed that the impact would be like "a string across a golf course", some environmentalists thought the building of pipeline was more "like cutting a knife wound through living flesh" (Brown). The concern that oil development could cause major environmental damage was validated by a devastating event 3,700 miles away.

In January, 1969, an oil spill occurred off the coast of Santa Barbara, California. Rescuers counted 3,600 dead sea birds and several dead porpoises (Clarke and Hemphill 158). Newspaper headlines told the American people that the oil companies and the government had failed in preventing a disaster (Graham 27) and television continually showed scenes depicting dying birds covered in oil (Miller). People could be seen on the beach barbecuing their oil company credit cards as a direct protest to the spill (Graham 27). This event represented a shift in the way the public viewed oil production. Adding to a growing negative perception of the oil companies was the misquotation of Fred Hartley, Chief Executive Officer of Union Oil, the company responsible for the spill. His original quote "I am always tremendously impressed at the publicity that the death of birds receives versus the loss of people in our country in this day and age" was transformed into "I'm amazed at the publicity for the loss of a few birds" (Lee). President Nixon stated "The Santa Barbara oil spill has frankly touched the conscience of the American people" (Clarke and Hemphill 159). This incident lead to the passage of the National Environmental Policy Act [NEPA] and brought about Earth Day (Earth Day).

NEPA was signed into law January 1, 1970, and requires all major construction projects to create an Environmental Impact Statement [EIS]. The EIS must examine how the project would affect the nearby environment (Taylor 375). According to the Environmental Protection Agency, "This statute recast the Government's role: formerly the conservator of wilderness, it now became the protector of earth, air, land, and water" (*The Guardian*).

After NEPA, the environmentalists and Alaska Natives raced to Federal District Court in Washington D.C. to stop the pipeline. Alaska Natives filed the first suit to block permits for the haul road over Native claimed land (Stone 181). Judge Hart granted a temporary restraining order blocking the haul road on April 3, 1970. Congress ultimately resolved the problem over a year later by passing the Alaska Native Claims Settlement Act which gave Native groups 40 million acres of Alaska land along with 962.5 million dollars (Taylor 382).

The second lawsuit was filed by three environmental groups who maintained that requirements of NEPA had not been met and that the pipeline violated the allowable size of the pipeline right of way contained in the Mineral Leasing Act of 1920 (Brown). Judge Hart agreed with the environmentalists. He issued a preliminary injunction stopping the pipeline on April 28, 1970 (Wilderness v. Hickel).

Responding to the Court, the Department of the Interior released the first draft EIS in January, 1971. It was only 196 pages and failed miserably in Congress (Berry 142). Environmentalists were outraged claiming "the nation cannot afford this fuzzy blueprint" (Brower). Upon being released for public comment, over 12,000 pages of testimony (Gallaway and Clifton) from 2500 individuals and organizations were generated with the majority expressing opposition to the pipeline (Taylor 383). Environmental issues ballooned

beyond permafrost and oil spills to include concerns such as earthquakes, caribou migration, vandalism, wilderness preservation, and creating a "scenic eyesore" in general (Brown).

The second EIS released March, 1972, contained 3,500 pages spanning nine volumes and costing over seven million dollars (Taylor 383). Although controversy still arose, the Department of the Interior accepted the EIS and issued permits. Judge Hart reviewed the final EIS and permits and ruled requirements had been met allowing the pipeline to proceed (Taylor 384).

The environmental groups quickly appealed Judge Hart's decision to the Federal Court of Appeals. In February, 1973, the Court reversed part of Hart's decision finding the Mineral Leasing Act had been violated and must be amended by Congress to allow permitting (Wilderness v Morton). As a result, Congress began work on changing the Mineral Leasing Act. In July, 1973, an amendment was introduced in the Senate which declared that the Department of Interior had met all the requirements of NEPA and forbid any further judicial review (Debacle). The Senate vote on the amendment was tied and Spiro Agnew, the current Vice President broke the tie by voting for the amendment (Debacle).

By October, 1973, the Yom Kippur war raged in the Middle East (Nixon). As punishment for aiding the Israelis in the war the Organization of the Petroleum Exporting Countries [OPEC] placed an oil embargo on the United States (Nixon). President Nixon addressed the country by saying that all citizens must conserve energy and legislation must be passed to authorize construction of the Alaska pipeline (Nixon). Gas prices came close to doubling in certain parts of the United States and panic arose amongst the citizens (Kihss). Lines to obtain gas had grown to extraordinary lengths and gas stations were running out of gas

(Kihss). Consumers were paying over ninety percent more for home heating oil (EIA Petroleum).

These events drastically changed views on the construction of the pipeline. Congressional votes for the pipeline also changed. In November, 1973, Congress passed the Trans-Alaska Pipeline Authorization Act which amended the Mineral Leasing Act and ended all lawsuits against the pipeline. The Congressional votes for authorizing the pipeline went from being a tie in the Senate broken by the Vice President in July, to an 80-5 vote in November. The measure passed in the House of Representatives 361-14 (Cowan).

The EIS estimated that oil spills from tankers would average 140,000 barrels per year based on historical world wide loses (Maxim and Niebo). To avoid marine spills, the alternate all pipeline route across Canada was much debated in Congress (US Congress 57). The concept was eventually rejected because of "the possibility of indefinite delays or even the project's ultimate impossibility" (US Congress 15). All these facts would not prepare the country sixteen years later when the Exxon Valdez tanker ran aground discharging 240,00 barrels of crude oil into Prince William Sound (Coates 325).

April, 1974, marked the beginning of actual construction, almost five years after the arrival of the pipe at Valdez, Alaska. The pipeline was built in a little over three years (Facts 13). The completed pipeline cost nearly four times the original estimate contained in the EIS and almost ten times the initial oil company estimates (Naske 252).

Contributing to the extreme cost overruns were things such as construction specifications requiring all 108,000 welds (Facts 77) joining the pipe having to be X-rayed for safety (Alaska Pipeline). In addition, interest on construction loans, government oversight (Turner 29), 554

elevated animal crossings (Facts 7), and restoring and repairing historic trails (U.S Department of the Interior 215) added to the cost. Thorton F. Bradshaw, the president of ARCO said "Early in the game environmentalists blocked us for very good reasons indeed. We did not know how to make an environmentally safe line. They helped us. We learned a great deal from them" (Coates 237). Although the final design of the pipeline was a much larger project than TAPS had imagined, the impact of the additional engineering was well worth it because of the catastrophic events that could have occurred with the original design.

The pipeline currently employs several thousand people in Washington State alone and generates millions of dollars in revenue (Murray). Over ninety percent of Washington oil is supplied by the pipeline and Senator Patty Murray supports the pipeline (Murray). The pipeline has made the U.S less reliant on foreign oil.

The pipeline has demonstrated how man can coexist with nature. In the past it has generally been man's goal to conquer nature and dominate the land. With the creation of NEPA the popular view has changed. The goal today is to coexist with nature and preserve the environment. The pipeline has shown that large projects can be constructed without severe environmental consequences. Unfortunately the same standards were not applied to the tankers carrying the oil until after the tragic oil spill from the Exxon Valdez.

The pipeline is a turning point in Alaska's economy as well. The state treasury has received over 171 billion dollars from the oil TAPS delivered and 31 billion dollars has gone into the state's savings account. Three out of every ten jobs in the state relates to the pipeline, making Alaska one of the most economically stable states in the nation (Murkowski). Alaska's population has also risen dramatically as a result (Tussing 4).

The Trans-Alaska Pipeline demonstrates how development and conservation can coexist. The safe delivery of over sixteen billion barrels of oil (Murkowski) to the Valdez terminal stands in tribute to the engineering and construction efforts which arose from the controversy over the pipeline's existence. Its construction and operation has acted as a second Gold Rush for the United States and was a turning point for Alaska - both for its people and its economy.

WORKS CITED

Primary Sources

Allen, Lawrence. *The Trans Alaska Pipeline*. Seattle: Scribe Publishing Corporation. 1976. Print.

This source gave me very general and basic information about the pipeline, how supplies were transported, the issues TAPS faced, and the primary environmental issues involved with the pipeline.

Berry, Mary. *The Alaskan Pipeline The Politics of Oil and Native Land Claims*. Ontario: Fitzhenry and Whiteside Limited, 1975. Print.

This source specifically showed how Native Alaskans were affected by the pipeline and how the environment was changed. Although it was biased towards not producing the pipeline, its information was solid.

Brower, David R. "Who Needs the Alaska Pipeline?" *The New York Times*. 5 February 1971. ProQuest Historical Newspapers. Web. 14 February 2013.

David Brower is the president of Friends of the Earth. His article was unique because it showed how environmentalists viewed the first Environmental Impact Statement released by the Department of the Interior. The entire article was in a vitriolic tone and was biased. However, the article did present some valid points against the pipeline.

Brown, Thomas. "That Unstoppable Pipeline: Our Arctic Will Never Be the Same Alaska." *The New York Times Magazine*. 14 October 1973. ProQuest Historical Newspapers. Web. 15 January 2013.

"The Unstoppable Pipeline" gave balanced information on both sides of the argument surrounding the construction of the pipeline. It had information about the pipelines construction and the legal battles that occurred. "The Unstoppable Pipeline" also had unique quotes about the pipeline that I used in my paper.

Cowan, Edward. "House Approves Alaska Pipeline Energy Bill Gains." *The New York Times*. 13 November 1973. ProQuest Historical Newspapers. Web. 14 February 2013.

The article showed how Congressional views on the construction of the pipeline changed once OPEC placed an oil embargo on the United States. It also gave excellent historical context on how the public viewed the pipeline.

"Debacle in the Senate." *The New York Times*. 18 July 1973. ProQuest Historical Newspapers. Web. 14 February 2013.

This article covered the amendment passed in the Senate by the Vice President's tie breaking vote which ended all lawsuits against the pipeline. The article was very biased against the vote.

Hubbert, M King. Nuclear Energy and Fossil Fuels. Shell Development Company. Publication No. 95. June 1956. www.hubbertpeak.com/hubbert/1956/1956.pdf. Web. 13 December 2012.

Hubbert's report was useful because it gave me historical context on oil production in the United States. It offered exceptional data on how oil production had grown since the early 1900s and forecast when US oil production would peak.

Kenworthy, E.W. "Pipeline Creates a Storm Over Ecology." *The New York Times*. 19 April 1970. ProQuest Historical Newspapers. Web. 20 February 2013.

This *New York Times* article was unique because it covered the concern which involved the hot oil from the pipeline melting the permafrost if the line was buried. The article also explained how Walter J. Hickel planned to deal with the situation.

Kihss, Peter. "Dealers See 'Panic Buying' In Long Lines for Gasoline." *The New York Times*. 4 January 1974. ProQuest Historical Newspapers. Web. 14 February 2013.

The *New York Times* article showed the drastic measures that citizens of the United States were taking in order to conserve gasoline during the OPEC oil embargo. It gave useful data and statistics showing the increase of gasoline consumption during the embargo. The article also provided vivid detail on the chaos that could be seen during the embargo in major cities.

Lee, Patrick. "Fred L. Hartley Dies; Built Unocal into Energy Giant: Oilman: He kept his imprint on almost every aspect of the company he joined in 1939 as engineer trainee." *Los Angeles Times*. 20 October 1990. latimes.com. Web. 12 December 2012.

I learned from this article the significance of the Santa Barbara oil spill on the development of the pipeline along with the famous misquotation of Fred Hartley. This source also showed me the ways in which the media tried to convince people to restrict oil development in the United States.

Morehouse, Thomas and Gordon Harrison. State Government and Economic Development in Alaska. Council of State Government. Autumn 1970. www.iser.uaa.alaska.edu/Publications/1970-StateGovandEconDevelop.pdf Web. 13 December 2012.

This article explained how the Alaskan government would benefit from the pipeline. The article contained information regarding Alaska's economy after World War II and how it was dependent on spending from the Federal Government.

Murray, Patty. "Alaska Oil Exports: A Crude Money Grab." *Seattle Times.* 22 February 1995. Seattletimes.com. Web. 15 December 2012.

This source was useful because it gave me exact numbers and statistics on how the Trans Alaskan pipeline affects the Washington economy. This source also showed me how the Trans Alaskan pipeline is a turning point locally.

Murkowski, Lisa. "35th Anniversary of TAPS, June 20, 2012." *Juneau Empire*. 18 June 2012. JuneauEmpire.com. Web. 14 February 2013.

This article helped me because it gave information on how the pipeline has become a turning point for the state of Alaska. It also provided information regarding the economic benefit for Alaska coming from the pipeline.

Naske, Claus. *Alaska, a History of the 49th State*. Grand Rapids: University of Oklahoma press, 1979. Print.

This source provided the historical background of Alaska and how the pipeline changed its economy and environment. It gave a very clear image of how Alaska struggled before the pipeline.

Nixon, Richard. *Address*. 7 November 1973. www.cvce.eu/viewer/-/content/1158015d-8cf9-4fae-8128-0f1ee8a8d292/en. Web. 6 January 2013

The address given by former President Richard Nixon showed the severity of the OPEC oil embargo. It discussed conservation measures and stressed the need for legislation to authorize construction of the pipeline.

Stone, Alan. "The Trans-Alaska Pipeline and Strict Liability for Oil Pollution Damage." *Urban Law Annual*. Vol. 9. 1975. Web. Digitalcommons.law.wustl.edu. Web. 15 December 2012.

I used this source because it provided excellent background material on the legal battles surrounding the pipeline.

Sullivan, Walter. "Hickel to Approve Alaska Oil Pipeline With Safeguards." *The New York Times*. 24 April 1970. ProQuest Historical Newspapers. Web. 14 February 2013.

The article showed how TAPS was delayed in the request for the right of way and how Walter Hickel viewed the construction of the pipeline. This source had many great quotes that I had to pick from to use in my paper and expanded my knowledge on the legal conflicts involved with the pipeline.

Taylor, Randall L. NEP Pre-emption Legislation: Decision making Alternative for Crucial Federal Projects. Vol. 6 *Boston College Environmental Affairs Law Review*. 1978. lawdigitalcommons.bc.edu/ealr/vol6iss3/5. Web. 22 February 2013.

This article gave me factual information on the historic background of the pipeline. I acquired a large amount of information on the process in which TAPS went through with the EIS and NEPA to begin construction of the pipeline.

Turner, Wallace. "Final Approval given for the Alaska Pipeline." *The New York Times*. 17 June 1977. ProQuest Historical Newspapers. Web. 20 January 2013.

This article gave me statistics about the pipeline and how the construction of it occurred. It provided information on causes and amounts of the cost overruns.

Tussing, Arlon. *Alaska Pipeline Report*. Fairbanks: Institute of Social, Economic, and Government Research, 1971. Print.

This source had the original estimates for how much oil the pipeline would produce in several time increments, the estimate for how much oil would be recovered from Prudhoe Bay, and original designs on how to transport the oil.

United States. Department of the Interior. *Final Environmental Impact Statement for Proposed Trans-Alaska Pipeline*. Washington: GPO, 1972. Print.

The Environmental Impact Statement showed the issues that TAPS had to face along with the process in which the TAPS had to endure. This source gave me a great understanding of how Alaska would be affected overall by the pipeline.

United States Congress, House of Representatives 93rd congress Report No. 93-414. *Amending Section 28 of the Mineral Leasing of 1920 and Authorizing a Trans-Alaska oil gas pipeline for other purposes.* Washington District Columbia: GPO. 28 July 1973. Print.

This hearing had great dissenting views within Congress upon the approval of the pipeline and had numerous quotes. It clearly showed both sides of the argument for the approval of the pipeline.

Wilderness Society v. Hickel. 325 F. Supp. 422 - United States District Court. District of Columbia. 28 April 1970. http://www.leagle.com/xmlResult.aspx?xmldoc=1970747325FSupp422_1662.xml&docbase=CSLWAR1-1950-1985 Web. 13 December 2012.

This court decision was useful because it showed the court's reaction to the Department of the Interior's ability to grant a right of way for the Trans-Alaska Pipeline. The source was useful because it was not as long as the other cases I observed relating to TAPS and was easy to read.

Wilderness Society v. Morton. Nos. 72-1796, 72-1797 and 72-1798, United States Court of Appeals for the District of Columbia Circuit. 9 February 1973. *Environmental Law Reporter*. 1973. elr.info/sites/default/files/litigation/3.20085.htm. Web. 20 February 2013.

This court case broadened my understanding of how the Department of Interior's granting of some permits had violated the 1920 Mineral Leasing Act. The court case also strengthened my works cited by allowing me to have the original case instead of having to document a secondary source.

Zelnick, Robert. "The Oil Rush of '70." *The New York Times*. 1 March 1970. ProQuest Historical Newspapers. Web. 14 February 2013.

The newspaper article explained the many disputes that TAPS faced early on. The source had exact dates and costs of items related to Alaskan oil development which helped me understand the chronology of events that occurred and Alaskan's reaction.

Secondary Sources

"The Alaska Pipeline." *American Experience*. Public Broadcasting Services. 4 April 2006. Web. 2 December 2012.

"The Alaska Pipeline" was the first source to show me how the pipeline benefited the nation and the severity of the OPEC embargo. It also showed me the contrast between early Alaskan life and Alaska life today.

"Arctic Oil Expansion: Global Danger and Local Threat." Greenpeace. Green Peace public address. 1998. http://www.skeptictank.org/treasure/GP3/NSLOPE2.TXT. Web. 17 December 2012.

This article written by Greenpeace is extremely biased against the pipeline however it did cover the main concerns environmentalists had over the pipelines construction.

British Petroleum. Prudhoe Bay Fact Sheet. 6 August 2010. bp.com/assets/bp_internet/us/bp_us_english/STAGING/local_assets/downloads/aA03_prudhoe_bay_fact_sheet.pdf. Web. 13 December 2012.

This fact sheet gave me great information on Prudhoe Bay. It contained information about the size and geological features of Prudhoe Bay.

Clarke, Keith and Jeffery Hemphill. "The Santa Barbara Oil Spill: A Retrospective." *Yearbook of the Association of Pacific Coast Geographers*. Vol. 64. 2002. www.geog.ucsb.edu/~kclarke/Papers/SBOilSpill1969.pdf. Web. 17 December 2012.

This source gave me exact figures and vivid details about the horrors residents of Santa Barbara faced during the 1969 oil spill. I learned about what factors that contributed to the Santa Barbara oil spill and how it led to the creation of NEPA.

Coates, Peter. *The Trans-Alaska Pipeline Controversy*. Bethlehem: University of Alaska Press. 1993. Print.

This book was the first source to show me both sides of the trans Alaskan pipeline controversy. It had no bias and gave a clear analysis of the arguments posed by both sides.

"Earth Day: The History of A Movement." Earth Day Network. www.earthday.org/earth-day-history-movement. Web. 13 December 2012.

This report issued by the Earth Day network was vital because it gave me information on how the Santa Barbara oil spill directly lead to the creation of Earth Day.

Facts Trans Alaska Pipeline System '09. Alyeska Pipeline Service Company. 2009. www.alyeska-pipe.com. Web. 13 December 2012.

The collection of facts provided a large amount of information regarding the pipeline and its construction. I used it primarily to find exact details on things such as the number of welds involved with the pipeline.

Gallaway L.J. and B.J. Clifton. History of Trans Alaska Pipeline System. Environmental Report for Trans Alaska Pipeline System Right-of-Way Renewal. 15 February 2001. tapseis.anl.gov/documents/docs/Section_13_May2.pdf. Web. 14 February 2013.

The report provided a brief history of the Trans Alaska Pipeline. However, the most important piece of information this source gave was a precise description of how the first Environmental Impact Statement received strong public reaction.

Graham, Mary. *The Morning After Earth Day: Practical Environmental Politics*. 1999. brookings.nap.edu/books/081573235X/html/1.html. Web. 13 December 2013.

I benefited from this article because it gave me information on the horrendous scenes that the press projected at citizens of the United States after the Santa Barbara oil spill. The article provided useful information on how Congress and the President reacted to the spill as well.

Maxim, L.D. and R.W. Niebo. Appendix B Oil Spill Analysis for North Slope Oil Production and Transportation Operations. Environmental Report for Trans Alaska Pipeline System Right-of-Way Renewal. 15 February 2001. tapseis.anl.gov/documents/docs/h_App_B_May2.pdf Web. 14 February 2013.

This source was useful because it offered information on the probability of an oil spill occurring from the tankers. I used this source to relate the Exxon Valdez oil spill to the pipeline.

Miller, Martin. "The Oil Spill That Sparked the Green Revolution." *Los Angeles Times.* 30 November 1999. articles.latimes.com/1999/nov/30/local/me-38862. Web. 28 February 2013.

This newspaper article showed how the Santa Barbara oil spill shaped the minds of American citizens and how the oil spill led to the Green Revolution. The article also provided information on the drastic protests that occurred as a result of the oil spill and the impact television had.

TAPS Planning. Argonne National Laboratory. http://tapseis.anl.gov/guide/history.cfm Web. 19 February 2013.

The article explained briefly how the pipeline was constructed and what its primary purpose is. I used this article mainly because it thoroughly described the process in which TAPS had to go through to obtain the steel and other resources used for the pipeline.

"This Week July 17 to July 22: July 17, 1973 - Trans-Alaska Pipeline Authorization Act." American Oil & Gas Historical Society. aoghs.org. Web. 10 February 2013.

The online article gave a concise history of the struggles faced by the Department of the Interior and TAPS in the U.S Congress. Although the information was rather general it was still useful.

United States Energy Information Administration. Petroleum Chronology of Events 1970-2000. May 2002. www.eia.gov/pub/oil_gas/petroleum/analysis_publications/chronology/petroleumchronology2000.htm. Web. 17 February 2013.

This article contained detailed descriptions of the OPEC oil embargo and how it affected the United States. The article also gave me information on how oil is developed in the United States. I obtained decent background information about oil in the article which helped me understand my topic in general.

United States Energy Information Administration. U.S. Total Crude Oil Proved Reserves, Reserves Changes, and Production. 2 August 2012. www.eia.gov/dnav/pet/pet_crd_pres_dcu_nus_a.htm. Web. 22 February 2013.

This spreadsheet from the Federal Energy Information Administration contains the United States crude oil reserve data from 1900 to 2010.

Untied States Environment Protection Agency. *The Guardian: Origins of the EPA*. Spring 1992. www.epa.gov/aboutepa/history/publications/print/origins.html. Web. 13 December 2012.

This article produced by the Environmental Protection Agency was useful because it gave an analysis of how the government took more concern for the environment during the 1970's. The article also gave information on the transformation of major development after NEPA was enacted.

Yergin, Daniel. *The Prize the Epic Quest for Oil, Money, and Power*. New York: Simon and Schuster, 1991. Print.

The Prize was a useful secondary source because its extensive bibliography gave me a large amount of useful primary sources to use for my project. The prize also provided vast detail about how the pipeline was a turning point for the Alaskan economy.