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Environmental Considerations Related to Oil Shale Development

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Abstract

Recently, public attention has been directed at global warming, greenhouse gases and overall environmental quality in the United States and around the world. Fuels production inherently produces carbon dioxide as a byproduct and the public and the legislature have deemed it necessary to consider these impacts. Development of the vast oil shale resource within the United States must be accomplished with consideration to the impacts such development will have on the environment. Those factors include oil shale developments impact on air quality, land disturbance, water use and quality, wildlife, and others.

A great deal of environmental analysis on oil shale development has taken place including the Oil Shale Prototype Leasing Program (1970's) and most recently, the DOI BLM's Programmatic EIS on the oil shale region of the western United States. This paper will synthesize these and other analyses to provide a comprehensive description of environmental considerations related to the development of oil shale.

Air quality considerations include the release of oxides, carbon dioxide, particulate matter, and water vapor. Commercially available stack gas clean-up technologies currently in use elsewhere should be effective in controlling oxides and particulates emissions. Carbon dioxide (CO_2) will be produced in large quantities and may need to be captured, used in other commercial applications, or otherwise sequestered.

America's best oil shale resources are highly concentrated in several major deposits in Colorado, Wyoming and Utah. The footprint that an oil shale industry would have in this region would be ~31 square miles per MMBbl/d of shale oil. This paper will consider the land disturbance of surface mining, underground mining, in-situ production, other surface impacts, and spent shale. Surface and groundwater impacts will also be assessed.

Environmental control technologies have advanced to improve efficiency, and reduce or better control effluents and emissions. Companies have implemented sophisticated environmental management systems that are incorporated into project development and plant management and operations. This paper will consider all of the potential impacts on the environment posed by oil shale development as well as how existing and emerging technologies are addressing these concerns.