

Oil Shale: Water Needs

The oil shale region of western Colorado, eastern Utah, and southwestern Wyoming is dry country. Water supplies are scarce and relied upon heavily. Oil shale extraction and processing will require significant amounts of water, as will the associated growth in local communities. For these reasons, water issues have long been viewed as a major constraint on large-scale development of oil shale resources.

Surface mining and retorting of oil shale would use up to five barrels of water for each barrel of oil produced.¹ The U.S. Congress Office of Technology Assessment estimated that production of just 100,000 barrels per day would require over 24,000 acre-feet of water a year.² During the last oil shale boom, the Interior Department estimated that production of one million barrels per day would require up to 189,000 acre-feet of water per year.³

Reliable data on amounts of water needed for *in-situ* development is extremely hard to come by. Information from Shell's ongoing research project in Colorado is proprietary and has not been made public, and all of the other *in-situ* proposals are in their infancy and have not yet been constructed. Nonetheless, we know that water will be needed for oil and gas extraction, postextraction cooling, upgrading and refining of produced oil, environmental control systems, and power production. New *in-situ* methods also might impact groundwater supplies, either through contamination or disruption of the aquifer. The State of Colorado and the United States Geological Survey have both expressed concerns about the long-term impacts *in-situ* methods will have on groundwater supplies and structures.

Even if the required water is available, another looming issue is the impact of a large-scale oil shale industry on the greater Colorado River Basin. The basin's water resources are tightly regulated and in great demand, and water demands in the basin have only increased since the last boom in the 1970s and 1980s. Significant water withdrawals could conflict with other users downstream and may exacerbate salinity problems.

Oil shale development would reduce Colorado River cutthroat trout fisheries by 35% and reduce the White River's annual flow by nearly 10%.

Source: BLM, White River RMP/FEIS at 1-13, 4-4..

In 1996, the BLM found that oil shale development would result in a reduction in the annual flow of the White River of up to 8.2 percent.⁴ These low flows could concentrate dissolved solids, increase salinity, and devastate fisheries. The BLM also found in its 1996 study that a large-scale shale oil industry "would result in the permanent loss or severe degradation of nearly 50% of BLM stream fisheries" and that surface disturbance, base flow reductions, and long-term aquifer disruption would result in the loss of 35% of Colorado River cutthroat trout fisheries.⁵

¹ Bartis, et al., "Oil Shale Development in the United States: Prospects and Policy Issues," Rand Corporation (September 2005) at 50 (available at www.rand.org).

² U.S. Congress Office of Technology Assessment, "An Assessment of Oil Shale Technologies," (June 1980) at 360 (available at www.wfs.princeton.edu/ota/disk3/1980/8004/8004.pdf).

³ U.S. Department of the Interior, "Final EIS for the Prototype Oil Shale Leasing Program," (1973) Vol. 1 at III-57 (available at <http://ostseis.anl.gov/documents/index.cfm>).

⁴ U.S. Bureau of Land Management, White River Resource Area Resource Management Plan, Final Environmental Impact Statement (June 1996) at 4-4 to 4-5 (available at <http://www.co.blm.gov/wrra/nepa.htm>).

⁵ White River RMP, Final EIS at 4-41, 1-13.

