

Lessons Learned from the Oil Shale RD&D Environmental Assessments

Jack Sosebee, Barb Neary, and
Will Mahoney

*O&G Environmental Consulting, LLC
Englewood, Colorado*



Proposed RD&D Projects

Company	Projects	Basin	State
Shell	3	Piceance	Colorado
EGL	1	Piceance	Colorado
Chevron	1	Piceance	Colorado
OSEC	1	Uinta	Utah

Proposed RD&D Technologies

Company	Projects	Technology
Shell	3	In-situ
EGL	1	In-situ
Chevron	1	In-situ
OSEC	1	Underground mining/surface retorting

Public Perception of Environmental Impacts

Changes Since the 1970s and 1980s that Affect Environmental Impacts

- ▶ Changes in Planned Oil Shale Development Technologies
- ▶ Changes in the Environment

Changes in Planned Oil Shale Development Technologies

1973 Final EIS for the Prototype Oil Shale Leasing Program Anticipated Development by 1985

Technology	Number of Mines	Daily Production (bbl each)	Total Daily Production (bbl)
Surface mine/surface retort	1	100,000	100,000
Surface mine/surface retort	1	150,000	150,000
Underground mine/surface retort	11	50,000	550,000
In-situ mine	4	50,000	200,000
		Total	1,000,000



Land Requirements

(30 years operation, 100,000 bbl/day production)

Technology	Mine (acres)	Surface Facilities (acres)	Total (acres)
Surface mine/surface retort	6,650	280	6,930
Underground mine/surface retort	4,420	280	4,700
In-situ mine	388-3,580	100	488-3,680



Land Impacts

- ▶ Vegetation – extent of cover, community composition, successional state
- ▶ Land Use – wildlife habitat, grazing, recreation, petroleum production

Water Requirements (100,000 bbl/day production)

Technology	Water Consumption (acre-feet/year)
Surface mine/surface retort	16,800
Underground mine/surface retort	17,400
In-situ mine	8,800



Water Impacts

- ▶ Water Quality
- ▶ Water Supplies

Air Emissions

▶ Particulate Matter

- Construction dust and vehicular emissions
- Blasting
- Mining
- Overburden and spent shale disposal operations

▶ Gaseous Emissions

- Retorting
- Oil upgrading operations

Operating Labor Requirements (100,000 bbl/day production)

Technology	Workers
Surface mine/surface retort	2,190
Underground mine/surface retort	2,190
In-situ mine	2,870

Changes in the Environment

- ▶ Additional sources of contaminants
- ▶ Increased competition for resources

A Challenge for the Oil Shale Industry

Questions and Comments