



**TOEROEK
ASSOCIATES, INC.**

TRONOX BANKRUPTCY TASK ORDER

**Site Research Summary for
Petrotomics Mill Site
Attachment B Site No. 1497**

December 24, 2014

I. Introduction

In 2014, the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Justice (DOJ) entered into a settlement agreement to resolve fraudulent conveyance claims against Kerr-McGee Corporation (Kerr-McGee) and related subsidiaries. This settlement was the result of litigation relating to Kerr-McGee's spin-off of businesses and liabilities to Tronox Incorporated (Tronox), which soon after filed for bankruptcy and therefore could not pay for legacy liabilities. These legacy liabilities were extensive, and comprised environmental liabilities associated with over 80 years of Kerr-McGee historic operations. In 2011, a report was prepared to evaluate the environmental liability of Tronox legacy sites that were operated by Kerr-McGee and affiliated entities (Appendix A-1 of the 2011 report provides a list of Kerr-McGee related entities).¹

Toeroek Associates, Inc. (Toeroek) was tasked to perform a targeted Potentially Responsible Party (PRP) search investigation of the Petrotomics Mill site, located in Shirley Basin, Carbon County, Wyoming. Petrotomics Mill was identified as a legacy site of Tronox and as an "Other Site" in Attachment B of a Consent Decree and Environmental Settlement Agreement.²

EPA directed Toeroek to research the history of Petrotomics Mill for evidence of site ownership or operations by Kerr-McGee-related entities. This report describes the methodology used for this research, defines the site location, provides a summary of the research results, and recommends, where applicable, future EPA investigative action.

¹ The report was prepared for the Anadarko Litigation Trust by Roux Associates Inc. and entitled: *Environmental Liability Evaluation of Tronox Legacy Sites*.

² The Consent Decree and Environmental Settlement Agreement in the matter of In re: Tronox Incorporated, *et al.*, Case No. 09-10156 (ALG) was filed with the U.S. Bankruptcy Court for the Southern District of New York.

II. Methodology

Toeroek reviewed the data sources described in Table 1 below for the purpose of identifying ownership and operational information pertaining to Petrotomics Mill. Toeroek compiled the data found and then conducted a data review to determine: (1) basic information about the site, including any aliases and a general timeline of its operations; (2) information regarding ownership; evidence of operation; and admission of operation; (3) PRPs associated with the site; and (4) identification of Kerr-McGee related entities at the millsite.

Table 1. Data Sources Reviewed

Data Source	Reviewed?	Notes
DOJ's Relativity Database	Yes	Key words: Petrotomics. General search produced no new information.
Internet	Yes	Federal agency websites (EPA, DOE, NRC); USGS Publications Warehouse; (USGS Minerals Yearbooks); Carbon County Recorder of Deeds and Assessor; Wyoming Secretary of State websites.
Kerr-McGee Annual Reports	Yes	Annual Reports from 1960 – 1971.

III. Research Findings – Petrotomics Mill Site

A. Site Location

The Petrotomics Mill site is located in rural Carbon County about 60 miles south of Casper and 35 miles north of Medicine Bow, Wyoming. The site is at an elevation of about 7,100 feet. The primary land uses in the surrounding vicinity are livestock grazing, wildlife habitat, and mineral exploration with numerous reclaimed open pit mines located in the immediate area. The Petrotomics Mill makes up part of the Shirley Basin South Disposal Site, which is regulated under the Uranium Mill Tailings Radiation Control Act (PET-001; PET-002, pp. 7, 10). Figure 1 depicts the location of the Shirley Basin South Disposal Site/Petrotomics Mill.



Figure 1. Location of the Shirley Basin South Disposal Site (PET-001)

B. Operations

Overview of Kerr-McGee Mining Activities in Shirley Basin

According to Kerr-McGee's Annual Reports, Kerr-McGee had a 50 percent interest in a partnership with Tidewater Oil Company and its associates for the development of uranium deposits in the Shirley Basin, Carbon County, Wyoming. This joint operation was known as the Petrotomics Company. The Shirley Basin ore was mined by Petrotomics Company using open-pit methods beginning in 1961. In 1962, the Petrotomics Mill began processing the ore for Petrotomics Company. In 1967, mill production doubled. In June 1968, the mill was expanded to produce 1,000 tons of ore per day and in early 1970, the mill produced more than 1,500 tons per day. In 1970, this uranium processing facility operated alternately on ores from Petrotomics Company and ores from Kerr-McGee's 100-percent-owned properties in the area. The last mention of Petrotomics Company in a Kerr-McGee Annual Report is in 1971 (KRMC-1960, KRMC 1961, KRMC-1962, KRMC-1967, KRMC-1968, KRMC-1969, KRMC-1970, KRMC-1971).

Petrotomics Company operated the uranium mill from 1962 to 1974, and again from 1978 to 1985. The mill used a conventional acid leach process to extract uranium from the ore. The milling process created radioactive tailings, a predominantly sandy material. Tailings and process solution were conveyed in a slurry to an on-site tailings impoundment. Because of a depressed uranium market, mining and milling operations shut down in 1985, and mill decommissioning began. Petrotomics Company completed encapsulation of the tailings impoundment, contaminated site soils, and contaminated building materials in an engineered, on-site disposal cell in 2000. Site remediation was completed in 2001 (PET-001).

Petrotomics Mill Operations

The Petrotomics Mill began operation in 1962 as a 500-ton-per-day mill. In 1968, the mill was expanded to 1,000 tons per day production by the addition of thickeners, leach tanks, and another solvent extraction circuit. In 1970, the mill was expanded again to a capacity of 1,500 tons per day (PET-002, p. 7).

The ore being processed through the mill came from open pit mines in the immediate vicinity of the mill. The mill was a conventional acid leach uranium ore processing plant. The tailings from milling operations were placed in the tailings pond since operations began in 1962. In 1977, an amendment to the Nuclear Regulatory Commission (NRC) license allowed a new dam to be constructed over the original dam. The new dam raised the elevation of the tailings impoundment by 35 feet to 7,100 feet above sea level. The new dam was completed in 1979. In 1985, due to the depressed uranium market, the mining and milling operations were shut down and mill decommissioning commenced. Mill components that were not salvaged and sold were buried in mine pit 33-1, the tailings pile, or disposal trenches on site (PET-002, p. 7).

The NRC approved a reclamation plan Shirley Basin Disposal Site in 1989. In 1996, Petrotomics applied for Alternate Concentration Limits and was granted approval by the NRC in 1998. Final reclamation was completed in 2001 (PET-002, p. 7).

C. Ownership Information

Petrotomics Company held multiple mining and millsite claims in Carbon County. On November 2, 1967, Petrotomics Company released its interest in certain mining claims, leases and fee lands (shown on Schedule B to the Release) to Getty Oil Company and Skelly Oil. Previously, Petrotomics Company released its interest in other mining claims, leases and fee lands (shown on Schedule A) to Kerr-McGee (PET-003).

On January 1, 1984, Getty Mining Company assigned its interest in multiple millsite claims and properties to Petrotomics Company (PET-004). On January 31, 1985, Getty Oil Company assigned to Petrotomics Company its interest in a Contract for Mineral Quitclaim Deed between Atlantic Richfield Company and Getty Oil Company for property containing 16.428 acres in Carbon County (PET-005).

On December 2, 1985, Petrotomics Company conveyed approximately 840 acres of land in Carbon County to Pathfinder Mines Corporation through two separate deeds (PET-006, PET-007).

In August and September 1986, Petrotomics Company issued Certificates of Abandonment for certain mining and millsite claims in Carbon County (PET-008, PET-009).

In November 2002, Petrotomics Company conveyed approximately 2,400 acres of land in Carbon County to the state of Wyoming (PET-010). In March 2005, Petrotomics Company conveyed approximately 1,500 acres of land located in Carbon County to the United States of America (PET-011).

In December 2004, the United States Government was identified as the owner of the 1,512-acre Shirley Basin South Disposal Site property. The site includes a 142-acre tailings impoundment (PET-002, p. 10).

D. PRPs for the Petrotomics Mill

Table 2 identifies PRPs for the Petrotomics Mill area along with a brief description and estimated dates of their involvement. Additional information regarding some of these parties is provided in the Operations section above. Results of corporate research on these parties conclude this section.

Table 2. PRP Summary Table for the Petrotomics Mill

PRP	Year(s)	Involvement at Site	Status	Contact Information	Reference	Kerr-McGee Entity
Petrotomics Company	1962 – 1985	Operator	Inactive	N/A	PET-018, PET-019	Yes
Getty Oil Company	1962 – 1985	Partner in Petrotomics Company	Active	6001 Bollinger Canyon Road San Ramon, CA 94583	PET-016; PET-022	No
Kerr-McGee	1962 – 1985	Partner in Petrotomics Company	Acquired by Anadarko Petroleum Corporation	N/A	PET-017	Yes
Skelly Oil	1962 – 1985	Partner in Petrotomics Company	Merged into Getty Oil Company	N/A	PET-003; PET-013	No
Tidewater Oil	1962 – 1985	Partner in Petrotomics Company	Merged into Getty Oil Company	N/A	PET-003	No
Texaco	N/A	Successor to Getty Oil and Petrotomics Company	Merged into Chevron Corporation	N/A	PET-014; PET-015	No
Chevron Corporation	N/A	Successor to Texaco	Active	6001 Bollinger Canyon Road San Ramon, CA 94583 925-842-1000	PET-015; PET-020	No
Anadarko Petroleum Corporation	N/A	Successor to Kerr-McGee	Active	Allison Tower 1201 Lake Robbins Dr. The Woodlands, TX 77380 832-636-1000	PET-017; PET-021	Yes

Corporate Research Results

Petrotomics Company, operator of the Petrotomics Mill, was a partnership between Kerr-McGee, Getty Oil Company, Skelly Oil Company and Tidewater Oil Company. Tidewater Oil Company merged into Getty Oil Company on September 30, 1967 (KRMC-1960; PET-003, p. 1). Skelly Oil Company merged into Getty Oil Company in 1977. In 2012, Nimmons-Joliet Development Corp. acquired the Skelly Oil brand name and it is now a division of Nimmons-Joliet Development Corp (PET-013).

In 1984, Getty Oil was purchased by Texaco (PET-014). Texaco subsequently merged into Chevron Corporation (PET-015). Getty Oil is an active Delaware corporation, headquartered in California (PET-016). On October 20, 1989, Getty Oil Company changed its name to Four Star Oil and Gas Company (PET-022).

Kerr-McGee, a 50 percent partner in Petrotomics Company, was acquired in August 2006 by Anadarko Petroleum Corporation (PET-017).

E. Kerr-McGee Regional Activities

In addition to its interest in the subject property as a partner in Petrotomics Company, Kerr-McGee and related entities had ownership and/or mining interests in other properties in Carbon County and surrounding counties. As of 2003, Kerr-McGee reportedly had three mining claims and five patents in Carbon County. Kerr-McGee's patents in Carbon County consist of about 946 acres and were filed between the years of 1967 and 1968 (PET-012). A corporately related entity, Sequoyah Fuels Corp, had 94 mining claims in the county comprising of approximately 1,942 acres. These claims were filed between 1955 and 1973 (PET-023). The names and locations of these claims were not specified.

Specifically within the Shirley Basin, Kerr-McGee staked the Bootheel property in 1958 and by 1962, it had completed 283 rotary drill holes. Kerr-McGee also first discovered uranium mineralization at the Chalk Hills property in the 1960s (PET-024, pp. 6-7). It was also noted that Kerr-McGee Nuclear and Jenkins & Hand mined several pits south of Petrotomics and processed their ore through the Petrotomics Mill (PET-025, p. 24).

Kerr-McGee as well as related entities conducted mining activities and/or owned mining property in several other Wyoming counties, including counties in close proximity to this county, such as Natrona and Fremont Counties. Toeroek has developed reports for the Gas Hills mining district (Nos. 2404 and 2437), located in Fremont and Natrona County; the Crooks Gap mining district (No. 2403), located in Fremont County; and Gillette East Area Burlington No. and Wyodak area (Nos. 2335 and 2345), located in Campbell County. All of these sites have been identified as Tronox legacy sites. Refer to the respective reports for each site for further details.

IV. Conclusion

The Petrotomics Mill was operated by Petrotomics Company, which was a partnership in which Kerr-McGee had a 50% interest. The remaining 50% interest was held by Getty Oil Company, Skelly Oil Company and Tidewater Oil Company. It operated from 1962 to 1974 and from 1978 to 1985, processing uranium ore that was mined by Petrotomics Company in Shirley Basin, Wyoming. Petrotomics Company also held multiple mining and millsite claims, and real property interests in Carbon County.

If EPA desires, additional research could be conducted at local archives and libraries to further develop the nexus between Kerr-McGee and the site.