



**TOEROEK  
ASSOCIATES, INC.**

**TRONOX BANKRUPTCY TASK ORDER**

**Site Research Summary for  
Hanna Basin Group: Hanna Basin, N. Hanna Basin, and North Hanna  
Attachment B Site Nos. 2359, 2360 and 2361**

**January 16, 2015**

**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 were comprised of 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).<sup>1</sup>

Toeroek Associates, Inc. (Toeroek) was tasked to perform a targeted Potentially Responsible Party (PRP) search investigation of the Hanna Basin Group, located in Carbon County, Wyoming. The Hanna Basin Group was identified as legacy sites of Tronox and as "Other Sites" in Attachment B of a Consent Decree and Environmental Settlement Agreement.<sup>2</sup>

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

---

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

<sup>2</sup> 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 for the purpose of identifying the ownership and operational history of the Hanna Basin Group site area. Toeroek compiled the data found and then conducted a data review to determine: (1) basic information about the site area, including any aliases and a general timeline of operations; (2) information regarding ownership, evidence of operation and admission of operation; (3) PRPs associated with the Hanna Basin Group; and (4) identification of Kerr-McGee related entities that operated at the site area.

**Table 1. Data Sources Reviewed**

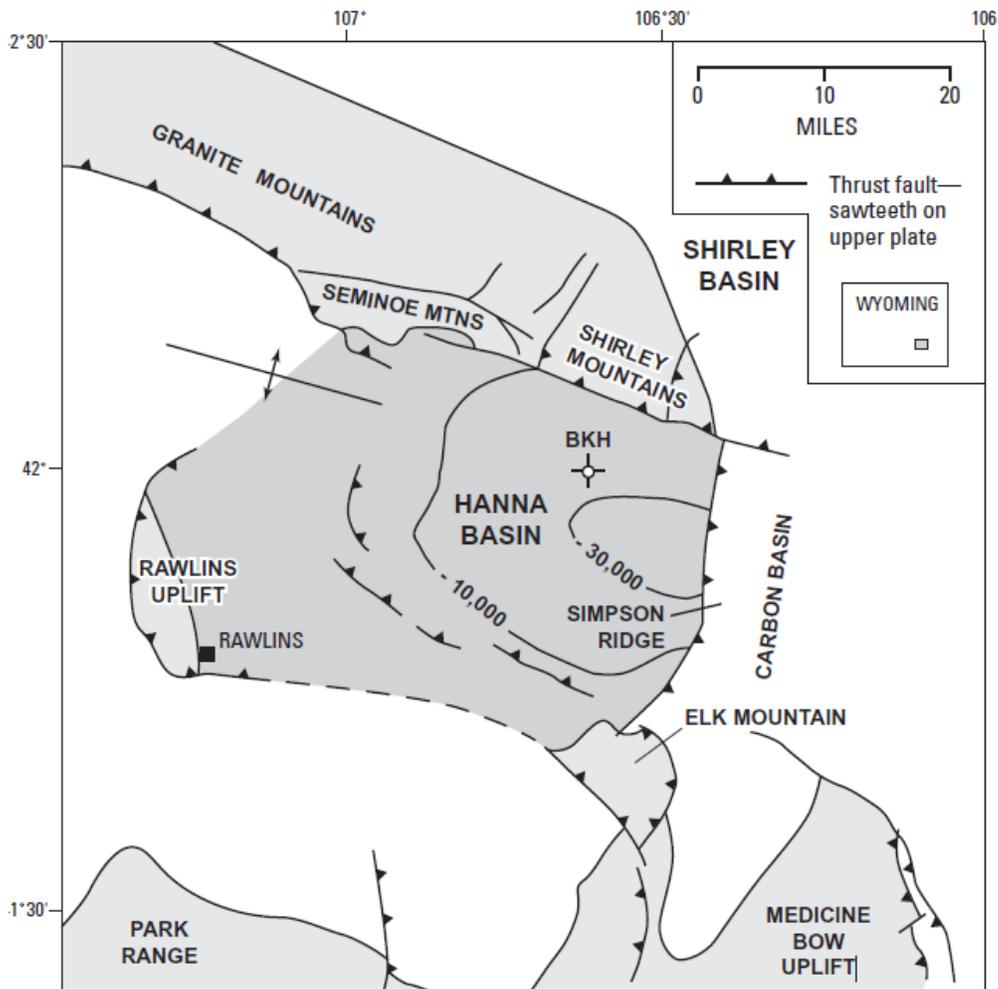
<b>Data Source</b>	<b>Notes</b>
Colorado School of Mines	Reviewed mining search engine databases. Search terms included, among others “Hanna Basin,” “Hanna Mining District,” and “Hanna Basin and uranium.”
DOJ’s Relativity Database	General search for “Hanna” produced seven results, all of which were listings of possible Tronox hazardous waste sites.
Internet	Carbon County, Wyoming websites; state agency websites (Wyoming Geological Survey, Wyoming Department of Environmental Quality); federal agency websites (EPA, BLM, NRC, USGS Publications Warehouse, USGS Defense Minerals Exploration Administration, USGS Mineral Resources On-Line Spatial Data); University of Wisconsin Ecology and Natural Resources (Minerals Yearbooks); WYOHistory.org; and other general Internet searches.
Toeroek Records	Concordance database for Tronox Project (including Kerr-McGee Annual Reports and various Minerals Yearbooks).

## **III. Research Findings – Hanna Basin Group**

### **A. Site Location**

The Hanna Basin Group consists of the following three sites: Hanna Basin (Site No. 2359 - coal), N. Hanna Basin (Site No. 2360 - uranium), and North Hanna (Site No. 2361 - phosphate). These sites, along with the commodity of interest, were listed on the KMC 2005 Due Diligence Mine Exploration List (NR0083927, p. 15). The specific site locations for the latter two sites are unknown. Consequently, for purposes of this investigation, Toeroek assumed a broad search for information relating to “Hanna” and “Hanna Basin” would encompass activities associated with all three sites, which are all believed to be located within the Hanna Basin geologic area.

Hanna Basin is located in Carbon County, Wyoming, and is about 35 miles long by 20 miles wide in the south-central portion of the state. This basin, a structural and sedimentary basin, is sandwiched between the Granite, Seminoe, and Shirley Mountains to the north, the Medicine Bow Mountains to the south, the Rawlins uplift to the west, and Carbon Basin to the east (HAN-004; HAN-009, p. 10). Figure 1 depicts the geological reference points surrounding Hanna Basin.



**Figure 1: Hanna Basin Geological Reference Points (HAN-005, p. 6)**

Hanna Basin contains thick coal beds. The north boundary of the Hanna Basin coalfield is Medicine Bow River, six miles north of the town of Hanna while the North Platte River formed the approximate western boundary of the coalfield about 15 miles west of Hanna (HAN-004; GLT-003, p. 61). The Hanna coalfield is approximately 750 square miles (HAN-010, p. 61). A 2001 study by the U.S. Geological Survey (USGS) also found conditions of this basin were favorable to support natural gas accumulation (HAN-005, p. 15). Trace elements also found in Hanna coal include uranium, arsenic, mercury and selenium (HAN-009, p. 22). As for phosphate in the area, a 2003 BLM publication describing mineral resources in a geographic area that includes Hanna Basin states that limited phosphate resources were available in the general area, but no known commercial production of phosphate ore had occurred. Rather, a number of phosphate mining and processing operations were situated near the Wyoming – Idaho state line, Lincoln County specifically (HAN-010, p. 153; CRGP-002, p. 11).

The town of Hanna is located in the southeastern portion of Hanna Basin. This town was established in 1889 by Union Pacific Railroad when it began to conduct coal mining operations at that location (HAN-003, pp. 3-4). The vast majority of the Hanna Mining District and the Seminoe Mining District is found within the basin (HAN-009, p. 32). Refer to Figure 2 for the locations of the town of Hanna and the two mining districts.

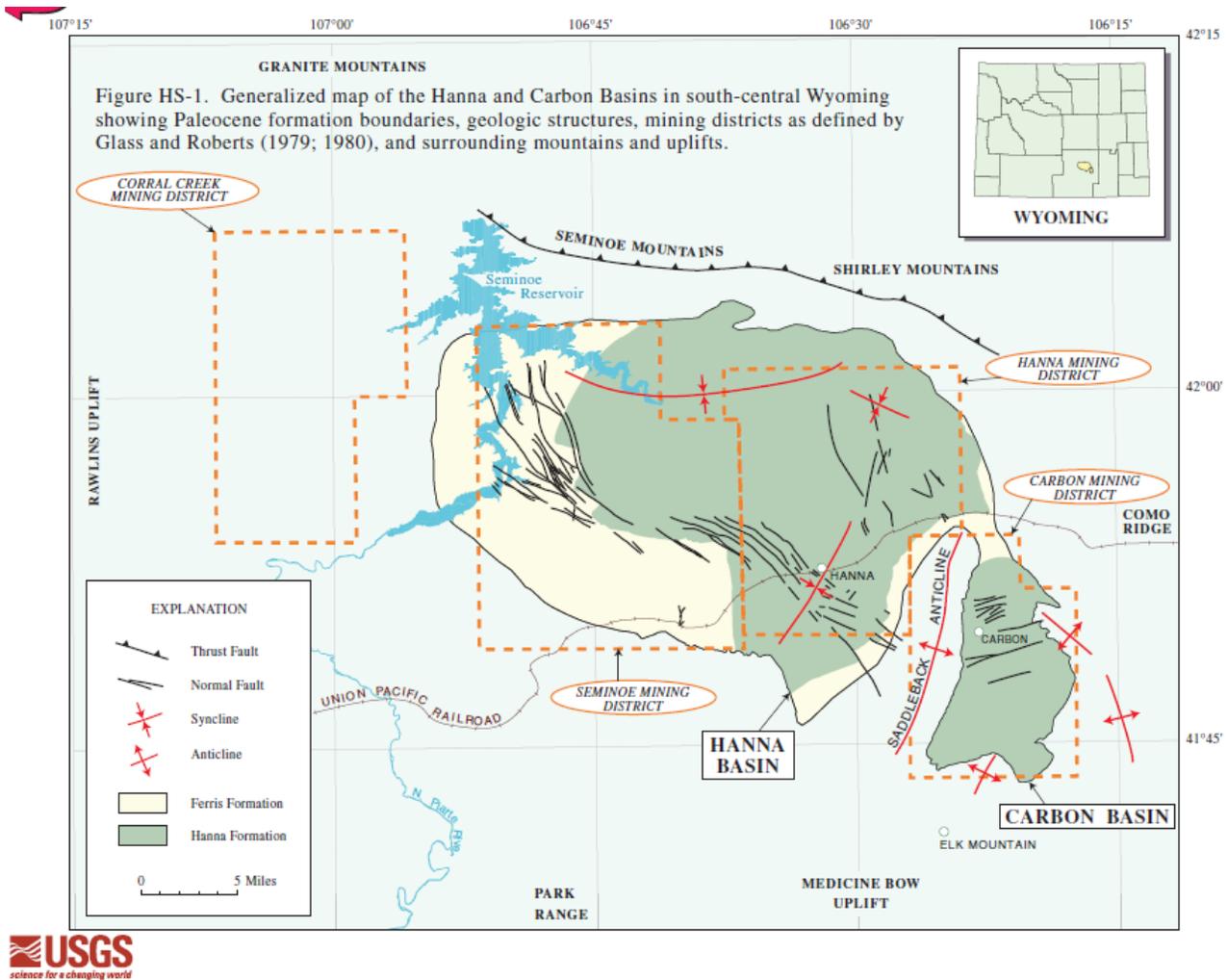


Figure 2: Site Location of Hanna Basin (HAN-009, p. 32)

## B. Operations

In 1888, Union Pacific Railroad decided to develop coalfields northwest of Carbon, Wyoming, after exhausting coal mines in the area around Carbon, Wyoming.<sup>3</sup> The railroad surveyed the town site of Hanna and conducted exploratory efforts of proposed mines. Coal was originally mined to fuel steam locomotives of the railroad. By 1889, development of the mines and construction of the town was underway (HAN-003, pp. 3-4; HAN-009, pp. 8, 32). The railroad constructed a spur from its main line west of Medicine Bow, ultimately routing its new railway through Hanna and building a company town there (HAN-003, pp. 8, 10). See Figure 2 above for the location of the railroad and the town.

By April 1890, Union Pacific Railroad created a wholly owned subsidiary, Union Pacific Coal Company, and transferred all coal properties to its subsidiary in order to improve coal operations. This new company was to “be maintained separately.” Union Pacific Railroad frequently adopted this strategy of using a wholly owned subsidiary to develop mines and the town of

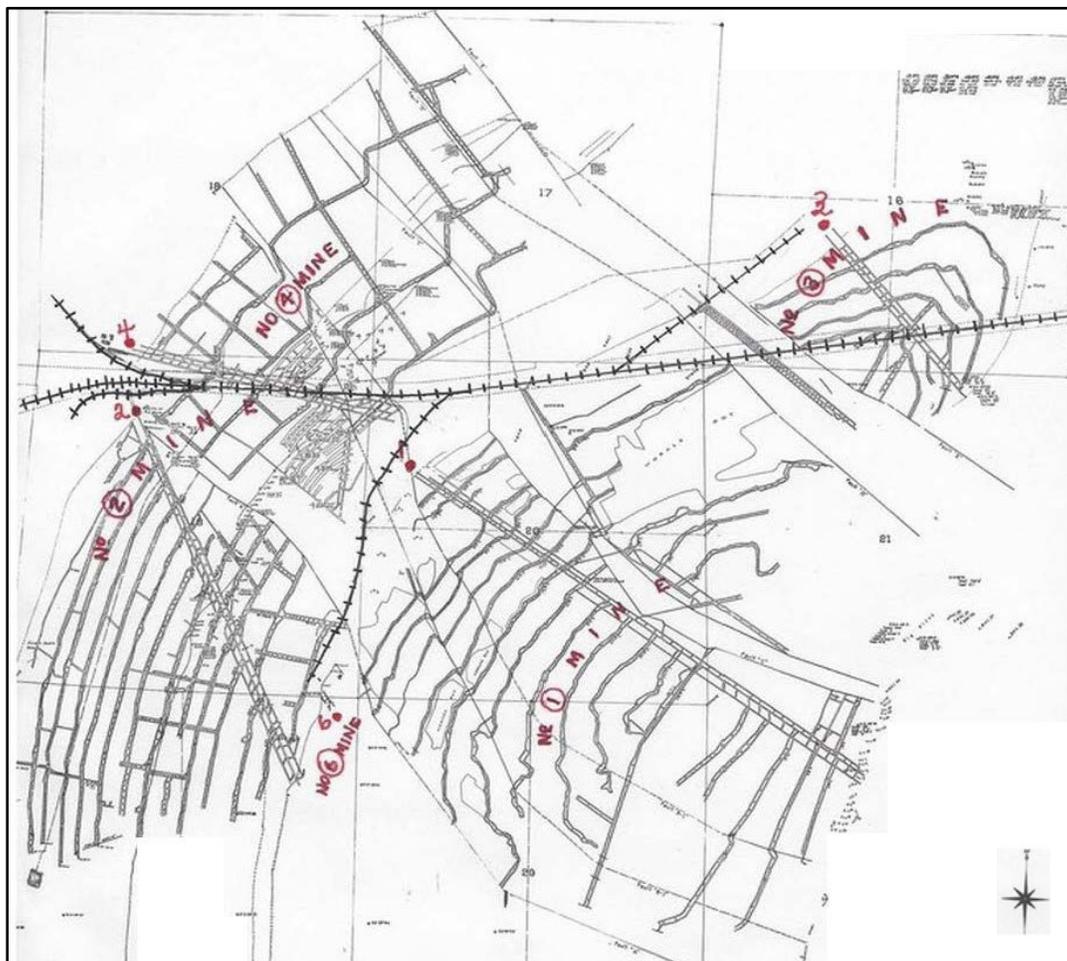
<sup>3</sup> Carbon, Wyoming is located in the Carbon Mining District (HAN-009, p. 32).

Hanna in order to protect itself of from debt and creditors and increase revenue (HAN-003, pp. 7-8).

Union Pacific Coal Company developed seven mines in Hanna, identified as Hanna Mines 1-6, and Hanna Mine 3 ½ (HAN-003, pp. 32-41). Coal production increased in the underground mines in the 1920 and 1930s due to mechanization, including use of electric locomotives to haul the coal and modern mining equipment (HAN-009, p. 9). Table 2 lists the company’s period of operation for each mine while Figure 3 [date unspecified] graphically depicts their locations, excluding Hanna Mine No. 5, which only operated one year.

**Table 2. Hanna Coal Mines of Union Pacific Coal Company**

Hanna Mine Name	Date of Operation	Source
Mine No. 1	1889 – 1908	HAN-003, p. 32
Mine No. 2	1889 – 1891, 1895, 1903 – 1934	HAN-003, p. 37
Mine No. 3	1906 – 1920	HAN-003, p. 39
Mine No. 3 ½	1912 – 1920 (subsequently leased to and operated by another company)	HAN-003, p. 39
Mine No. 4	1911 – 1954	HAN-003, p. 40
Mine No. 5	1918 – 1918	HAN-003, p. 41
Mine No. 6	1929 – 1933	HAN-003, p. 41



**Figure 3: Mines of Union Pacific Coal Company, Hanna, Wyoming (HAN-003, p. 16)**

Union Pacific Coal Company's Hanna coal mines had thick seams of coal, which created extremely dangerous conditions from mine collapse and gas accumulation. Four violent explosions occurred in Hanna Mine No. 1, with the 1903 and 1908 explosions resulting in substantial loss of life and assessment of coal mining practices. This mine, which closed after the last incident in 1908, was considered Wyoming's most dangerous mine. The town itself sat on top of mine slopes and entries (HAN-003, pp. 32, 37, 58).

In 1920, Union Pacific Coal Company abandoned Hanna Mine No. 3 ½, and began leasing the mine to John W. Hay to conduct "the clean up work." However, in October 1920, John W. Hay Company began mine operations, which involved driving the rooms and extracting the pillars (HAN-003, p. 39).

In March 1954, the Union Pacific Coal Company closed all mines in Hanna as the railroad completed its conversion to diesel fuel. Two other coal mines in Hanna were unaffected by Union Pacific Coal Company closing its mines. Both were strip mines, one operated by Nugget Coal Company and the other Monolith Portland Midwest Company (HAN-003, pp. 52, 59). Monolith Portland Midwest Company continued to conduct strip mining in Carbon County into 1960 (CRGP-003, p. 15).

Coal mining operations, using both underground and surface mining methods resumed in the 1960s and 1970s due to an increased demand for coal to fuel electric power plants and the introduction of modern strip-mining methods (HAN-009, p. 8). From 1960 and 1964, the following companies were conducting strip mining operations for coal near Hanna, Wyoming: Rosebud Coal Sales Co., Hanna Basin Construction & Coal Co., and Monolith Portland Midwest Company (CRGP-003, p. 15; CRGP-004, pp. 4, 15; CRGP-005, p. 19). All three companies experienced a decrease in coal production by 1964 (CRGP-007, pp. 4, 18). Hanna Basin Construction & Coal Co. closed its coal operations in 1968 while Monolith Portland Midwest Company and Rosebud Coal Sales Co remained operational until at least 1966 and 1969, respectively (CRGP-008, p. 16; CRGP-009, p. 16; GLT-003, p. 13).

In 1962, six percent of exploratory drilling for petroleum was conducted in the Hanna Basin and a new discovery was made although the party that made the discovery was not identified (CRGP-005, pp. 4-5).

In 1964, Monolith Portland Midwest Company mined coal from the Hanna No. 2 strip mine at Hanna (CRGP-007, p. 12). This mine was closed in 1968 (GLT-003, p. 13). In 1969, Energy Development Co., a subsidiary of Iowa Public Service Co., was a successful bidder on 8,683 acres of federal coal leases near Hanna, Wyoming (CRGP-012, p. 6). Within in two years, in 1971, Energy Development Co. intended to ship one million tons of coal per year from its underground mine, Vanguard, in the Hanna area. Also that year, Arch Mineral Corp. executed a contract involving the production of 5.5 million tons of coal from its new mine near Hanna. By December of 1971, Arch Mineral Corp. was operating the largest dragline in Wyoming (HAN-016, p. 5).

In 1973, Rocky Mountain Energy Corporation, a subsidiary of Union Pacific Corporation, formed a joint venture company with Arch Mineral Corporation to strip mine Union Pacific Corporation's coal reserves near Hanna, presumably in Hanna Basin. The joint venture company

was Medicine Bow Coal Company (CRGP-014, p. 9). Medicine Bow Mine, operated by Medicine Bow Coal Company, was operational as of 1979. Other coal mines operational during this year included: Rosebud Mine, Operator Rosebud Coal Sales (Peter Kiewit & Sons); Seminoe Nos. 1 and 2, Operator Arch Mineral Corporation; and Vanguard No. 2, Operator Energy Development. With the exception of the Vanguard No. 2 Mine, the operators conducted strip mining (HAN-012, pp. 23, 24). By the late 1970s, 98 percent of coal production in the Hanna Basin was from strip mines (HAN-009, p. 10).

As of 1981, federal coal leases in Hanna Basin included the Medicine Bow Mines, Seminoe Nos. 1 and 2 Mines, Carbon No. 1 Mine, Rosebud Mines, Hanna South Block, Energy Mine and Vanguard No. 2 Mine (GLT-005, pp. 150, 327). Both the Energy Development mines (three mines) and the Seminoe I Mine, operated by Arch of Wyoming, Inc. were closed by 1984 (HAN-010, p. 64).

In the mid-1990s, Cyprus Shoshone Coal Corporation, Arch Minerals of Wyoming and Rosebud Coal Sales Company were mining coal and performing reclamation operations in Hanna (HAN-015, p. 5).

As of 1999, Arch Coal Incorporated operated strip mines in the Hanna coalfields and the Cyprus Coal Company operated an underground mine in the Hanna coalfield, located within Hanna Basin (HAN-009, p. 10).

On August 31, 2001, RAG Shoshone Mine, the last working underground mine in the State of Wyoming at that time, shut down.<sup>4</sup> This closure concluded 134-year history of underground mining in Hanna and nearby Carbon Basins (HAN-003, p. 59). Seminoe No. 2 Mine and the Medicine Bow Mine, both surface mines operated by Arch of Wyoming, Inc., were the only two active coal mines in the Hanna coalfield by 2003 (HAN-010, p. 58).

In February 2004, Anadarko Petroleum Corporation announced it was drilling an exploration well for natural gas in the Hanna Basin area of Wyoming, expecting to reach target depth of the well by that summer. This well was to target “a potentially extensive deep-basin, tight-sands gas play” (HAN-001, p. 2). The corporate website for Anadarko Petroleum Corporation did not provide additional information about further activity in the Hanna Basin area; however, other areas of Wyoming were discussed.

In January 2007, the U.S. Bureau of Land Management issued an Environmental Assessment for the Hanna Draw Coalbed Natural Gas Pilot Project. Anadarko Petroleum Corporation proposed to explore and potentially develop coalbed natural gas wells near Hanna Draw. The proposed well sites were located in Township 23 North, Range 81 West, Section 2, in Carbon County, Wyoming, about 10 miles northeast of Hanna, Wyoming. The pilot project is located within Hanna Basin (HAN-011, pp. 18, 20, 24). See Figure 2 above.

In September 2014, Armada Oil, Inc. (Armada), an oil and gas exploration and production company, successfully completed its drilling of Bear Creek No. 1 well in Hanna Basin to a depth of 8,921 feet. Armada conducted this work under a farmout agreement with Anadarko E & P

---

<sup>4</sup> The operator of this mine is believed to be RAG Shoshone Coal Company.

Onshore, LLC and Anadarko Land Corp.<sup>5</sup> The commodity of interest was oil production (HAN-006, pp. 1-2). Both Anadarko Land Corp. and Anadarko E & P Onshore, LLC operate as subsidiaries of Anadarko Petroleum Corporation (HAN-007; HAN-008, p. 1).

According to the Wyoming State Geological Survey website, most coal mining activities in the Hanna Basin have ceased due to competition with nearby coal mining operations in Powder River Basin, where coal is more easily mined and therefore involving cheaper operations (HAN-004).

### **C. Ownership Information**

Toeroek searched the Carbon County Assessor's website for information on property ownership using the search terms of "Kerr" and "Anadarko." The 2014 tax levy information was searched. No records were found for "Kerr;" however, 38 records were returned for Anadarko Land Corp., and at least 13 records pertain to property located within Hanna Basin (HAN-014).

Toeroek also searched for mining interests using two U.S. Bureau of Land Management (BLM) websites. Searches were conducted within Carbon County using the terms: "Kerr" and "Anadarko." The BLM General Land Office Records website is the first website. It contains federal land conveyance records for the Public Land States, dating between 1820 and the present. No records were identified through these searches.

The second BLM website is identified as the Land & Mineral Legacy Rehost 2000 System, referred to as LR2000. Toeroek searched both Case Recordations and Mining Claims using the search terms "Anadarko" and "Kerr" along with 24 township and range descriptions, which reflect the majority of the geographic area of Hanna Basin.<sup>6</sup> A search of the Case Recordation for "Anadarko" found three pages of information.<sup>7</sup> Review of available information indicates that Anadarko E&P Company, LP, a subsidiary of Anadarko Petroleum Corporation, was the lessee on several occasions within Hanna Basin. The leases relate to oil and gas mining between 1999 and 2009 based on the review of two records (HAN-013, pp. 1-3; HAN-017). A search for "Kerr" in the LR2000 Case Recordation located one record. Kerr-McGee Corp. was identified as claimant on mining interests, a portion of which were located in the Hanna Basin. The period of activity on this case ranged from 1983 to 1988 (HAN-013, pp. 4-5). A search of Mining Claims for "Kerr" located four pages of information, possibly reflecting over 80 results. Information available for review indicates mining claims have been closed. The commodity was not identified, but the activity occurred between 1982 to 1989 for one mining claim (HAN-013, pp. 6-7). No results were found for "Anadarko."

---

<sup>5</sup> In the oil and gas industry, a farmout agreement is an agreement entered into by the owner of one or more mineral leases, called the "farmor," and another company who wishes to obtain a percentage of ownership of that lease or leases in exchange for providing services, called the "farmee." The typical services described in farmout agreements is the drilling of one or more oil and/or gas wells ([http://en.wikipedia.org/wiki/Farmout\\_agreement](http://en.wikipedia.org/wiki/Farmout_agreement)).

<sup>6</sup> In the BLM LR 2000, Case Recordations contain information on leases, permits, contracts, grants, agreements, mineral patents, etc. issued by the BLM on federal actions affecting public lands. The Mining Claims contains information on unpatented mining claims located on federal.

<sup>7</sup> The LR2000 website does not allow the User to advance through multiple pages returned on a search and, on occasion, the associated record cannot be opened. Each page contains approximately 20 results.

#### D. PRPs for the Hanna Basin Group

Table 2 identifies PRPs for the Hanna Basin Group site area along with a brief description and estimated dates of their involvement. Additional information regarding these parties is provided in the Operations section above.

**Table 2. PRP Summary Table for the Hanna Basin Group**

<b>PRP</b>	<b>Year(s)</b>	<b>Involvement at Site</b>	<b>Kerr-McGee Entity</b>
Anadarko E&P Company, LP	1999-2009	Identified as a lessee on several oil and gas leases. Subsidiary to Anadarko Petroleum Corporation.	Yes*
Anadarko E & P Onshore, LLC	2014	Granted Armada Oil Inc. an oil and gas agreement. Subsidiary to Anadarko Petroleum Corporation.	Yes*
Anadarko Land Corp.	2014	Owned land throughout Hanna Basin based on 2014 tax records. Subsidiary to Anadarko Petroleum Corporation.	Yes*
Anadarko Petroleum Corporation	2004-2007	Conducted exploratory drilling for natural gas in the Hanna Basin area. Successor to Kerr-McGee Corp. as of August 2006 (PET-017).	Yes*
Arch Coal Incorporated	1999	Operated strip mines in the Hanna coalfields, Hanna Basin.	No
Arch Mineral Corporation	1971-1979	Operated the Seminoe Nos. 1 and 2 Mines (strip mining for coal) and was part of the joint venture (Medicine Bow Coal Company) that operated the Medicine Bow Mine.	No
Arch Minerals of Wyoming	Mid-1990s	Mined coal and conducted reclamation operations in Hanna.	No
Arch of Wyoming, Inc.	2002	Operated Seminoe No. 2 Mine and the Medicine Bow Mine, both strip mines.	No
Armada Oil, Inc.	2014	Conducted drilling in Hanna Basin related to oil production under farmout agreement with Anadarko E & P Onshore, LLC and Anadarko Land Corp., both subsidiaries of Anadarko Petroleum Corporation.	No
Cyprus Coal Company	1999	Operated an underground mine in the Hanna coalfields, Hanna Basin.	No
Cyprus Shoshone Coal Corporation	Mid-1990s	Mined coal and conducted reclamation operations in Hanna.	No
Energy Development Co.	1964-1981	Obtained federal coal leases near Hanna, Wyoming.	No
Hanna Basin Construction & Coal Co.	1960-1965	Operated a strip mine for coal near Hanna.	No
John W. Hay Coal Company	1920-Unknown	Leased Hanna Mine No. 3 ½ from Union Pacific Coal Company and mined for coal.	No
Kerr-McGee Corp.	At least 1983-1988	Held unpatented mining claim with the Hanna Basin area.	Yes
Medicine Bow Coal Company	1973-1979	Conducted strip mining for coal near Hanna, Wyoming. Joint venture formed between Rocky Mountain Energy Corporation and Arch Mineral Corp.	No
Monolith Portland Midwest Company	1954-1966	Conducted strip mining for coal near/in Hanna, Wyoming.	No

<b>PRP</b>	<b>Year(s)</b>	<b>Involvement at Site</b>	<b>Kerr-McGee Entity</b>
Nugget Coal Company	1954	Conducted strip mining for coal in Hanna, Wyoming.	No
RAG Shoshone Coal Company	2001	Conducted underground mining at the Shoshone Mine in Hanna Basin.	No
Rocky Mountain Energy Corporation	1973	Conducted strip mining for coal near Hanna, Wyoming. Participated on joint venture with Arch Mineral Corp., known as the Medicine Bow Coal Company	No
Rosebud Coal Sales Co.	1960 – 1966, 1979, mid-1990s	Conducted strip mining for coal near Hanna, Wyoming.	No
Union Pacific Coal Company (previously Union Pacific Railroad Company, its parent)	1889 – 1954	Conducted underground coal mining in Hanna, Wyoming.	No
Union Pacific Corporation	1973	Held coal reserves near Hanna. Created Rocky Mountain Energy Corporation, as a subsidiary to mine these reserves.	No

\* A corporation relationship exists between this entity and Kerr-McGee; however, the entity is not one of the affiliated entities identified on Appendix A-1 of the 2011 *Environmental Liability Evaluation of Tronox Legacy Site* report.

#### **E. Kerr-McGee Regional Activities**

Kerr-McGee had a 50 percent ownership interest in Petrotomics Company, a company that developed uranium deposits in the Shirley Basin area and operated the Petrotomics Mill, all of which were located in Carbon County, Wyoming. The Petrotomics Mill has been identified as a Tronox legacy site (Site No. 1497). Refer to the Site Research Summary Report for Petrotomics Mill.

Kerr-McGee had additional mining-related interest in Carbon County, Wyoming. In 1958, it had staked the Bootheel property within the Shirley Basin, completing 283 drillings in the area by 1962. Kerr-McGee also first discovered uranium mineralization at the Chalk Hills property in the 1960s (PET-024, pp. 6-7, 30). By 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.

A search of Carbon County's land records and assessors records indicate Kerr-McGee and/or a Kerr-McGee related entity (specifically Kerr-McGee Oil & Gas Onshore LP and various Anadarko related entities) held real property interests in land within Carbon County, in addition to the interests identified within Hanna Basin (SPM-003; SPM-005).

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; and the Crooks Gap

mining district (No. 2403), located in Fremont 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**

Toeroek was tasked with determining the involvement of Kerr-McGee entities with the Hanna Basin Group. This group consists of three sites identified as Hanna Basin (Site No. 2359), N. Hanna Basin (Site No. 2360), and North Hanna (Site No. 2361). The commodities of interest for each site were identified as coal, uranium and phosphate, respectively.<sup>8</sup> Based on information obtained in the DOJ Relativity database, this work may have been exploratory in nature. While it is not entirely clear where the latter two sites are located, Toeroek assumed them to be located within the large geographic boundary of the Hanna Basin.

The Hanna Basin is rich with coal deposits, and coal mining in this basin has been relatively non-stop since about 1889 either through underground mining, stripping mining, or exploratory drilling. Kerr-McGee Corp. reportedly had an interest in unpatented mining claims within the Hanna Basin in at least the 1980s. The commodity(ies) of interest for these mines was not identified. Operational information for Kerr-McGee in regards to coal, uranium or phosphate mining or exploratory work in the Hanna Basin was not identified.

Furthermore, the Anadarko Petroleum Corporation, the successor to Kerr-McGee, conducted exploratory work to develop natural gas in Hanna Basin in 2004. Anadarko E & P Company, LP, a subsidiary to Kerr-McGee's successor, also had an interest in several oil and gas leases in the area from 1999 to 2009. More recently, in 2014, Armada Oil, Inc. was drilling for oil under a farmout agreement with two subsidiaries of Anadarko Petroleum Corporation, identified as Anadarko E & P Onshore, LLC and Anadarko Land Corp., another subsidiary. Anadarko Land Corp. also owned a large amount of property in Carbon County, a portion of which appears to be in Hanna Basin.

If EPA desires, additional research could be conducted at local archives and libraries to further develop the nexus between Kerr-McGee and the site. One potential area for further research includes more in-depth research into the ownership interest of Anadarko Land Corp. and possibly other Kerr-McGee entities over time as the county maintains a limited number of records online. Another area for research is in the mining interests of Kerr-McGee and Anadarko E & P Company, LP identified through a search of the BLM LR2000 website.

Toeroek has limited access to the Tronox case files in DOJ's Relativity Database; a credentialed user with full access could run additional keyword searches through the database to identify pertinent information. Specifically, an expanded search may provide information connecting Kerr-McGee entities to coal, uranium and phosphate mining activities associated with the Hanna Basin, N. Hanna Basin (Site No. 2360) and North Hanna (Site No. 2361), respectively.

---

<sup>8</sup> Sundance Petroleum & Uranium Co. (Sundance) mined uranium ore from a mine called "Hanna No. 1" in 1956. This mine is located in Johnson County, which lies due north of Carbon County (CRGP-002, p. 21). Sundance is not identified as a Kerr-McGee related entity.