3.2

RECORD OF DECISION

KERR-MCGEE SUPERFUND SITE
CARIBOU COUNTY, IDAHO

September 1995

U.S. Environmental Protection Agency

Region 10

PREFACE

This Record of Decision documents the remedial action plan for contaminated ground water and associated sources, and secondary risks associated with on-site solid wastes at the Kerr-McGee Superfund site. This Record of Decision serves three functions:

- It certifies that the remedy selection process was carried out in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act as amended, and to the extent practicable, with the national Contingency Plan.
- It summarizes the technical parameters of the remedy, specifying the treatment, engineering, and institutional components, as well as remediation goals.
- It provides the public with a consolidated source of information about the site, the selected remedy, and the rationale behind the selection.

In addition, the Record of Decision provides the framework for transition into the next phases of the remedial process, Remedial Design and Remedial Action.

The Record of Decision consists of three basic components: a Declaration, a Decision Summary, and a Responsiveness Summary. The Declaration functions as an abstract for the key information contained in the Record of Decision and is signed by the U.S. Environmental Protection Agency Regional Administrator. The Decision Summary provides an overview of the site characteristics, the alternatives evaluated, and an analysis of those options. The Decision Summary also identifies the selected remedy and explains how the remedy fulfills statutory requirements. The Responsiveness Summary addresses public comments received on the Proposed Plan, the Remedial Investigation/Feasibility Study, and other information in the administrative record.

This Record of Decision is organized into three main sections: the Declaration, the Decision Summary, and Appendices. Appendix A provides the letter of concurrence from the State of Idaho, Appendix B consists of the Responsiveness Summary, and Appendix C contains tables and figures.

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DECLARATION FOR THE RECORD OF DECISION

Site Name and Location

Kerr-McGee Superfund Site
Caribou County, Idaho

Statement of Basis and Purpose

This decision document presents the selected remedial action for the Kerr-McGee Superfund Site, in Caribou County, Idaho, which was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the administrative record for this site. The State of Idaho concurs with the selected remedy.

Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision, may present an imminent and substantial endangerment to public health, welfare, or the environment.

Description of the Selected Remedy

This remedial action addresses all necessary response actions at the Kerr-McGee Superfund Site. The Kerr-McGee Chemical Corporation's (KMCC) Soda Springs plant is an active operating plant which primarily manufactures vanadium and vanadium related products from ferrophosphorus ore and limestone. The processing of the ferrophosphorus and limestone generates three industrial waste water streams: the solvent extraction (S-X) raffinate waste stream, calcine sluicing waste stream, and the scrubber ponds waste stream. Solid wastes are also generated: roaster reject solids, calcine tailings, S-X pond solids, and scrubber pond solids. The primary goals of this remedial action are to prevent potential human exposure to ground water contaminated with molybdenum, vanadium, arsenic, tributyl phosphate, total petroleum hydrocarbons, and manganese, and to restore ground water to its beneficial use as a potential drinking water resource.

The selected remedy for contaminated ground water includes elimination of uncontrolled liquid discharges from the site which are the main source of ground water contamination, recycling or containment of solid sources of contamination, ground water monitoring, and institutional controls.

The remedy for ground water specifically includes:

- Elimination of uncontrolled liquid discharges from the facility as soon as practicable;
- Excavation and reuse/recycling of buried calcine tailings during the next eight years.

- Excavation and disposal of Solvent Extraction and Scrubber Pond solids in lined cells on-site;

- semi-annual ground water monitoring to determine the effectiveness of source control in achieving ground water performance standards for the following contaminants of concern:

  - Molybdenum
  - Vanadium
  - Manganese
  - Tributyl Phosphate
  - Total Petroleum Hydrocarbons
  - Arsenic

- Establishment of Institutional Controls (deed restrictions, limited access, well restrictions and/or well-head protection) in affected off-site areas to prevent ingestion of ground water for as long as the ground water exceeds the performance standards.

In addition to the selected remedy for ground water, which addresses the principal risks posed by this site, this Record of Decision includes remedial actions to address two localized problems: potential human exposure to roaster reject materials stored above ground and migration of windblown calcine tailings to surrounding land.

The *selected remedial action for the roaster reject materials is resource recovery/reuse* (currently being implemented), and the selected remedial action for windblown calcine tailings is excavation and disposal (which has been completed).

As part of the overall site strategy, though not part of this selected remedy, KMCC has developed and submitted to EPA and the State of Idaho, a waste minimization/treatment plan to eliminate liquid discharges to ground water from the facility within two years. The plan includes:

- construction of new lined ponds to contain the main source of ground water contamination (S-X raffinate currently discharged to leaking unlined ponds);

- construction and operation of a phosphoric acid plant to consume scrubber water and calcine tailings to produce phosphoric acid, ammoniated phosphate, and gypsum fertilizers as marketable products.

KMCC has obtained necessary state permits to construct lined ponds to replace the existing unlined S-X pond. The new lined ponds are now under construction. The company has also applied for the necessary permits to operate a phosphoric acid plant which will reuse/recycle wastes that are currently sources of ground water contamination.

Successful implementation of KMCC's plan, including timely issuance of all permits, along with excavation and disposal of the S-X and scrubber pond solids, should effectively address the sources of ground water contamination. This will be subject to confirmation by ground water monitoring.

Based on information obtained during the Remedial Investigation and on a careful analysis of all remedial alternatives, EPA and the State believe that the selected remedy will achieve the remedial action goals. It may become apparent, during the remedy (after implementation of source control and continued monitoring) that contaminant levels have ceased to decline and are remaining constant in ground water at levels higher than the remediation goal. In such a case, the performance standards and/or remedy will be reevaluated.

Declaration of Statutory Determinations

The selected remedy is protective of human health and the environment, complies with Federal and State laws and regulations that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment (and resource recovery) technologies, to the maximum extent practicable for this site. The selected remedy under CERCLA includes treatment, specifically reuse/recycling of calcine tailings as part of source control to address contaminated ground water and reuse/recycling to address the roaster reject materials. Re-capture and treatment of contaminated ground water was not found to be practicable at this site and was not selected because it is much more expensive than source control, and is neither expected to substantially accelerate the time frame for cleanup nor significantly reduce the risk associated with contaminants in ground water beyond what will be achieved with source control actions alone. Since treatment was incorporated to the extent practicable for this site, the selected remedy satisfies the statutory preference for treatment as a principal element of the remedy.

Because this remedy will result in hazardous substances remaining in ground water and in the roaster rejects area above health-based levels, a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Chuck Clarke

Chuck Clarke
Regional Administrator
U.S. EPA Region 10

9/28/95
Date

DECISION SUMMARY

Kerr-McGee Superfund Site
Caribou County, Idaho

1.0 SITE DESCRIPTION

1.1 Introduction

The Kerr-McGee Superfund site ("the site") was listed on the National Priorities List (NPL) on October 4, 1989. Previous investigations of the site identified hazardous substances from the site entering ground water from unlined industrial waste water ponds.

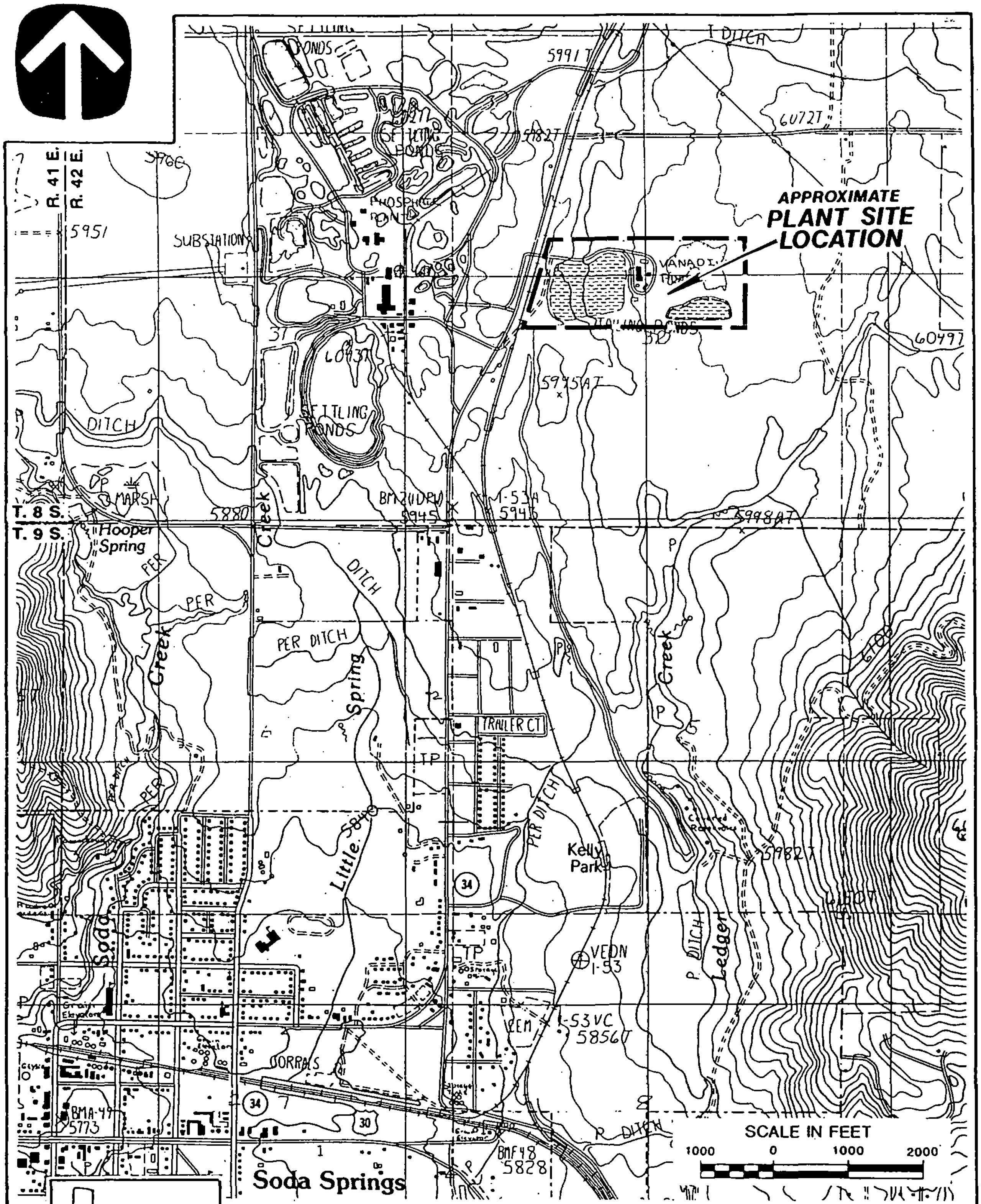
1.2 Site Name, Location, and Description

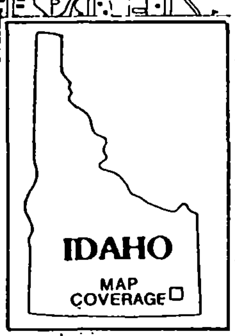
The site includes a vanadium production plant, owned and operated by Kerr-McGee Chemical Corporation (KMCC), and located in Caribou County about 1.5 miles north of Soda Springs, Idaho (population approximately 3,000) on the east side of State Highway 34 (see Figure 1). KMCC owns approximately 332 acres of industrial and agricultural land including the plant facilities (see Figure 2). The plant was constructed in 1963 and covers approximately 80 acres. The remaining 252 acres are used for agriculture. KMCC manages by-products and waste materials resulting from production operations in three unlined surface impoundments: the solvent extraction (S-X) pond, scrubber pond, and the calcine tailings pond. Industrial waste waters discharged to unlined ponds on-site currently infiltrate into the underlying ground water at a rate of 300 to 350 gallons per minute.

The industrial site is surrounded on the north, east, and south sides by agricultural land and on the west side by State Highway 34. To the west of Highway 34, Monsanto Chemical Company owns and operates an elemental phosphorous plant, which is also a Superfund site listed on the National Priorities List (NPL). KMCC owns the agricultural land to the north and east of the industrial site. A local farmer owns the land to the south of the site.

The site is located within the Bear River Basin which is characterized by broad, flat valleys with a few scattered topographic features including cinder cones, rhyolitic domes, and uplifted fault blocks. The site lies in a valley at approximately 6,000 feet elevation. The valley is bordered by northwest trending mountain ranges reaching approximately 8,000 feet in elevation. The northern boundary of the Bear River Valley drainage basin is formed by the Blackfoot Reservoir, located approximately thirteen miles north of the KMCC site.

Surface drainage in the valley is predominantly to the south. Soda Creek forms the largest surface water drainage feature, flowing from its headwaters near Fivemile Meadows, southward toward the Alexander Reservoir located to the west of Soda Springs. Natural springs are important hydrologic features of the basin, and emerge at several locations to the ground surface as result of discharge from the underlying ground water aquifer. There are no known floodplain zones, endangered species, or historical or archeological sites in the immediate vicinity of the site. There is a small wetland (Finch Spring/Pond) about one mile south of the site.





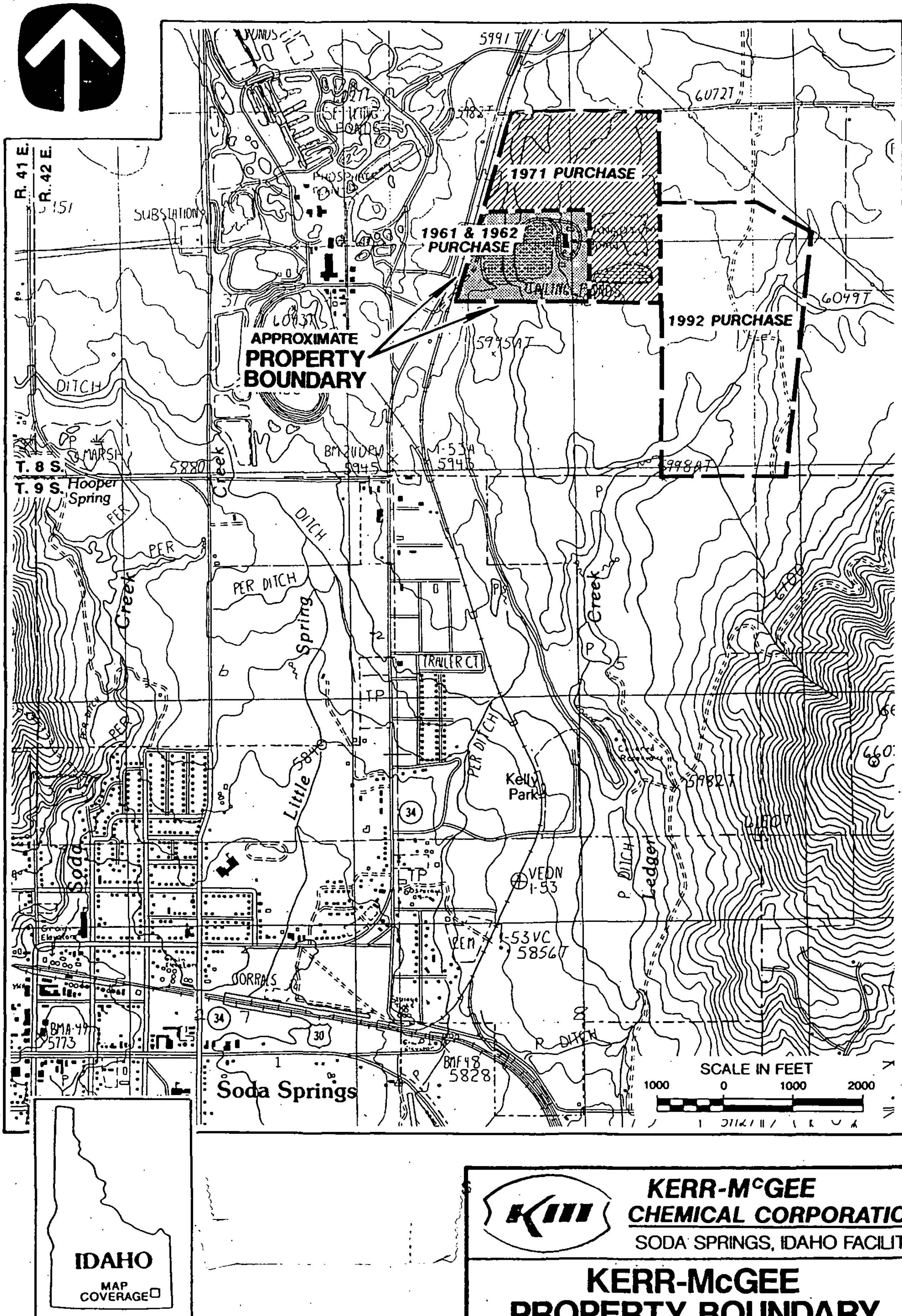
REFERENCE -
U.S.G.S. QUADRANGLE ENTITLED "SODA SPRINGS, IDAHO" - PROVISIONAL EDITION - 1982.

KERR-McGEE CHEMICAL CORPORATION
SODA SPRINGS, IDAHO FACILITY

KERR-McGEE LOCATION MAP

REVISION :	DATE :	PREPARED BY :
		Dames & Moore

FIGURE 1



KERR-McGEE CHEMICAL CORPORATION
SODA SPRINGS, IDAHO FACILITY

KERR-McGEE PROPERTY BOUNDARY MAP

REFERENCE -
U.S.G.S. QUADRANGLE ENTITLED "SODA SPRINGS, IDAHO" - PROVISIONAL EDITION - 1982.

REVISION :	DATE :	PREPARED BY :
		Dames & Moore

FIGURE 2

Three primary ground water systems have been identified in the Soda Springs area: the Shallow Ground Water System, the Mead Thrust Aquifer System (originating from the Aspen Range to the east of the site); and the Chesterfield Range Aquifer System (originating in the Soda Springs Hills and Chesterfield Range to the west of the Monsanto Corporation).

2.0 SITE HISTORY AND KEY MILESTONES

2.1 Historical Site Activities

The KMCC Soda Springs plant has operated at its present location since 1963. The vanadium extraction process is divided into the five steps shown on Figure 3 in Appendix C. These steps are sizing, conversion, leaching, purification, and packaging. The primary raw materials are Ferrophosphorous (FeP) ore and limestone. The FeP is purchased from Monsanto in Soda Springs and FMC Corporation in Pocatello, Idaho. The limestone is mined once a year from a quarry approximately eight miles east of the plant. The technology used to extract vanadium has not changed notably since the plant started operations in 1963. Equipment modifications have increased the processing capacity from an original capacity of 20 tons of ore per day to its current capacity of 66 tons of ore per day.

Industrial waste waters generated by the vanadium production process are stored in various on-site ponds. The sized FeP and limestone mix is converted to a water soluble sodium vanadate via a roasting process. Emissions from the roasters and quench tank are controlled using a cyclone followed by a venturi scrubber. The air stream flows to the venturi scrubber where recycled and fresh waters are used to remove solids from the air stream. The air stream then exits through a stack. A maximum of 210 gallons per minute (gpm) of excess water is discharged to an unlined scrubber pond which accumulates an estimated 300 tons per year of scrubber residuals. The location of the scrubber pond is shown on Figure 4 in Appendix C.

Solvent-extraction (S-X) raffinate is contained in a series of three ponds (Figure 4) which consist of two lined settling ponds that allow limestone to settle, and the S-X pond that contains the clarified S-X raffinate. The settling ponds are lined with high density polyethylene (HDPE). The second lined settling pond was constructed immediately downstream of the first lined settling pond. The lower S-X pond is unlined and excavated into native silts and silty clays. The S-X pond has capacity for 5.5 million gallons of industrial waste water and typically operates at 4 million gallons capacity.

Once the vanadium in liquor discharging from the leach tanks has decreased below a specified concentration, the solids are sluiced to a calcine tailings pond. Approximately 55,000 tons of leached calcine tailings are produced annually and discharged to an unlined calcine tailings pond. An average of 80 to 100 gpm of water is used to transport the leached calcine to a tailings pond. This operation uses recycled scrubber water. Figure 4 shows the location of the calcine tailings impoundment area. Calcine tailings are deposited at different locations within the impoundment area depending upon the time of year.

While KMCC's vanadium production process has been substantially the same since it began operations in 1963, like most operating plants, the KMCC facility is a dynamic entity where changes are made to improve the efficiency of a process, to meet market demands or to perform routine maintenance activities. Table 1 in Appendix C lists the nature and quantity of all raw materials, byproducts, and wastes used at the site. Figure 5 and Table 2 in Appendix C identify the past and present use of waste ponds at the site. Of the material and waste ponds listed on these tables, site investigations described in Section 5.0 have focused cleanup actions on the following areas (see Figure 6):

-» S-X raffinate pond
-» scrubber pond
-» east calcine tailings area, and
-» roaster rejects pile

Two ponds on the property have experienced containment failures. Both involved ponds in the S-X raffinate system. In April 1981, the S-X pond lost approximately 2.5 million gallons from a hole in the bottom of the pond. In September 1989, one of the settling ponds was also discovered to have a hole in the clay lining in the bottom of the pond. On that occasion an estimated 650,000 gallons of raffinate was lost. The hole in the settling pond was repaired, but another 100,000 gallons of raffinate was discharged to ground water in November 1989. After the November 1989 pond failure, an HDPE liner was installed.

A Site Investigation in April 1988, leading to NPL listing of the site, identified hazardous substances in waste ponds including arsenic, cadmium, chromium, lead and vanadium, as well as three organic compounds.

Samples of boiler blowdown water, roaster scrubber discharge, leached residue solids, and S-X raffinate were collected as part of the initial RI activities during January 1991. Analysis of samples indicate that processing wastes generated at the plant are not regulated as hazardous wastes under the Resource Conservation and Recovery Act (RCRA) regulations.

2.2 Key Milestones

Previous investigations at the site focused primarily on ground water quality. A summary of historical milestones include:

May 1985	State of Idaho Hazardous Materials Bureau completed a Preliminary Assessment of the KMCC facility
April 1988	U.S. EPA, through its contractor Ecology & Environment, completed a Site Inspection
October 1989	EPA listed the Kerr-McGee Superfund Site on the NPL
March 1990	KMCC was identified as a potentially responsible party for the site
July 1990	EPA requested that KMCC perform site studies to characterize the nature and extent of contamination
September 1990	Agency for Toxic Substances and Disease Registry completed a Preliminary Health Assessment for the site
October 1990	EPA signed an Administrative Order on Consent with KMCC to perform a Remedial Investigation/Feasibility Study
October 1993	Risk Assessment completed
April 1995	Remedial Investigation completed
June 1995	Feasibility Study completed

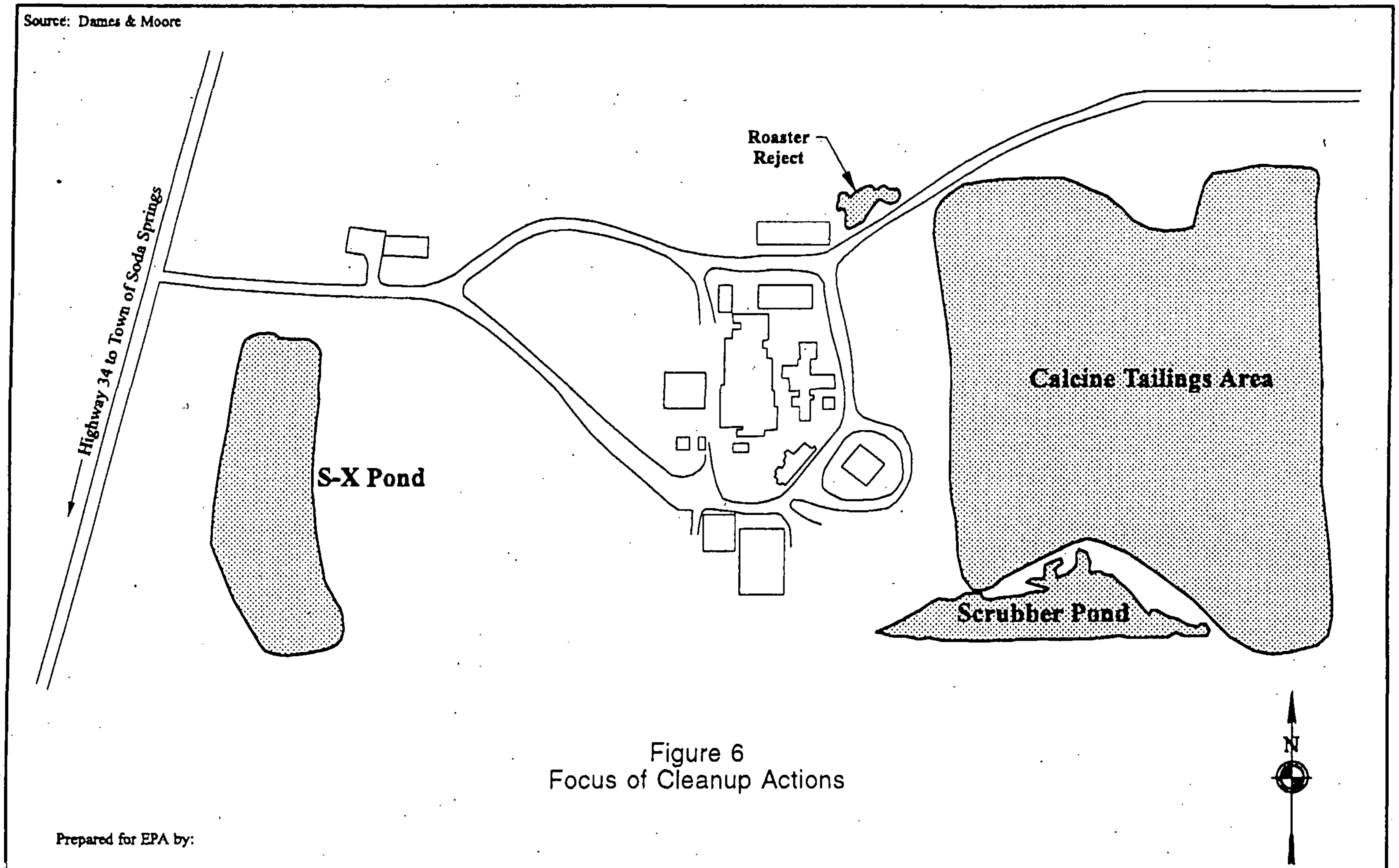


Figure 6
Focus of Cleanup Actions

Prepared for EPA by:

ecology and environment, inc.
International Specialists in the Environment
Seattle, Washington

3.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

This section provides a summary of how the public participation requirements in CERCLA Section 113(k)(2)(b)(i - v) were met in the remedy selection process.

The Remedial Investigation/Feasibility Study (RI/FS) Report and the Proposed Plan for the Kerr-McGee Superfund site were released to the public for comment on August 1, 1995. These two documents were made available to the public in both the administrative record and an information repository maintained at the EPA Superfund Records Center for Region 10 in Seattle, Washington, and at the Soda Springs Public Library, in Soda Springs, Idaho. The notice of availability for these two documents was published in the Caribou County Sun on August 3, 1995. A public comment period on the documents was held from August 4, 1995, to September 3, 1995.

A public meeting was offered in the Proposed Plan and in the newspaper notice, but no meeting was requested. A response to the comments received during this period is included in the Responsiveness Summary, which is part of this Record of Decision (ROD).

In addition to the public comment period EPA conducted the following outreach activities, which were directed towards interested members of the community to provide current information on the status of site activities:

September 1989	EPA News Release proposing KMCC site for NPL
August 1990	Community interviews were conducted for Superfund sites in southern Idaho including Kerr-McGee site
August 1991	Community Relations Plan developed
December 1991	Introductory fact sheet
May 8, 1992	Preliminary Site Characterization Report fact sheet
February 28, 1994	RI and Risk Assessment information fact sheet
November 22, 1994	Draft RI report and ground water modelling fact sheet
June 16, 1995	RI and ground water model fact sheet
August 1, 1995	Proposed Plan
August 3, 1995	Notice of opportunity to comment on the Proposed Cleanup Plan published in the Caribou County Sun newspaper

An administrative record was established at the beginning of the RI/FS and has been maintained at the EPA offices and the information repository near the site. The selected remedy is based on the administrative record.

4.0 SCOPE AND ROLE OF RESPONSE ACTION WITHIN SITE STRATEGY

Some CERCLA sites are separated into distinct "operable units," such as a "ground water unit" and a "soils unit", in order to most efficiently remediate the contamination and reduce exposures. The Kerr-McGee site is not separated into operable units. This ROD addresses the final planned remedial action at the site. This remedial action, in conjunction with plant modifications undertaken independently by KMCC, addresses the principal threats to ground water posed by the conditions at the site.

The selected remedial action for the site recognizes that KMCC's Soda Springs plant is an active industrial facility and seeks to minimize unnecessary impacts to ongoing operations while ensuring protection of public health and environment. During the Remedial Investigation KMCC voluntarily remediated some past disposal areas (e.g., magnesium ammonium phosphate ponds and boiler blowdown pond--see Figure 5 in Appendix C) and modified their process to reduce/recycle waste streams. These actions are acknowledged and described in the RI/FS document, but have not been managed as part of the CERCLA response action. KMCC has consulted with EPA and the State on actions that affect the ultimate remedial action and has applied for the necessary state and/or federal permits related to the individual actions (e.g., construction permits for lined ponds, application for air permit for phosphoric acid plant).

The site strategy takes into consideration the actions and process changes that have been completed or are in process to date. In light of those actions and at KMCC's request, the Feasibility Study acknowledges the need to eliminate the liquid sources of ground water contamination and describes the ongoing and completed process changes, but does not specifically evaluate alternatives to accomplish liquid source elimination. Instead, the selected remedy specifies the need to eliminate liquid sources and to cease unpermitted discharges from the facility, and to rely on performance standards and monitoring to ensure the effectiveness of the cleanup. Actions that are already permitted under state regulatory authority will not be subject to EPA oversight as part of Superfund cleanup. EPA may require additional actions if the agency, in consultation with the State, determines that cleanup performance standards are not or cannot be met in a timely manner.

5.0 SUMMARY OF SITE CHARACTERISTICS

Under EPA's oversight, KMCC collected and analyzed samples of air, soil, waste water, pond solids and sediment, vadose zone, and ground water at the site between 1991 and 1994. These efforts were documented in the Remedial Investigation (RI) report. Sample locations are shown on Figure 7. Tables 6, 7, and 8 in Appendix C list the contaminants of potential concern sampled by medium, the range of site concentrations for each, and the maximum background and risk-based concentrations (screening levels). Figure 8 summarizes the chemicals of potential concern that were identified for further consideration during the RI. The final chemicals of concern addressed in this remedy are discussed in Section 6.0 The major findings of KMCC's investigations are:

Ground Water. Ground water beneath the site exists in an interconnected aquifer, known as the Shallow Ground Water Aquifer (or System), which flows through the fractured basalt underlying the site. Ground water flow in the shallow system is rapid, and is measured in feet per day. Recharge to the system occurs through precipitation, runoff from irrigation, leakage from the Blackfoot Reservoir, and from the Mead Thrust Aquifer System originating beneath the mountains to the east. The basalts of Shallow Ground Water Aquifer is considered to be the primary aquifer at the KMCC site. The Mead Thrust Aquifer is unaffected by the site.

The regional direction of ground water movement in the shallow ground water system is to the southwest. Ground water moves from the eastern half of the site in a predominantly western direction, and moves increasingly south/southwest at the western site boundary. Discharge from the Shallow Ground Water Aquifer is to Soda Creek, Finch Spring/Pond, Big Springs, the Alexander Reservoir, and the Bear River. The City of Soda Springs drinking water supply comes from Formation Springs, which is an expression of the Mead Thrust Aquifer upgradient and to the east of the site and the Shallow Ground Water Aquifer.

The largest concentrations of site-related contaminants were detected in on-site shallow wells adjacent to the S-X pond; concentrations in off-site wells were generally one to two orders of magnitude lower. The highest concentrations at the site boundary have consistently been found in monitoring well KM-8 (shown on Figure 7), on the western end of the southern site boundary, down-gradient from the S-X pond. Constituent concentrations in paired shallow and intermediate depth wells, both on- and off-site, suggest that mixing of pond seepage (and ground water) occurs vertically throughout the aquifer. On-site intermediate depth wells generally have lower concentrations than nearby shallow wells, but observed concentrations are generally greater than background. Concentrations in deeper wells on-site are close to or within range of background concentrations.

Potential human consumption of ground water from the affected area south of the plant is the primary pathway of concern at the site. Arsenic, molybdenum, vanadium, tributyl phosphate (TBP), manganese, and total petroleum hydrocarbons (TPH) in the ground water exceed risk-based screening concentrations equal to 10^{-7} risk for carcinogens or a HI of 0.1 for non-carcinogens, assuming residential ground water use at the site. The maximum concentrations of these chemicals in ground water at various monitoring locations are summarized below and in more detail on Table 3 in Appendix C.

	Maximum at Plant Boundary	Maximum Off-Site	Maximum at Finch Spring
Vanadium	28.6 mg/l	3.54	0.009
Molybdenum	119.0 mg/l	6.00	0.689
Arsenic	0.08 mg/l	0.007	0.002
TBP	4.4 mg/l	0.48	0.008
TPH	2.2 mg/l	0.5	0.5
Manganese	8.63 mg/l	0.54	0.005

The source of these contaminants is the leaching of industrial waste waters from unlined ponds: the S-X pond, the scrubber pond, and the active calcine tailings pond. In addition, atmospheric precipitation passing through the vadose zone are believed to leach contaminants from buried calcine tailings on the east portion of site, and through S-X and scrubber pond solids into ground water. Table 4 in Appendix C summarizes the estimated mass and concentration of contaminants of concern in each of the liquid sources. The concentration of contaminants at various monitoring locations within the plant boundaries and off-site are also shown. In comparison with the contaminant levels found in ground water (shown above), the highest concentration of each contaminant, detected in the S-X pond water, is:

Vanadium	117	mg/l
Molybdenum	155	mg/l
Arsenic	0.19	mg/l
TBP	16	mg/l
TPH	41	mg/l
Manganese	0.16	mg/l

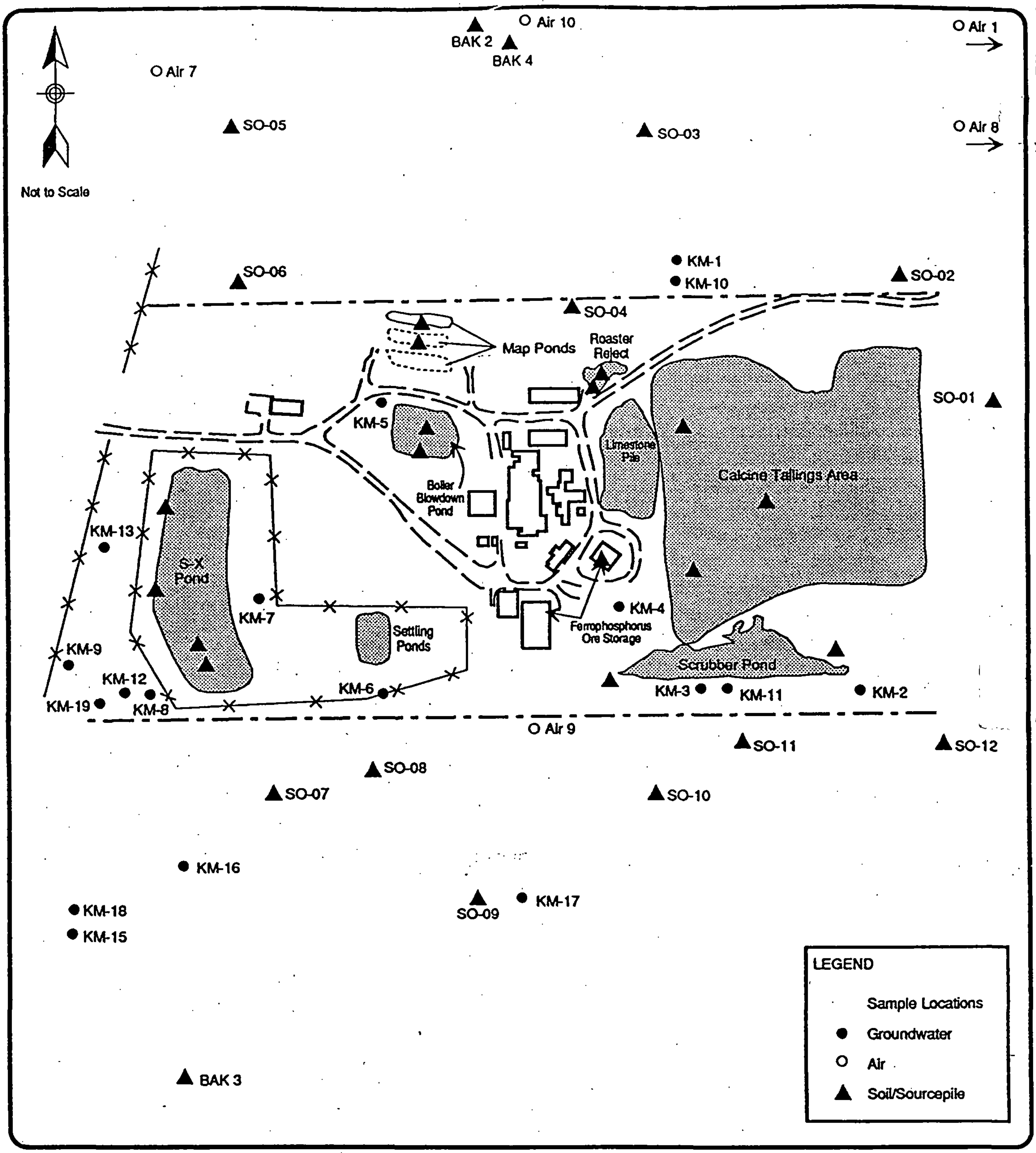


FIGURE 7

DATA POINTS AVAILABLE IN ALL MEDIA

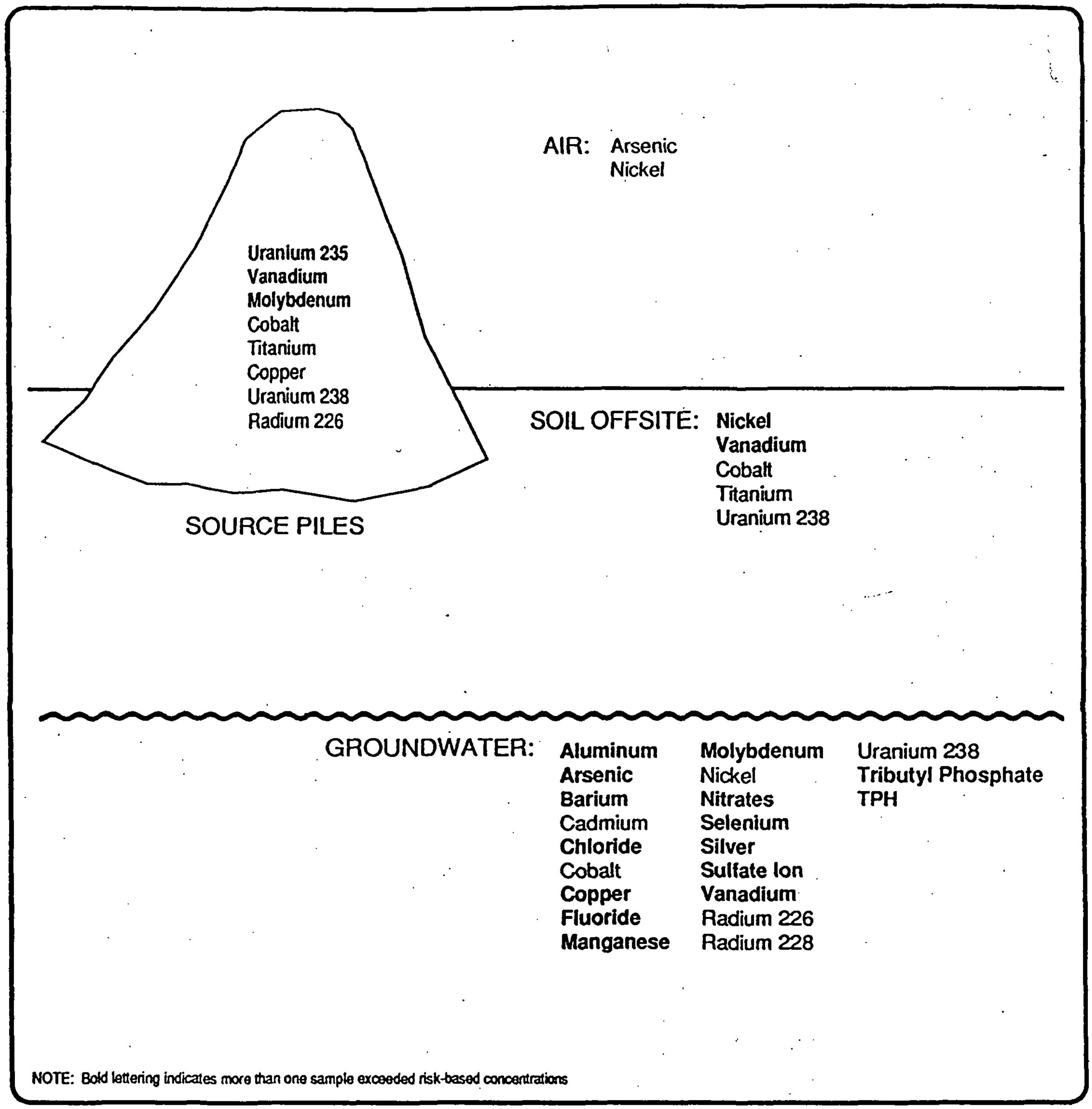


Figure 8

SUMMARY OF CHEMICALS OF POTENTIAL CONCERN

These values exceed the maximum levels of COCs in ground water for all contaminants except manganese. The manganese concentration 0.16 mg/l measured in the S-X pond is lower than some of the concentrations measured off-site in ground water monitoring well locations. It may be that the small number of source samples taken from the S-X pond over time provides an underestimate of manganese concentrations in the S-X pond. In addition, an abnormally high concentration of manganese was found in well KM-8, which may have been caused by turbidity in the samples. Despite these uncertainties, site investigations confirm the presence of elevated levels of manganese downgradient from the site which appear to originate from the KMCC plant.

Figure 9 shows conceptually how contaminants in ground water move from the site southward. Traces of molybdenum have been detected as far south as Big Spring. As the contaminated ground water moves away from the plant, it spreads out across a larger area, mixes with uncontaminated ground water in the aquifer, and the concentrations decrease.

Contaminants in the shallow ground water system are of potential concern because contaminants exceeding risk-based concentrations (discussed in Section 6.0) make the ground water unsafe as a drinking water source. No one is currently using the affected portion of the ground water aquifer as a drinking water source. The municipal water system obtains its supplies from Formation Spring, which originates in the Mead Thrust Aquifer (not the affected Shallow Ground Water Aquifer) located to the east of and hydrogeologically upgradient from the site. Neither the Chesterfield Aquifer nor the Mead Thrust Aquifer are affected by contamination from the site.

Finch Spring. At Finch Spring, ground water discharges into a small pond which is part of a wetland located approximately one mile to the south of the site. Water quality measurements at the spring detected elevated levels of contaminatants associated with releases from the site. Subsequent sediment samples to measure accumulation indicated that molybdenum is present in sediments above background levels.

Contaminants at levels slightly above background have also been detected at Big Springs, the southern-most sampling location. Other springs sampled in the area do not show impacts.

Vadose zone. The vadose zone includes the native soils, underlying basalt rock, and solid sources (calcine tailings, and S-X and scrubber pond solids) buried at the site or beneath the S-X and scrubber ponds that may leach contaminants into ground water. Metals (vanadium in particular) are leached from the solid sources but appear to be attenuated within underlying native soils. Ground water modelling indicates that solid sources are likely contributing between 1 and 20% of the contaminants entering the ground water, so that even if liquids discharged to and leaking from the ponds were eliminated, remaining solid sources buried or trapped in the vadose zone would continue to leach metals into ground water. Table 5 in Appendix C shows the maximum concentrations measured at various locations in the solid sources.

The maximum chemical concentration measured in pond solids and calcine tailings is:

Vanadium	10,700 mg/Kg (scrubber solids)
Molybdenum	1,040 mg/Kg (scrubber solids)
Arsenic	7.7 mg/Kg (pond solids)
TBP	140 mg/Kg (pond solids)
TPH	Not measured in solids
Manganese	915 mg/Kg (calcine tailings)

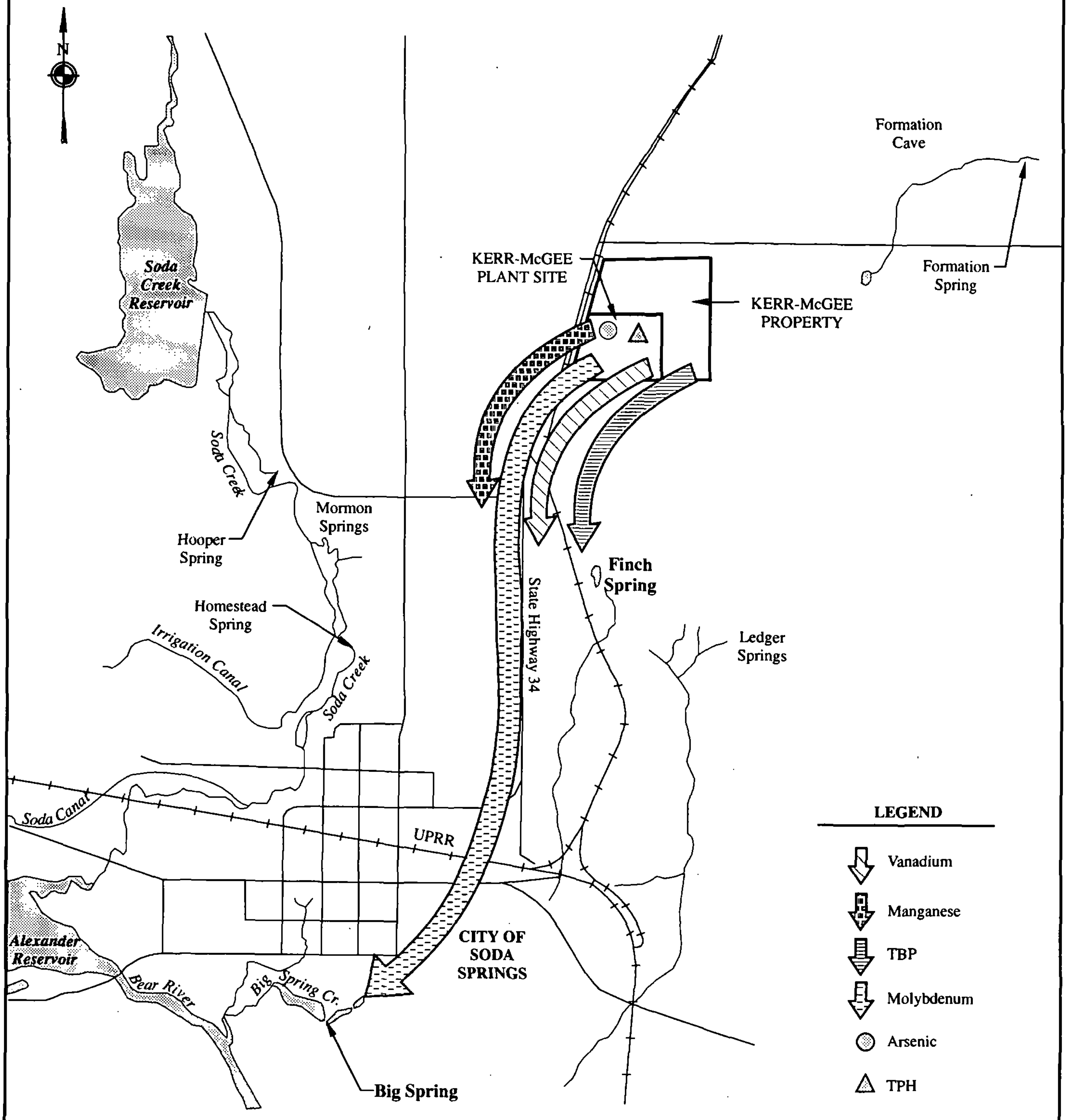


FIGURE 9
APPROXIMATE DIRECTION OF GROUNDWATER FLOW AND EXTENT OF GROUNDWATER CONTAMINATION AT LEVELS OF CONCERN FROM KERR-McGEE

Prepared for EPA by:

ecology and environment, inc.
International Specialists in the Environment
Seattle, Washington

Roaster Rejects. The roaster rejects are solid residual materials recovered from the roasters and stored above ground on-site. They contain a variety of site related constituents, most notably vanadium at levels as high as 24,000 ppm. This material had been stockpiled on-site but is now being reused in the process to eliminate the existing stockpile and reduce possible risks to workers from ingestion or direct contact exposure.

Air. KMCC performed an air pathway analysis and produced a report as part of the RI. The study concluded that emissions of metals from the site via the air pathway do not impact human health or air quality, or result in impacts to off-site soils. This analysis, coupled with analysis of soil samples from the surrounding area, support the conclusion that there are no significant air pathways or impacts at the site. Some localized migration of calcine tailings from the surface of the active calcine area to the surface soils immediately to the north has been observed, but not at levels that pose risks to humans. Actions to address these "windblown calcine tailings" were evaluated and are discussed in this document.

Soil. Samples were taken from within the plant boundaries and from surrounding soils off-site. Statistical comparisons of the off-site soil samples to background soils indicated that the concentrations of some metals and non-metals exceeded background concentrations at one or more locations. Constituents which were most frequently detected in off-site samples at concentrations statistically above background included calcium, chromium, nickel, copper, silver, uranium and vanadium. Off-site soil contamination is confined to areas in the immediate vicinity of the windblown calcine tailings and is related to saltation. Due to the presence of radionuclides on-site, on-site sources and adjacent soils were sampled and analyzed for uranium-238 and in some cases other radionuclides, and gamma radiation surveys were done in some areas to analyze gamma activity. The levels of radionuclides in adjacent soils were initially thought to exceed local background and were analyzed further in the RI/FS (including the risk assessment) before further sampling determined that local background levels were in fact higher than the concentrations found either on site or in surrounding soils.

Solid Sources. Samples were taken from the various solid sources/source piles (including pond sediments) on-site to determine potential contaminants of concern and possible pathways for contaminant migration to other media. Samples collected from solid sources contained metal concentrations elevated with respect to background soils. These included chromium, copper, iron, manganese, molybdenum, silver, vanadium, and zinc, and are discussed above under the vadose zone and roaster rejects.

6.0 SUMMARY OF SITE RISKS

This section briefly summarizes the results and conclusions of the baseline human health and ecological risk assessments, which were prepared by EPA and its contractors. This section also discusses how the results were used, and the need for remedial action at the site.

6.1 Human Health Risks

6.1.1 Purpose and Approach

The human health risk assessment provides an evaluation of potential risks to human health from exposure to releases or potential releases of hazardous substances at the KMCC facility. Specific objectives included the following:

- Evaluation of data and identification of chemicals of potential concern;

- Identification of potential human receptors and exposure pathways;
- Quantification of exposure; and
- Characterization of human health risks to current and future receptors.

The risk assessment provides both a quantitative and qualitative description of current and future scenarios, identifies the contaminants of greatest toxicologic concern, and evaluates environmental pathways for the most important exposures.

Equations to assess chemical intake and associated risks, along with appropriate default parameters were taken from EPA guidance documents. The following assumptions were incorporated into the risk analysis:

- The industrial facility will remain an industrial facility indefinitely in the future, but surrounding land outside the facility boundary is assumed to be residential in the future;
- Chemical concentrations in environmental media and resulting exposures remain constant over time;
- Effected ground water, which is not currently used for drinking and household use, would be used for those purposes in future off-site residential scenarios;
- Except where site specific information has been provided, EPA default exposure parameters are representative of the potentially exposed populations; and,
- Soil ingestion is evaluated utilizing the integrated approach described in the 1991 EPA Human Health Evaluation manual.

6.1.2 Identification of Contaminants of Concern

Samples collected and analyzed from ground water, source piles, and off-site soils were compared to background levels and with risk-based screening concentrations (equal to 10^{-7} cancer risk or a Hazard Index of 0.1 using residential assumptions) to identify chemicals of potential concern (COPCs). COPCs that were identified and carried through subsequent steps of the risk assessment are shown in Figure 8 in Section 5.0 and identified in more detail in Tables 6, 7 and 8 in Appendix C.

Initial results for radium-226 and radium-228 appeared to show elevated levels of these constituents in a number of wells, and as a result radionuclides were initially identified as COPCs. These wells were re-sampled and the resulting activity levels were reported to be low. After further evaluation of these sampling results and the revised background soil samples, radionuclides were eliminated from consideration as COPCs for the KMCC site.

6.1.3 Exposure Assessment

An exposure assessment was conducted to identify exposure pathways, develop risk scenarios, and quantify exposure. The assessment used standard EPA exposure assumptions for most scenarios and parameters. For the current on-site scenario, some of the exposure parameters used for current workers are more realistic site-specific reasonable maximum exposure (RME) estimates based on typical work practices, weather and site-use restrictions at the site. Using site-specific exposure and work-practice information provided by KMCC, site specific modifications were made to the intake rates, exposure times, and corresponding averaging time used to calculate risks in the current scenario. The information that was used to make these modifications is shown in Table 9.

EPA developed scenarios for the current and potential future industrial use of the industrial site itself and potential future residential use of adjacent properties (except for the Monsanto plant to the west). The site is industrial and expected to remain that way, so current on-site residential exposures were not assessed. The nearest off-site resident at the time of the assessment is approximately 4,000 feet away and no one was currently using contaminated ground water for drinking or household purposes, so current off-site residential exposures were not evaluated further. Future residential use of properties adjacent to the facility was evaluated, with particular emphasis on residents to the south, who could be exposed to contaminated ground water in the event of no action.

The following exposure pathways were identified and considered:

- For workers: Ingestion of chemicals in source piles, inhalation of dusts, and external exposure to gamma radiation.

- For residents: Ingestion of chemicals in off-site ground water and off-site soils, inhalation of dusts, dermal exposure to organic chemicals in off-site ground water, ingestion of garden produce, and external exposure to gamma radiation.

Intake values which represent an average exposure and RME for each scenario were used to develop equations which calculate site specific human health risk.

6.1.4 Toxicity Assessment

A toxicity assessment identifies and quantifies toxicological measures for the chemicals of potential concern. Quantitative estimates of toxic response developed by EPA were used to evaluate potential carcinogenicity and non-cancer toxicity for the chemicals of potential concern at the Kerr-McGee site. Generally, cancer risks were calculated using toxicity factors known as slope factors, while non-cancer risks rely on reference doses.

Slope Factors (SFs) have been developed by EPA for estimating excess lifetime cancer risks associated with exposure to potential carcinogens. SFs are expressed in units of ((mg/kg-day)-1) and are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the SF. This approach minimizes the potential of underestimating cancer risks. SFs are derived from human epidemiological studies or chronic animal bioassay data, to which mathematical extrapolation from high to low dose, and from animal to human doses, have been applied.

Reference Doses (RfDs) and reference concentrations (RfCs) have been developed by EPA for indicating the potential for adverse health effects from exposure to chemicals exhibiting non-carcinogenic effects. The RfD or RfC is an estimate of lifetime daily exposure for humans (including sensitive subpopulations) that is likely to be exposed without risk of adverse effect. RfDs for ingestion exposures are expressed in units of mg/kg day, and RfCs for inhalation exposures are expressed in units of mg/m^3. Estimated intakes of COPCs from environmental media (e.g., the amount of a COPC ingested from contaminated drinking water) can be compared to the RfD or RfC. The RfD and RfC for each chemical are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied.

Table 9
Work Practices Around Source Materials at the KMCC Soda Springs Plant

Worker	Outdoor Work Locations (Source Area)	Brief Job Description	Number of days/year at each Source Area	Number of hours/day at each Source Area	Exposed Skin Surfaces that may Contact Source Materials
1 operator	Ferrophos (FeP) stockpile	Move ~ 20 loader buckets of FeP to the ore bay	180	1	Minimal - worker is inside an enclosed cab
1 operator	Calcine pond	Walk sluice line to make visual inspection	250	20 min/trip; one trip made every 10 hours (<1 hour/day)	Hands, face
2 operators	Calcine pond	Move sluice line	12	4	Hands, face
1 operator	Roaster reject pile	Stack roaster rejects onto stockpile	104	1	Minimal - worker is inside an enclosed cab

NOTE: Several times a year calcine tails and MAP are transferred from the site for processing at a local fertilizer plant. This activity takes approximately one day and operators are located in enclosed cabs.

SOURCE: Dames and Moore on behalf of KMCC

This risk assessment relies on oral and inhalation SFs, RfDs, and RfCs. Because dermal toxicity factors have not been developed for the chemicals evaluated, oral toxicity factors are used in estimating risks from dermal exposure. The toxicity factors were obtained from the EPA Integrated Risk Information System (IRIS), or if no IRIS values were available, from the Health Effects Summary Tables (HEAST), and several EPA Environmental Criteria and Assessment Office (ECAO) memoranda, as noted in the risk assessment.

The reference dose for JP-5 fuel was used to represent the dose-response relationship for TPH in water. It is assumed that TPH levels are the direct result of waste kerosene poured into the limestone settling pond and later poured into the S-X pond as clarified solution. In an EPA memo the reference dose for JP-5 is suggested for use in characterizing risks associated with kerosene in ground water. This is not the most conservative reference dose available for evaluating TPH in water (the reference dose for marine diesel fuel is more conservative), but it is believed to be the most representative of kerosene fuels. The same memo also lists reference doses for marine diesel fuel, JP-4, and gasoline.

6.1.5 Risk Characterization

Risk characterization integrates the results of the exposure and toxicity assessments for the chemicals of potential concern to identify the actual contaminants of concern. Estimates of chemical intake were compared with appropriate toxicological endpoints to determine the likelihood of significant effects for each scenario. Risks were characterized separately for cancer and non-cancer effects. Exposure pathways resulting in cancer risks greater than 1 in 1,000,000 (also expressed as 1E-06) or a non-cancer hazard quotient greater than 1.0 were identified.

Ground Water. The baseline Human Health Risk Assessment identified ingestion of contaminated ground water as the primary pathway of concern. This use would require pumping of an existing or future private well in the area; which, according to the Risk Assessment is considered "not likely" at this time because of readily available municipal water.

Potential exposure to concentrations of inorganic and organic chemicals in ground water was only shown to pose significant potential human health risk (as evaluated by hazard quotients) in the event contaminated ground water was used for drinking by residents south of the facility (from the facility south to Finch Spring - ground water to the north and east of the facility is unaffected). Manganese (HQ=3), molybdenum (HQ=32), vanadium (HQ=14), TPH (HQ=3), and tributyl phosphate (HQ=3), all contribute to non-cancer risk. The HQs for molybdenum and vanadium were combined in the risk assessment, based on common toxic endpoints, yielding an HI of 45, a decision which has been reconsidered in the risk management decision (see uncertainty section). Arsenic in one perimeter well exceeds the Maximum Concentration Limit (MCL) of 0.05 ug/l, and the estimated carcinogenic risk from arsenic in the ground water (1.4E-04) is slightly greater than background arsenic risk (1.0E-04).

Radionuclides were originally identified as contaminants of potential concern in ground water but were later eliminated when sampling showed that activity levels were low and that site soils and sources were below background.

Manganese was found in ground water at levels that exceed the secondary MCL (0.05 mg/l) under the Safe Drinking Water Act, which is primarily directed at the aesthetic qualities (e.g. color, odor), of ground water. The primary MCL established for protection of human health for manganese was not exceeded at the site. A risk-based concentration of 0.18 mg/l was calculated in the risk assessment equal to a HI of 1.0.

Surface Water. Another potential pathway of concern considered in the risk assessment was the discharge of ground water to surface water. This pathway was not considered significant for human health but potential impacts to ecological receptors were evaluated through the sampling of sediments in Finch Pond in the spring of 1995. No impacts to ecological receptors were identified - see ecological risk discussion below.

Source Piles and Soils - Chemical Risk. For on-site workers under current or future (default) conditions, the only significant potential pathway of concern identified was excess exposure to vanadium in the roaster rejects area, which poses a hazard quotient of 1.7. No off-site soils were found to pose risks warranting action to protect human health. Potential localized environmental impacts from soils were considered and are discussed below.

Source Piles and Soils - Radionuclide Risk Estimate and Re-Evaluation. The risk assessment estimated potential risks to workers and potential residents from exposure to naturally-occurring radionuclides in source piles and surrounding soils and identified radionuclides as a contaminant of potential concern. Subsequent information developed in the Monsanto RI/FS demonstrated that radionuclide levels in the areas of potential concern at the KMCC site are **less** than local background levels. Therefore the conclusion of the risk assessment has been corrected and radionuclides are no longer considered potential contaminants of concern.

Specifically, when the draft Risk Assessment was released (October 1993), it relied on 3-6 local background samples of which the maximum was 1.3 pCi/g (posing a risk of 2.0×10^{-4}). The S-X pond solids concentrations were found to be 2.3 pCi/g (thought to pose an excess risk of 3.5×10^{-4} at the time). The ferrophosphorus and boiler blowdown value also exceeded 1.3 pCi. Similarly, potential residential exposure in the future to surrounding soils contaminated with U-238 and it's decay progeny was estimated to pose risks of 5×10^{-4} over background of 4.5×10^{-4}.

However, subsequent sampling in support of the Monsanto RI/FS and risk assessment has demonstrated that the estimate of future industrial risk from exposure to radionuclides was overestimated in the KMCC risk assessment because **local background is actually 3.0 pCi/g.** Therefore the concentrations in the S-X pond and surrounding soil samples are **less** than local background, there is no excess risk, and no RAOs were developed for radionuclides at this site.

Air. No significant airborne exposure pathways to future workers or off-site residents were identified in the baseline risk assessment.

6.2 Environmental Risks

6.2.1 Ecological Risk Assessment

The scope of the ecological risk assessment was limited to potential impacts upon ecological receptors directly attributable to the KMCC facility. However, related factors (i.e., agricultural practices) were considered to determine whether those factors have a compounding effect on the same receptors.

The ecological risk assessment was generally conducted using a weight of evidence approach. Evidence considered included qualitative information gathered during site reconnaissance, as well as quantitative comparisons used in the risk analysis. The assessment considered the following exposure scenarios:

- Vegetation exposed to potential phytotoxic levels of chemicals in soil;
- Ingestion of potential contaminants in soils by field mice and mule deer; and,

- Ingestion of potential contaminants in impounded water by waterfowl and deer.

In general, the comparison of site exposure concentrations to toxicological reference values suggested that plant and animal receptors near the site are (using field mice, mule deer and waterfowl as representative animal species) not at substantial risk from contaminants in off-site soils. The distribution of potential contaminants is not widespread in off-site soils but rather is concentrated on the north central portion of the facility boundary. At this location, evidence of rodent populations, birds, small mammals and ungulate (i.e., hoofed animals) use was not readily apparent. Based on field observations, the habitat surrounding the KMCC facility and associated wildlife usage does not appear to have been altered when compared to similar habitat conditions in other portions of the valley. Ground water contamination leaving the site largely attenuates before reaching downgradient receptor locations, including Finch Spring, Big Spring and (possibly) the Bear River, but insufficient data was available to assess potential impacts.

Based on the available information, the findings of the ecological risk assessment support the following conclusions:

- Sensitive plant species may be at risk to vanadium, chromium, copper, and nickel at highly localized areas (particularly at sample locations SO-3 and SO-4).

- Field mice may be at risk to vanadium in soil; however, considerable uncertainty exists in the toxic reference value.

- Chronic exposure from other elevated metals in soil to field mice and deer would result in low toxicological risk (the predicted chemical intake exposures are less than the toxic reference values).

- Acute risks to waterfowl from ingestion of vanadium in scrubber pond water may occur. However, the scrubber pond is not considered attractive habitat when compared to the surrounding area and exposure is likely mimimal.

Even though there are no substantial ecosystem risks from chemical releases from the KMCC facility, actions that would minimize transport of potential contaminants off-site would reduce chemical exposure to plants and animals.

6.2.2 Finch Pond Evaluation

Subsequent to the baseline ecological risk assessment, discharge of ground water to surface water was evaluated for potential ecological risks/effects. The two main potential discharge points considered were Big Spring and Finch Pond. Ground water entering Finch Pond, which is approximately one mile from the site, contains molybdenum, vanadium, manganese and TBP above risk-based concentrations. Big Spring, where ground water impacted by the site next surfaces, shows evidence of low levels of molybdenum above ecological risk-based concentrations. Based on the higher concentrations found in Finch Spring and the presence of a small but productive wetland there, a focused investigation was conducted of Finch Pond sediments to evaluate potential ecological impacts.

Finch pond sediments were sampled in May 1995 to evaluate whether molybdenum or vanadium have accumulated in the sediments, resulting in potential increased risk to waterfowl and other water birds via the food chain pathway. Ground water entering Finch Pond has resulted in accumulation of molybdenum (maximum value 429 mg/kg) at levels statistically higher than background concentrations. The U.S. Fish and Wildlife Service was consulted and a brief literature search was conducted for molybdenum toxicity data. Based on the information available, molybdenum concentrations are nearly an order of magnitude below theoretical risk-based calculations derived from the literature. EPA determined that the likelihood of significant ecological effects from molybdenum in the surface water or sediments is low. No impacts to ecological receptors were identified and further assessment involving toxicity bioassays was unwarranted.

6.3 Uncertainty

The numerical results of a risk assessment (HQs and cancer risk values) have inherent uncertainty because of limited knowledge regarding exposure and toxicity, and because of limitations on the accuracy and representativeness of environmental sampling. Whenever available and appropriate, site-specific information from the RI was used for estimation of exposure to reduce uncertainty. Where information was incomplete, conservative assumptions were made and/or conservative default values were used to ensure protection of public health and the environment.

The following sections summarize the most significant uncertainties associated with scenarios in the Kerr-McGee Human Health and Ecological Risk Assessments. The exposure factors used in each scenario are detailed on Tables 12 - 18 in Appendix C. More details are available in the Risk Assessment.

6.3.1 Human Health Risk Assessment Uncertainties

Uncertainties associated with this human health risk assessment included:

- reliance on a small background data set (3-6 samples), which introduces uncertainty about the true concentrations in environmental media and their significance. Additional background samples were later collected and evaluated, which contributed to the elimination of radionuclides from the list of contaminants of concern at this site;

- for some constituents (arsenic, beryllium, and radionuclides in source piles), background concentrations exceeded the 10^{-6} risk level. Cleanup below background is not considered practicable.

- the use of modelled air data, since actual air monitoring data was not collected;

- the assumption that chemical concentrations remain constant over time, particularly the organic compounds (TPH and TBP) which have been shown to degrade over time rather than persist in the environment under some conditions;

- the use of the reference dose for JP-5 (a type of fuel with known toxilogical parameters) to calculate risk-based concentrations for kerosene on site;

- the use of conservative assumptions with regard to exposure parameters in future scenarios and for current scenarios where site-specific data was not available. Some assumptions regarding future land uses surrounding the facility, such as residential ground water use in the vicinity of the southern boundary of the site are highly speculative (the facility itself was assumed to remain industrial); and,

- summation of risks for each media and contaminant for each scenario. The uncertainty in this method includes a conservative assumption that the routes of absorption and target organs are similar for each contaminant of concern, as well as the possibility that potential synergistic interactions between chemicals could result in a cumulative risk greater than the risks calculated for individual chemicals. The hazard quotients for molybdenum and vanadium were summed in the risk assessment on the basis of common toxilogical endpoints, despite having very different levels of uncertainty.

6.3.2 Ecological Risk Assessment Uncertainties

Uncertainties associated with this ecological risk assessment included:

- extrapolations of overall potential ecological risks from an evaluation of a few selected receptor organisms (mice, deer, waterfowl) intended to be representative of local biota;

- the use of conservative assumptions with regard to exposure parameters for the modelled receptors; and,

- the selection of toxic reference values for comparison with predicted intakes, which may over or under-estimate actual conditions.

6.4 Need for Action

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

Where the cumulative site risk to an individual based on RME for both current and future land use is less than approximately one-in-ten-thousand, and the non-cancer causing HQ is less than one, cleanup at a site is generally not warranted unless there are adverse environmental impacts. As described above in the risk characterization section, the non-cancer risks calculated were in excess of the criteria. Based on the results of the risk assessment, EPA has determined that cleanup is necessary at the site.

6.5 Remedial Action Objectives

Based on the human health risk assessment for the site, the primary medium of concern is the ground water and the primary exposure route of concern for ground water is ingestion. Therefore the Remedial Action Objectives (RAOs) for this site with respect to ground water are:

- Prevent the transport of Contaminants of Concern (COCs) to the ground water from facility sources that may result in COC concentrations in ground water exceeding risk-based concentrations (RBCs) in ground water or chemical specific ARARs, specifically Maximum Contaminant Levels (MCLs). The RBCs shown in Table 10 correspond to a cancer risk of 10^{-6} or a Hazard Index of 1.0.

- Prevent the ingestion by humans of ground water containing COCs having concentrations exceeding RBCs or MCLs (chemical-specific ARARs)

- Prevent the transport of COCs from ground water to surface water in concentrations that may result in exceedences of human health RBCs or MCLs in the receiving surface water body (chemical-specific ARARs)

The ultimate goal of this remedial action is to restore ground water that has been impacted by site sources to meet all RBCs or MCLs for the COCs.

A secondary remediation goal at the site is risk associated with the roaster reject material. The RAO for this material is:

- Prevent the ingestion/direct contact with roaster reject area material having vanadium concentrations in excess of 14,000 mg/kg (concentration shown to correspond to an HI = 1).

TABLE 10
Risk-Based and Maximum Concentration of Contaminants of Concern in Ground Water

All amounts in milligrams per liter (mg/l)

Substance of Concern	Human Health Risk Based Concentration (RBC) with HI = 1	AREA EVALUATED (see map)		
		Within Plant Boundary	Plant Boundary to Finch Springs	Finch Springs
Vanadium	0.26	28.6	3.54	0.009
Molybdenum	0.18	119.0	6.0	0.689
Arsenic	0.05 (MCL)	0.08	0.007	0.002
TBP	0.18	4.4	0.48	0.008
TPH	0.73	2.2	0.5	0.5
Manganese	0.18	8.63	0.54	0.005

Finally, to prevent localized areas from being impacted by solid sources which may pose a risk to sensitive plants and field mice in the area, an RAO has been established for the ecosystem to:

- Prevent the transport of COCs from the active calcine tailings area to the surrounding soils in amounts that exceed the 95 percent upper threshold limit (UTL) concentration of the background soils.

7.0 DESCRIPTION OF ALTERNATIVES

This section identifies actions being taken by KMCC which were not explicitly evaluated as components of the various alternatives. However, actions contemplated by KMCC have a direct and positive affect on the ability to successfully implement source control, a necessary component of all remedial action alternatives evaluated. A full discussion of KMCC's plant changes, the highlights of EPA's remedial action alternatives, and the relationship between the two are discussed. Section 7.0 also summarizes conclusions of the ground water modelling effort that was a key component is scoping the range of alternatives considered.

7.1 Summary of Plant Process Changes

The main plant process change that is planned is Liquid Source Elimination. This section describes the elements of Liquid Source Elimination and how they relate to the remedial action alternatives considered below. There are currently three liquid sources in unlined impoundments which contribute the majority of contaminants of concern to ground water. As an active facility, KMCC has elected to undertake certain process changes or additions in order to discontinue the use of unlined ponds, while continuing to operate its facility. The process changes, referred to as Liquid Source Elimination, as described in this section, will be completed under state regulatory authority outside of the Superfund process.

7.1.1 Components of Liquid Source Elimination

Liquid Source Elimination (LSE) refers to actions that will result in stopping (or eliminating) contaminants of concern from entering the ground water. KMCC has determined that the specific components of LSE involve changes in to day-to-day operations and business decisions. However, the end result of Liquid Source Elimination--to prevent contaminants from entering the ground water--is a necessary component of all remedial action alternatives considered at the site.

KMCC is taking two separate actions to implement LSE. The first is the creation of two double-lined evaporation ponds (10 acres of total area) that are being constructed to contain the S-X raffinate that is discharged from the facility. The evaporation ponds have been sized to handle all of the raffinate discharge, including winter production and precipitation. A permit to construct these ponds has been received from the Idaho Department of Health and Welfare (IDHW). Construction of the ponds has begun and is expected to be complete by October 1995.

Plans are also in progress to eliminate the other two liquid waste streams, the scrubber water and calcine sluicing water. KMCC is planning to construct a phosphoric acid plant to produce several grades of phosphoric acid and granular fertilizer using the impounded calcine as the feed material. The scrubber water will be used in the digestion step of the acid production process. The solids generated by the digestion step will be granulated and sold as a soil conditioner and the acid can be sold in numerous forms. An air permit is required to operate the phosphoric acid plant. KMCC has submitted an application to the IDHW to obtain the necessary permit. A decision on the permit is expected by January 1996.

7.1.2 Relationship of LSE to Remedial Action Alternatives

The process changes or additions being made are referred to in the remedial action alternatives as LSE. When LSE is completely implemented, all three liquid sources will be eliminated and the impounded calcine will be excavated and processed. The combined actions of LSE are predicted to result in a "zero-discharge" to ground water. As part of remedial action alternatives, the success of source control actions will be subject to confirmation by ground water monitoring.

7.2 Ground Water Modelling

KMCC conducted ground water modelling to assist in scoping the Feasibility Study and to evaluate and compare remedial action alternatives, specifically to determine what magnitude of decrease in COC concentrations would be expected in the ground water over time when seepage of process water from the pond sources is eliminated, and whether the magnitude of the decrease in COC concentrations would be significantly increased over time if LSE was supplemented by ground water extraction. The model was not intended to predict precise future concentrations at specific locations. The model was calibrated to within an order of magnitude of observed concentrations and is considered reliable within that range of values.

The model addressed the six COCs in ground water: arsenic, manganese, molybdenum, vanadium, tributyl phosphate, and total petroleum hydrocarbons (because TPH data proved inadequate for modeling, TPH was assumed to be similar to TBP).

In summary, the findings were:

- Concentrations of arsenic, manganese, molybdenum, and vanadium were predicted to decrease rapidly after implementation of source control, achieving risk-based performance goals at the plant boundary within 10 years. Tributyl phosphate and TPH were predicted to take longer to recover, persisting as long as 30 years if no degradation takes place. Some evidence suggests that degradation is taking place. Iif natural degradation is taken into account, predicted concentrations may achieve risk-based performance goals in 10-15 years.

- Predicted reductions in arsenic, manganese, molybdenum and vanadium are **not** substantially accelerated if LSE is supplemented by three extraction wells pumping a total of 6,000 gpm.

- Predicted concentrations of TBP (and presumably TPH) would fall below risk-based performance standards in approximately 15 years (rather than persisting for 30 years) if LSE is supplemented by three extraction wells pumping a total of 6,000 gpm.

TBP and TPH require a longer time frame for cleanup because they react with subsurface materials, which slow down, or retard, their movement through the aquifer. The metals are much less reactive, and move through the aquifer relatively quickly. When the liquid source is discontinued, clean ground water will flush the metals-contaminanted water through the system much more quickly than the organics, which will remain in the aquifer for much longer.

7.3 Summary of Ground Water Alternatives

KMCC presented seven alternatives to address sources of contamination to ground water in its detailed study of cleanup options in the Feasibility Study. The seven alternatives were chosen after KMCC looked at thirty-five potential ground water treatment technologies. The most effective technologies were included as part of the seven alternatives. The alternatives consider a different range of actions to address contamination at the site, varying in cost, permanence, and requirements for long-term maintenance. The alternatives are referred to by the numbers assigned in the Feasibility Study and Proposed Plan.

7.3.1 No Action (Alternative 1)

This alternative leaves the site as-is, without treatment, containment, or elimination of industrial waste waters entering the ground water. Contaminants would continue to enter the ground water and remain above risk-based concentrations. Process water discharge and atmospheric precipitation would continue to leach contaminants from the calcine tailings and pond solids in the vadose zone.

7.3.2 Monitoring and Institutional Controls (Alternative 2)

This alternative includes semi-annual monitoring at existing monitoring wells. It also includes institutional controls to limit access to contaminated ground water to prevent it from being developed as a drinking water source in the future. It does not include treatment of the contaminated ground water areas.

The present worth cost of this alternative for a 30-year period is estimated to be $1,000,000, with capital costs of $100,000 and annual operation and maintenance costs of $60,000.

7.3.3 Liquid Source Elimination, Monitoring and Institutional Controls (Alternative 3)

Liquid source elimination removes all discharge of contaminants to unlined ponds, which is the primary source of contaminants entering ground water. Ground water contamination is predicted to naturally attenuate once the sources are removed. No action is taken on pond solids or calcine tailings in the vadose zone for this alternative, and some contaminants would continue to enter the ground water via atmospheric precipitation passing through the solid sources. This alternative does not include treatment of contaminated ground water.

Alternative 3 is predicted to reduce vanadium to below RBCs within five years, except for a small area beneath the buried calcine tailings because no action is taken on the solid sources. Manganese is predicted to fall below RBCs within the first year after implementation of LSE. Molybdenum is predicted fall below RBCs within 10 years. TBP and TPH are predicted to fall below RBCs in 30 years or less.

Monitoring and institutional controls would be included in this alternative and all other alternatives listed below.

The present worth cost of this alternative is $2,000,000 for a 30-year period. Capital costs are estimated at $70,000 for construction of lined ponds to replace the unlined S-X pond. Construction time frame is approximately one to two years to implement all elements, including KMCC's LSE components (i.e., phosphoric acid plant construction). The lined ponds to replace the S-X pond are currently being constructed and are expected to be completed by October 1995.

7.3.4 Liquid Source Elimination, On-site disposal of Waste Pond Solids, and Reuse of Calcine Tailings, Monitoring and Institutional Controls (Alternative 9)

This alternative does not include ground water treatment, but it addresses all sources of contamination to ground water. As in Alternative 3 above, the unlined ponds are taken out of service, eliminating them as ongoing sources of contaminants to ground water. In addition, the pond solids would be excavated and disposed in an on-site landfill created for their disposal. The calcine tailings will be reused over a period of eight years. This alternative utilizes a combination of containment and elimination for the liquid and pond solid sources, and reuse for the calcine tailings. Approximately 1,800 cubic yards of solids would be excavated from the S-X pond and 4,500 tons of solids from the scrubber pond.

This alternative is expected to reduce concentrations of contaminants in ground water to below risk based concentrations in a period of 5 to 10 years for most contaminants. TBP and TPH may require 30 years to achieve risk based concentrations.

Lined ponds to replace the unlined S-X pond are currently under construction and are expected to be complete in October 1995. The present value cost is $2,200,000, including $1,000,000 for construction of lined cells and excavation and disposal of the S-X and scrubber pond solids, and 100,000 per year for O&M. Capital and O&M costs associated with the phosphoric acid plant for reuse/recovery of the calcine tailings are not included.

7.3.5 Liquid Source Elimination, Ground Water Extraction and Carbon Treatment; On-Site Disposal of Waste Pond Solids, Reuse of Calcine Tailings, Monitoring and Institutional Controls (Alternative 26)

The main feature of this alternative is treatment for the organic contaminants in ground water. Also, the calcine tailings under this alternative are reused over a period of eight years. Metals in ground water are not treated, but are allowed to naturally attenuate in the subsurface once the Liquid Source Elimination action described in Alternative 9 is completed. Extracted ground water, once treated, would be discharged to the Bear River about 5.5 miles south of the site.

This alternative is expected to reduce concentrations of TBP and TPH in ground water to below risk based concentrations in a period of thirty years or less. Molybdenum, arsenic, vanadium, and manganese are expected to reach RBCs within five years.

The ground water treatment plant constructability and operability depend on the success of activated carbon at removing the organic contaminants of concern. The number and size of carbon units as well as the carbon usage rate are dependent on site ground water quality. Competitive absorption could substantially affect the feasibility and the capital and operating cost of the treatment system. Carbon absorption can also be affected by some inorganic constituents, such as iron. Treatability studies would need to be conducted with activated carbon to determine whether it would be effective at treating the organic COCs.

The actions for Alternative 26 can be monitored by the collection and analysis of ground water, by periodic checks of the evaporation pond and landfill leak detection system, and by monitoring the treatment plant discharge. Monitoring of institutional controls would also be required.

Present value costs for this alternative are $23,000,000. Capital costs associated with the treatment plant and lined pond construction are $13,000,000, and annual O&M costs are $1,000,000 during treatment and $70,000 thereafter. Construction time frames for a treatment system is estimated at five years.

7.3.6 Liquid Source Elimination, On-site Disposal of Pond Solids, Ground Water Extraction, Treatment via Reverse Osmosis and Carbon Treatment, Disposal of Sludges, Reuse of Calcine Tailings, Institutional Controls and Ground Water Monitoring (Alternative 34)

Treatment for all contaminants of concern in ground water is accomplished by two treatment processes, carbon extraction for organics and reverse osmosis (RO) for inorganics. Inorganic treatment of the extracted ground water would be effected by reverse osmosis, assuming adequate removal is feasible. Extracted ground water would be collected in a equalization tank.

This water would be pumped from this tank to a bank of approximately ten RO units to handle an expected flow rate of 6,000 gpm.

The reject stream from the initial bank of RO units would be sent to another RO until to further concentrate the contaminants. The concentrated reject stream would be sent to an evaporator and to a crystallizer. The evaporator crystallizer removes most of the water. The water vapor would be further concentrated in a centrifuge with the final slurry stored as waste in a lined landfill, approximately 20 acres in size. An estimated 11,000 pounds per hour of slurry would be generated from the treatment process for disposal.

Treatability tests would be required because of concerns for fouling and scaling. The low concentrations of inorganic COC combined with greater concentrations of general inorganics may serve to reduce the removal efficiency below what otherwise could be obtained.

As in Alternative 26 above, this alternative is expected to reduce concentrations of TBP and TPH in ground water to below risk based concentrations in a period of thirty years or less. Molybdenum, arsenic, vanadium, and manganese are expected to reach RBCs within five years. The addition of the RO treatment is not expected to accelerate the reduction of COCs in ground water.

The present worth cost for this alternative is estimated to be $58,000,000. Annual O&M costs are expected to be $4,500,000 for the first five years, dropping to $1,000,000 for 6th through 15th years, and $70,000 thereafter. Capitals costs are expected to be $33,000,000.

7.3.7 Liquid Source Elimination, On-site Disposal of Pond Solids, Ground Water Extraction and Carbon Treatment, Capping of Calcine Tailings, Institutional Controls and Ground Water Monitoring (Alternative 35)

This alternative is substantially the same as Alternative 26 above, with the additional action of requiring that the calcine tailings be capped in the interim period when it is being reused. The ground water treatment plant constructability and operability depend on the success of activated carbon at removing the organic contaminants of concern. The number and size of carbon units as well as the carbon usage rate are dependent on site ground water quality. Competitive absorption could substantially affect the feasibility and the capital and operating cost of the treatment system. Carbon absorption can also be affected by some inorganic constituents, such as iron. Treatability studies would need to be conducted with activated carbon to determine whether it would be effective at treating the organic COCs.

Monitoring and institutional controls and ground water monitoring are included in this alternative as presented in the alternatives above. As in the other ground water treatment alternatives, this alternative is expected to reduce concentrations of TBP and TPH in ground water to below risk based concentrations in a period of thirty years or less. Molybdenum, arsenic, vanadium, and manganese are expected to reach RBCs within five years.

Present value costs for this alternative are $25,000,000. O&M costs are estimated at $1,000,000 and construction costs are $15,000,000. The construction time frame for this alternative is approximately five years.

7.4 Summary of Roaster Reject Remedial Action Alternatives

As a secondary human health concern at the site, an RAO was established for the roaster rejects area. The RAO for this alternative is to prevent ingestion or direct contact with roaster reject area material having vanadium concentrations in excess of 14,000 mg/kg. Roaster reject remedial action alternatives are not concerned with preventing transport of COCs to ground water.

Roaster reject is material that has been removed from the hearths inside the roaster and associated ventilated ducts. The removal occurs as part of the weekly, routine maintenance. Roaster reject material had been stockpiled in past years. However, this material has a recoverable quantity of vanadium and is now being used as a feedstock into the roasters.

Roaster reject material currently covers an area of approximately 5,000 square feet to a height of 10 to 12 feet. There is approximately 3,000 tons of material containing vanadium concentrations ranging from 17,700 mg/kg to 24,300 mg/kg. See Figure 6 in Section 2.0 for the current location of the roaster reject material.

Two alternatives were considered for the roaster rejects:

7.4.1 Institutional Controls (Alternative RR-1)

This alternative involves instituting additional company policies to specifically address workers who are exposed to this area, e.g., fencing around the area to limit contact.

7.4.2 Resource Recovery/Reuse (Alternative RR-2)

Roaster reject can be reused at a rate of 8 to 17 tons/week depending on whether one or two roasters are operating. Roaster reject from ongoing operations is generated at 2.5 to 5 tons/week, resulting in a net reduction in the source pile of 300 to 600 tons per year through reuse. It is estimated that the roaster reject will be reused within 5 to 10 years.

This activity is currently being undertaken as part of KMCC's ongoing operations. In the event that reuse/recovery no longer becomes feasible the institutional controls alternative can be implemented.

7.5 Summary of Windblown Calcine Tailings Remedial Action Alternatives

The RAO for the windblown calcine tailings is to prevent the transport of COCs from the active calcine tailings area to the surrounding surface soils in amounts that exceed the 95 percent upper threshold limit (UTL) of the background soils. The windblown calcine tailings are not considered a source of COCs to ground water because the quantity dispersed over the surface soils is negligible with respect to ground water. The buried calcine tailings discussed as a component of solid sources under ground water remedial action alternatives are separate.

Windblown calcine tailings have been found at only a few inches in depth and tend to accumulate in and around grass located north of the site. Since they were discovered during the Remedial Investigation, KMCC has excavated and returned all visible tailings to the active calcine tailings area. The limited alternatives discussed below discuss additional actions which may be taken as part of this remedial action to ensure the RAO is met.

7.5.1 No Action for Windblown Calcine Tailings (Alternative WCT-1)

The no action alternative relies solely on institutional controls and access restrictions. Because the RAO associated with this alternative is for ecosystem, not human health concerns, access restrictions are unlikely to be effective. There are no costs associated with this alternative.

7.5.2 Excavation and Disposal for Windblown Calcine Tailings (Alternative WCT-2)

The actions associated with this alternative require excavation of windblown tailings and disposal into the active calcine tailings impoundment area where they are/will be capped with native material. Costs to implement this alternative is essentially zero, since the action was taken during the site investigation. Annual O&M costs associated with documentation of monitoring and institutional controls are estimated at $10,000.

7.5.3 Capping of Windblown Calcine Tailings (Alternative WCT-3)

Capping of the calcine tailings requires placement of fill material over the tailings to prevent airborne transport. Capping is currently being conducted on an as need basis as part of plant operations to minimize airborne transport. Annual costs associated with documentation of monitoring are estimated at $10,000. Construction costs are zero since the action is currently being conducted as part of plant operations.

8.0 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

The NCP defines procedures for selecting response actions under CERCLA. As part of those procedures EPA is required to analyze each remedial action alternative according to nine specific criteria. The purpose of this evaluation is to promote consistent identification of the relative advantages and disadvantages of each alternative thereby guiding selection of remedies offering the most effective and efficient means of achieving site cleanup goals.

All nine criteria are important, but are weighed differently in the decision-making process depending on whether they describe a required level of performance (threshold criteria), provide for consideration of technical merits (balancing criteria,), or involve the evaluation of non-EPA reviewers that may influence an EPA decision (modifying criteria).

No action and alternative number two for ground water, discussed in Section 7.3, are not protective of human health and the environment and thus are not further evaluated under the nine criteria. Neither alternative effectively addresses contaminants moving into the ground water even though human health may be somewhat protected through administrative or legal measures identified under institutional controls for alternative two.

This section evaluates all the ground water alternatives developed by KMCC (described in Section 7.3), based on the nine criteria described in Table 11. The purpose of this evaluation is to highlight the most significant advantages and disadvantages of the alternatives in relations to each of the nine criteria. This section also evaluates the limited alternatives for remedial action of the roaster rejects and windblown calcine tailings, which are secondary concerns at the site. A more detailed evaluation is provided in the Feasibility Study prepared by KMCC.

8.1 Threshold Criteria

8.1.1 Overall Protection of Human Health and the Environment

This criterion addresses whether the remedial actions provide adequate protection, and describes the mechanism for controlling risks for the different exposure pathways.

Except for alternatives 1 and 2, all of the alternatives provide adequate protection of human health and the environment. Alternatives 3 and 9 significantly reduces the toxicity, mobility and volume of contaminants through their liquid source eliminations actions, and provides protection through reuse, allowing ground water to naturally recover. Alternatives 26, 34, and 35 take the additional step of treating ground water. This could reduce the time required for the aquifer to recover to acceptable levels, but in addition to costing ten times as much as Alternatives 3 and 9, the treatment alternatives would have much greater environmental impacts and provide little additional protection of human health.

TABLE 11 NCP NINE EVALUATION CRITERIA	
EPA ranks the alternatives considerêd against the following nine evaluation criteria:	
THRESHOLD CRITERIA:	
1)	Overall protection of human health and the environment - How well does the alternative protect human health and the environment, both during and after construction?
2)	Compliance with applicable or relevant and appropriate requirements (ARARs) - Does the alternative met all applicable or relevant and appropriate state and federal laws and regulations?
BALANCING CRITERIA:	
3)	Long-term effectiveness and permanence - How well does the alternative protect human health and the environment after completion of cleanup? What, if any, risks will remain at the site?
4)	Reduction of toxicity, mobility, and volume through treatment - Does the alternative effectively treat or recycle the contamination to significantly reduce the toxicity, mobility, and volume of hazardous substances?
5)	Short-term effectiveness - Are there potential adverse effects to either human health or the environment during construction or implementation of the alternative? How fast does the alternative reach the cleanup goals?
6)	Implementability - Is the alternative both technically and administratively feasible? Has the technology been used successfully at other similar sites?
7)	Cost - What are the estimated costs of the alternative? How do costs of the alternative compare with costs of the other alternatives?
MODIFYING CRITERIA:	
8)	State acceptance - What are the state's comments or concerns about the alternatives considered and about EPA's preferred alternative? Does the state support or oppose the preferred alternative?
9)	Community acceptance - What are the community's comments or concerns about the preferred alternative? Does the community generally support or oppose the preferred alternative?

Reuse/recovery for the roaster rejects is more protective of human health and the environment than no action because the quantity of roaster reject material is reduced. There is essentially no difference in the short-term risk. Reuse/recovery of the roaster reject is clearly superior as compared to no action. Reuse of the roaster reject lowers the environmental impact and reduces the volume and toxicity.

For windblown calcine tailings, no action poses minor risks to the ecosystem. Excavation and disposal and capping are protective of the ecosystem. Excavation and disposal is more protective than capping because it removes calcine tailings that have already been windblown. Excavation and disposal would transfer windblown calcine to the existing impoundment. This latter action has been completed.

8.1.2 Compliance with ARARs

The purpose of this analysis is to evaluate the alternatives for compliance with the major ARARs.

All alternatives except 1, 2, and 3 meet all ARARs.

The Safe Drinking Water Act (SDWA) is a chemical specific ARAR with an MCL for arsenic of 0.05 mg/l. There are no promulgated standards specified under the SDWA which are exceeded for the other contaminants of concern at the site. Site specific risk-based concentrations will be met by Alternatives 9 through 35, and also could be met by Alternative 3, though it is less certain to be successful, and will likely take longer due to the failure to address buried solid sources.

The Idaho Ground Water Standards (IDAPA Section 16.01.02.299) protect ground water for beneficial use and the Idaho Antidegradation Policy (IDAPA Sec. 16.01.02.051), requires that existing water uses and water quality be maintained and protected. These ARARs will be met by Alternatives 9 through 35 because the absence of any discharges from the site should prevent degradation and preserve ground water quality standards. Alternative 3 is also likely to meet this ARAR, but over a longer period of time.

The Environmental Protection and Health Act, Idaho Code 39-101 to 129, protects the environment and human health and safety by reviewing design requirements and approving solid waste disposal sites. The substantive requirements of this action-specific ARAR will be met by Alternatives 9 through 35. Alternative 3 does not meet this ARAR because it would allow solid wastes to remain in existing unlined ponds.

The Rules for Control of Fugitive Dust, IDAPA Section 16.01.01.650, are applicable to the roaster rejects alternatives and windblown calcine tailings alternatives. No action/institutional controls and reuse/recovery would meet this ARAR. Construction components of ground water alternatives would also meet this ARAR.

8.2 Primary Balancing Criteria

8.2.1 Long-Term Effectiveness and Permanence

This criterion evaluates the ability of a remedial alternative to maintain reliable protection of human health and the environment over time, once cleanup goals have been achieved.

Alternatives 9, 26, and 35 have similar long-term effectiveness due to the reuse of contaminants reducing any potential long-term exposures. Alternative 34 has slightly lower long-term effectiveness than alternatives 9, 26 and 35 due to the need to dispose of inorganic solids generated by the reverse osmosis treatment process. Alternative 3 has less long-term permanence than the others because calcine tailings would be left in place.

For Roaster Rejects alternatives, reuse/recovery is assigned a higher score for long-term effectiveness because the quantity of source material is reduced, which results in minimal remaining risk. Controls are adequate for the small quantity of roaster reject material that may be staged prior to use after the existing stockpile has been consumed. The magnitude of remaining risk for no action does not decrease from that which currently exists.

Excavation/disposal and capping of windblown calcine tailings both have high long-term effectiveness because the windblown calcine tailings have been covered and are no longer exposed to possible airborne transport. No action provide less long-term permanence because it is ineffective at reducing the risk to the ecosystem.

8.2.2 Reduction of Toxicity, Mobility, or Volume Through Treatment

This criterion evaluates the anticipated performance of the various treatment technologies and addresses the statutory preference for selecting remedial actions which permanently and significantly reduce toxicity, mobility, or volume of hazardous substances. This preference is satisfied when treatment is used to reduce the principal threats at a site through destruction of toxic contaminants, irreversible reductions in contaminant mobility, or reductions in the total volume of contaminated media.

Alternative 34 offers the greatest reduction in toxicity, mobility and volume due to treatment of all contaminants of concern in ground water. Alternatives 26 and 35 are similar to 34, but do not include treatment of inorganic contaminants.

Alternatives 9 and 3 do not employ treatment to address COCs in ground water. Alternative 9 relies upon natural attenuation to achieve the ground water cleanup levels. Treatment is used in addressing two of the three industrial waste streams that are sources of ground water contamination, through Liquid Source Elimination activities, explained in Section 7.1. Alternative 3 utilizes slightly less treatment of sources than Alternative 9 because the calcine tailing are left in place.

For Roaster Rejects Alternatives, no action does not reduce the toxicity, mobility, or volume of the roaster reject material. Reuse reduces the volume of the source pile, reduces the mobility (by making saleable products), and reduces the toxicity. The volume of source pile would be reduced from 3000 tons to almost zero within 5 to 10 years by the reuse alternative.

No action on windblown calcine tailings does not reduce the toxicity, mobility, or volume of the windblown calcine tailings. Excavation/disposal and capping reduce the windblown volume and the mobility (though not through treatment), but not the toxicity of the calcine tailings.

8.2.3 Short-Term Effectiveness

The short-term effectiveness criterion focuses on the period of time needed to achieve protection of human health and the environment, and adverse impacts which may occur during remedial construction and remedial action, until cleanup goals are achieved.

Short-term risks to workers are not a large factor at this site since the significant risk is from ground water currently unused as a drinking water source. Risks posed during the implementation of the remedies are mostly associated with construction risks associated with fugitive dust, the presence of heavy machinery, open trenches, etc. Standard construction practices and methods will be used to adequately protect the public health. The potential exists in Alternatives 3 through 35 for exposure to COCs by fugitive dust inhalation and accidental contact or ingestion of solid sources. Dust suppression measures and general hygiene practices will be followed. The potential for exposure to COCs in ground water may occur for Alternatives 26, 34, and 35, during extraction, well construction or sampling, but the risk is low because the main risk to human health is by long-term ingestion of water containing COCs.

Alternative 3 does not prevent further contamination of ground water from solid sources (calcine tailings).

Alternatives 26, 34 and 35 could cause environmental impacts in the Bear River that may be unavoidable due to discharge of such a large volume (6,000 gpm) of treated water. All alternatives, except 1 and 2, meet the cleanup objectives for reductions of contaminants in ground water. Alternatives 26, 34 and 35 are expected to restore the ground water to its beneficial use as a potential drinking water source in a period of five to ten years for most contaminants of concern. TBP and TPH may require a longer time period, approximately fifteen years. The time frames for TBP and TPH to fall be low risk-based concentrations are expected to double to ten and thirty years, respectively, under Alternatives 3 and 9, which do not include active ground water treatment.

For the roaster rejects, no action and reuse/recovery pose very minor or no risk to the community with essentially no difference between the risks imposed by either option. Reuse/recovery poses slightly greater risk to workers because handling of the material may cause slight amounts fugitive dust containing vanadium. Environmental impacts are considered to be minimal. Reuse will be more protective of the environment because the quantity of material will be reduced. Remedial objectives can be immediately met by no action and reuse/recovery combined with company policies, such as access restrictions.

All of the windblown calcine tailings alternatives pose minor risks to the community with essentially no difference between the risks imposed by them. No action has slightly lower risk to workers than the other alternatives because calcine tailings are not handled. No action would not address the environmental impacts to the ecosystem. Excavation and disposal would immediately remove the risk to the ecosystem. Capping alone would not be as protective of the ecosystem as excavation and disposal because calcine tailings that have been windblown would not be recovered. Remedial objectives can be immediately met by excavation/disposal. No action would not meet the RAOs.

8.2.4 Implementability

This evaluation addresses the technical and administrative feasibility of implementing the alternative, including the availability of materials and services required to construct the remedy.

Alternatives 3 and 9 have the most easily implemented technical aspects because they depend on proven containment technologies and reuse of waste streams (constructing lined ponds and reusing calcine tailings in phosphoric acid production). Alternatives 26, 34, and 35 have less easily implemented technical aspects because of uncertainties concerning the extraction, treatment and discharge of ground water. Treatment of ground water would result in a discharge of 6,000 gpm to the Bear River. Alternatives 3 and 9 are administratively implementable because a similar phosphoric acid production plant was permitted to operate in the area in the past. The administrative feasibility of discharging treated ground water is considered low due to opposition from the State of Idaho. The ability of these alternatives to treat low contaminant levels is uncertain. Discharge permit requirements would need to be established for this site.

Roaster rejects alternatives, no action and reuse, are both technically feasible. Reuse is currently being implemented causing the stockpile to be reduced by 300 to 600 tons/year. No action and reuse are also both administratively feasible. New permits would not be required for either action.

No action of windblown calcine tailings is technically feasible, but not administratively feasible because it is ineffective at reducing risks to the ecosystem caused by windblown calcine tailings. Excavation/disposal is technically and administratively feasible. Excavation and disposal of windblown calcine tailings has already been done. Capping would also be implementable.

8.2.5 Cost

Present worth costs are used to evaluate and compare the estimated monetary value of each remedial alternative. The costs are determined by summing the estimated capital costs and estimates of the discounted operation and maintenance (O&M) costs over the projected lifetime of the remedial alternative. Estimated present worth costs are based on a 30-year life of the remedial alternative using a discount rate of five percent. Costs for source control and ground water components of each alternative are summarized below:

Alternative 2	Capital cost Annual O&M Present Worth	$100,000 $60,000 $1,000,000
Alternative 3	Capital cost Annual O&M Present Worth	$1,000,000 $70,000 $2,000,000
Alternative 9	Capital cost Annual O&M Present Worth	$1,000,000 $100,000 $2,200,000
Alternative 26	Capital cost Annual O&M Present Worth	$13,000,000 $1,000,000 $23,000,000
Alternative 34	Capital cost Annual O&M Present Worth	$33,000,000 $4,500,000 $58,000,000
Alternative 35	Capital cost Annual O&M Present Worth	$15,000,000 $1,000,000 $25,000,000

Costs associated with roaster rejects and windblown calcine tailings are not included here because the do not significantly (less than $10,000) affect the cost of the overall alternatives and the actions are already in progress. Note that for Alternative 34, annual O&M drops to $1,000,000 after the first five years, once active treatment is completed.

8.3 Modifying Criteria

8.3.1 State Acceptance

The Idaho Department of Health and Welfare concurs with the selected remedy and final remedial action described in this ROD for the Kerr-McGee Superfund site. The combination of measures identified as Liquid Source Elimination which will result in the addition of a phosphoric acid plant to consume the calcine tailings, and the scrubber water, in addition to lined ponds to replace the existing unlined S-X pond, will adequately prevent contaminants of concern from entering the ground water once the remedial action has been completed. The ground water is expected to naturally recover once LSE actions have been complete. This approach and the selected remedy are deemed to be in compliance with the environmental laws and regulations of the State of Idaho.

8.3.2 Community Acceptance

EPA has attempted to keep the public informed of activities leading up to the selection of the remedial action identified in this ROD. The public has not expressed a significant interest in activities at the site. One public comment was received during the public comment period which was supportive of the selected remedy.

9.0 SELECTED REMEDY

The selected remedy for this site is Alternative 9, which includes distinct remedial actions for contaminated ground water, stockpiled roaster reject solids, and windblown calcine tailings. Together they constitute the selected remedy for the Kerr-McGee site. For purposes of providing complete information about the actions and the basis for each one, they are discussed separately below.

9.1 Remedial Actions for Ground Water

9.1.1 Remediation Goals for Ground Water Actions

The remediation goals for ground water are to prevent human exposure to ground water contaminated with chemicals of concern, specifically vanadium, molybdenum, arsenic, tributyl phosphate, total petroleum hydrocarbons, and/or manganese exceeding risk-based concentrations in the absence of MCLs (chemical specific ARARs), and to restore ground water to its beneficial use as a drinking water resource.

Chemicals of concern are those substances exceeding risk-based concentrations calculated in the baseline risk assessment to correspond to a Hazard Index of 1.0 for each chemical identified in Table 10). The COCs at this site (except arsenic) do not have established chemical-specific ARARs (MCLs) under the Safe Drinking Water Act, so human health risk-based concentrations developed in the baseline risk assessment have been established to correspond to a cancer risk of 10^{-6} or a Hazard Index of 1 in accordance with EPA guidance.

The point of compliance for evaluation of the performance of the selected remedial actions for ground water will be the boundary of the currently active industrial facility, using existing monitoring wells, (shown in Figures 1 & 7).

9.1.2 Selected Remedial Actions for Ground Water

The following actions constitute the selected remedy for contaminated ground water:

- Elimination of uncontrolled liquid discharges from the facility to soils, surface or ground water as soon as determined practicable;

- Excavation and reuse/recycling of buried calcine tailings (in the areas shown on Figure 6, Section 2.0) over the next eight years.

- Excavation and on-site disposal of Solvent Extraction and Scrubber Pond solids (sediments and the top few inches of underlying soils containing elevated levels of ground water COCs) in lined, covered, cells on-site;

- Semi-annual monitoring of ground water to determine the effectiveness of the source control measures described above in achieving the following risk-based ground water performance standards, as measured at the point of compliance:

  - Vanadium: 0.26 mg/l
  - Molybdenum: 0.18 mg/l
  - Tributyl Phosphate: 0.18 mg/l
  - Total Petroleum Hydrocarbons: 0.73 mg/l
  - Manganese: 0.18 mg/l; and,
  - Arsenic: 0.05 mg/l

  A comprehensive evaluation of monitoring data will be conducted annually to verify that reductions of COCs in ground water are occurring consistent with the ground water modelling.

- Establishment of Institutional Controls (deed restrictions, limited access, well restrictions and/or well-head protection) in the affected areas on- and off-site (areas with concentrations > RBCs) to curb certain types of uses of ground water for as long as the ground water exceeds the performance standards.

- Until such time as monitoring demonstrates that the performance standards have been achieved for all COCs, reviews will be conducted no less often than every five years (using monitoring) to confirm the elimination of liquid discharges and effectiveness of source control and ensure that the remedy continues to provide adequate protection of human health and the environment.

9.1.3 Cost and Volume Estimates for Ground Water Actions

The estimated capital cost for the selected ground water remedy is $2,000,000. Additional costs will be incurred by KMCC to construct the phosphoric acid plant that are not reflected in these capital costs.

The following is a summary of the volumes of material that will be addressed by the selected remedy:

- Source Elimination: Currently about 350 gpm of industrial waste water is discharged from the unlined S-X and scrubber ponds that leach into ground water. The selected remedy addresses this material by requiring elimination of uncontrolled discharges.

- Pond Solids (Sediments and Soils): Approximately 1,800 cubic yards from the S-X pond solids and 4,500 cubic yards from the scrubber pond will be excavated and disposed of in lined ponds on site. Excavation must ensure that all visible pond solids are removed.

- Calcine Tailings: The current calcine tailing production rate is about 90 tons/day (full capacity is about 150 tons/day) and the estimated volume of buried material is approximatley 700,000 tons. The anticipated throughput of the planned phosphoric acid plant is 350 tons/day. At this rate, the buried calcine tailings will be consumed in approximately 8 years.

9.2 Remedial Action for Roaster Reject Solids

9.2.1 Remediation Goals/Risk Levels for Roaster Rejects

The remediation goal for roaster rejects is to prevent contact and or human exposure to the roaster reject solids, particularly ingestion of solids containing levels of vanadium greater than 14,000 mg/kg, which corresponds to hazard index greater than one as calculated in the risk assessment. The roaster rejects are not considered a source of ground water contamination.

9.2.2 Remedial Action for Roaster Reject Solids

The selected remedy for the roaster reject area of the facility is resource recovery/reuse. Roaster rejects stockpiled during past operating practices will be reused as feedstock material for the production of vanadium over the next 5-10 years. During the time material remains stockpiled, it must be maintained in an area that is designed to minimize potential migration of materials to the surrounding environment or direct human exposure to it. So long as roaster rejects remain stockpiled in their current fashion, a review will be conducted every five years to ensure the remedy remains protective.

9.2.3 Cost and Volume Estimates

There is currently about 3,000 tons of material containing vanadium concentrations exceeding 20,000 mg/kg. Approximately 300-600 tons of material will be consumed each year, depending on the number of roasters operating. At that rate, the stockpile should be eliminated in 5-10 years. The approximate cost is estimated to be $10,000, with annual operating costs less than the value of the vanadium in the material.

9.3 Windblown Calcine Tailings

9.3.1 Remediation Goals/Risk Levels

The goal of this remedial action is to prevent the transport of COCs from the active calcine tailings area to the surrounding soils in amounts that exceed the 95% UTL of background soils. The windblown calcines are not considered a source of ground water contamination.

9.3.2 Remedial Action for Windblown Calcine Tailings

The selected remedy for windblown calcine tailings observed in the Remedial Investigation is excavation and on-site disposal. The company voluntarily excavated all visible windblown calcine tailings in the spring of 1995. Sampling will be done during remedial design to confirm that remediation goal has been met, and to ensure that no further action is needed.

9.4 Plant Process Changes Contributing to Remediation Goals

In recognition of RI/FS results and anticipation of the need to eliminate the source of ground water contamination, KMCC has already developed and submitted (to EPA and the State of Idaho) elements of a waste minimization plan to eliminate liquid discharges from the facility and to reuse/recycle buried calcine tailings such that on-site containment will not be necessary. The KMCC plan includes:

- construction of new lined evaporation ponds to contain the main source of ground water contamination (S-X raffinate currently discharged to leaking unlined ponds);

- construction and operation of a phosphoric acid plant to consume other liquid and solid wastes and produce a marketable product.

The company has obtained all the necessary state permits to build and operate the lined S-X ponds, which are now under construction. The company has also applied for the necessary permits to operate a phosphoric acid plant.

Successful implementation of KMCC's plan in a timely manner, along with excavation and disposal of the S-X pond solids, should effectively address the sources of ground water contamination. The success of source control actions will be subject to confirmation by ground water monitoring.

9.5 Timely Implementation of Plant Changes

Elements of Liquid Source Elimination being implemented by KMCC outside of the Superfund process must be implemented in a timely manner to ensure adequate protection of human health and the environment. KMCC has a permit and is already constructing lined ponds to replace the unlined S-X pond, and it has applied for the necessary air pollution control permit to operate a phosphoric acid plant, a necessary part of their plan to address the scrubber and calcine waste streams. EPA has solicited input from KMCC and from IDHW to determine how soon KMCC can reasonably be expected to implement the these elements of their waste minimization/Liquid Source Elimination plan.

IDHW has provided a general timeline for air permit processing of thirty days for permit application review to ensure the application is complete, followed by a sixty-day technical evaluation period, a thirty-day public comment period, and fifteen days to respond to public comment prior to issuing the permit. KMCC's application was complete as of July 20, 1995. Currently, IDHW is in the process of performing its technical evaluation. If there are no delays in the general permit process, KMCC can be expected to obtain the permit by December 5, 1995. This assumes that KMCC's permit application for a phosphoric acid plant will be granted.

KMCC has indicated that the construction time frame for the phosphoric acid plant is expected to take four to five months. Following construction, an additional one to two months to reach maximum processing capacity of 350 tons/day of calcine tailings is expected, after which time the scrubber pond water may be diverted to the phosphoric acid plant. The water used to sluice the calcine will then be recycled. One to two months after the acid plant is operating at full capacity, KMCC will be able to have the scrubber pond out of service completely.

KMCC also anticipates that harsh winter weather typical of the area may prevent construction of the phosphoric acid plant until May 1996. Based on these considerations, timely implementation will require that the plant construction be completed by October 1996, with the phosphoric acid plant in operation by February 1997 (and the unlined ponds out of service). S-X and scrubber pond solids would be expected to be excavated the following summer.

9.6 Potential Changes to the Selected Remedy

Based on information obtained during the RI and on a careful analysis of all remedial alternatives, EPA and the State believe that the selected remedy is a final remedy and will achieve the remedial action goals. It may become apparent, during the remedy (after implementation of source control and continued monitoring), that contaminant levels have ceased to decline and are remaining constant at levels higher than the remediation goal over some portion of the contaminated plume. In such a case, the performance standards and/or remedy will be reevaluated.

The schedule for implementation may be modified if significant changes occur to the expectations outlined above. However, if EPA determines that LSE is not being implemented in a timely manner, additional CERCLA enforcement action may be taken.

10.0 STATUTORY DETERMINATIONS

10.1 Protection of Human Health and the Environment

The selected remedy will provide adequate protection of human health through a combination of source control and institutional controls. In order to accomplish source control, the company has made and continues to make process changes to treat, reuse and recycle the waste streams which have been the source of ground water contamination, and lined ponds are being constructed to manage S-X liquids under a state permit in anticipation of and consistent with this selected remedy. Exposure to roaster rejects, which potentially pose unacceptable risks to humans, will be reduced and eventually eliminated by reuse/recycle of all stockpiled material over the next several years.

Ground water modelling predicts that within ten years of implementation of the selected remedy (source control) levels of vanadium, molybdenum, arsenic, and manganese will achieve the health-based performance standards; levels of TPH and TBP are predicted to achieve the performance standards in thirty (30) years or less (possibly much less if degradation occurs). The performance standards have been established at levels that correspond to a hazard quotient of 1 for non-carcinogens and the 10^{-6} level for carcinogenic risks.

Implementation of the selected remedy will not pose unacceptable short-term risks or cross-media impacts. During the period of time before and after source control, during which the ground water is recovering naturally through dilution, institutional controls will be established to prevent exposure to contaminated ground water.

10.2 Compliance With Applicable or Relevant and Appropriate Requirements

The selected remedy will comply with all chemical, action and location-specific federal and state ARARs. No ARAR waivers will be used. Specifically:

<u>40 C.F.R. Part 141, Safe Drinking Water Act</u>. Establishes MCLs and non-zero MCLGs. The MCL for arsenic is relevant and appropriate to the ground water beneath and beyond the boundaries of the currently operating facility, and will be met by source control and natural attenuation;

<u>Idaho Ground Water Standards (IDAPA Sec. 16.01.02.299)</u>. Protects ground water for beneficial uses, along with the <u>Idaho Antidegradation Policy (IDAPA Sec. 16.01.02.051)</u>, which requires that existing water uses and water quality be maintained and protected. These ARARs will be met by source control and natural attenuation;

Environmental Protection and Health Act, Idaho Code 39-101 to 129. Authorizes rules to protect the environment and human health and safety through state oversight of solid waste disposal and state approval of disposal locations and design. This requirement is relevant and appropriate for the on-site disposal of S-X and scrubber pond liquids and solids (once excavated). Since KMCC has been issued and is currently in compliance with the requisite permit for the new lined S-X ponds, the substantive and administrative requirements of this ARAR are already being met. The substantive portion of this ARAR will also be met for on-site disposal of the pond solids;

Rules for Control of Fugitive Dust, IDAPA § 16.01.01.650. This ARAR is relevant and appropriate for the management of the roaster rejects material as well as during excavation and reuse/recycling of buried calcines. This ARAR is met for roaster rejects by the requirement that those materials be maintained in an area that is designed to minimize potential migration to the surrounding environment for as long as the material remains stockpiled. Fugitive dust control measures will also be required during excavation of buried calcines for reuse/recycling.

10.3 Cost-Effectiveness

The selected remedy affords overall effectiveness proportionate to its costs. The selected source control remedy is cost effective because it will achieve most cleanup goals within ten years and all goals within thirty years or less, at a cost of about $2,200,000, without adverse affects on the plant operations. The no action alternative and other more limited alternatives would not achieve the cleanup goals. The addition of a pump-and-treat system would increase costs by $10-20 million without achieving the goals much more quickly than natural recovery after source control.

10.4 Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The selected remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable for this site. It meets the statutory requirements, is protective of the environment, addresses all sources of contamination, utilizes treatment in waste minimization efforts (reuse/recycle of two waste streams) and achieves the ground water cleanup goals in about the same time frame as more expensive ground water treatment options.

Source control is expected to eliminate the source of the problem such that the aquifer will recover naturally to its beneficial use within ten years for most contaminants (levels of TPH and TBP are predicted to return to normal and achieve performance standards in 30 years or less) without treatment. The selected remedy for the roaster rejects is resource reuse/recovery. The material currently stockpiled will be used as feedstock, and in the future the material will be used at such a rate as to eliminate the need for permanent stockpiling.

The selected remedy provides the best balance of tradeoffs among the alternatives with respect to the evaluation criteria, particularly the five balancing criteria. It provides similar long term effectiveness and permanence as the more expensive treatment options. The source control component will achieve some reduction of toxicity and volume of contaminants, and will restrict mobility via lined ponds for the S-X raffinate, to eliminating the source of future contamination.

The pump and treat alternatives would treat a greater volume of contaminants and remove them from the environment, but at substantially higher cost and with only marginal reductions in the time to achieve the cleanup goals. In addition to costing ten times as much as the selected remedy, the pump and treat alternatives would have substantially greater short term impacts than the selected remedy during the construction of the system and afterwards due to the need to capture and dispose of very large volumes of treated water. The implementability of the pump-and-treat alternatives is also questionable due to the lack of feasible disposal alternatives for the large volume of treated water. Other alternatives considered, including no action, institutional controls alone, and control of only selected solid sources, all failed to adequately address some or all of the evaluation criteria.

Once the threshold criteria of protection of public health and the environment and compliance with ARARs was addressed, the most significant factors in determining the selected remedy were the combination of long term effectiveness, permanence and cost effectiveness. State and community acceptance were considered informally during the RI/FS by keeping the public and state representatives informed and offering opportunities for their input during the process, as well as formally at the conclusion of the FS. The state was consulted and concurred on the proposed plan for cleanup. The public was given the opportunity to comment on the proposed plan. A single public comment supporting EPA's selected remedial action was received during the public comment period.

10.5 Preference for Treatment as a Principle Element

The selected remedy includes treatment, specifically reuse/recycling of calcine tailings as part of source control to address contaminated ground water. Re-capture and treatment of contaminated ground water was not found to be practicable at this site and was not selected because it is much more expensive than source control, and not expected to substantially accelerate the time frame for cleanup. This remedy also includes reuse/recycling to address the roaster reject materials. Since treatment was incorporated to the extent practicable for this site, the selected remedy satisfies the statutory preference for treatment as a principal element of the remedy.

Also, as part of the overall site strategy, though not the selected remedy, KMCC has developed a waste minimization/treatment plan and is changing its industrial processes to eliminate liquid discharges to ground water from the facility within the next one to two years. In order to do so, KMCC has applied for a permit to operate a phosphoric acid plant, which will recycle/reuse wastes which are currently the source of ground water contamination to manufacture a new, marketable product.

11.0 DOCUMENTATION OF SIGNIFICANT CHANGES

CERCLA Section 117(b) requires that the Record of Decision document and discuss the reasons for any significant changes made to the selected remedy from the time the Proposed Plan and RI/FS reports were released for public comment to the final selection of the remedy.

The preferred alternative identified in the Feasibility Study and in the Proposed Plan is Alternative 9, Liquid Source Elimination, on-site disposal of pond solids, and reuse of calcine tailings, ground water monitoring, and institutional controls.

The Proposed Plan did not explicitly describe the actions taken to address secondary risks on the roaster rejects pile, which were documented in the FS. However, the selected remedial action for reuse of the roaster rejects is already being implemented by KMCC. Similarly, the excavation and disposal of windblown calcine tailings was not specifically described in the Proposed Plan, but voluntary actions by KMCC to address windblown calcine tailings were taken during the site investigation. These actions do not significantly impact either the cost or the scope of the remedial action identified in the Proposed Plan.

In addition, costs in the Proposed Plan vary from the FS because in the FS capital costs were rounded to the nearest million dollars. EPA believed that it was more appropriate to represent costs without rounding in the Proposed Plan, to more precisely display the costs of each alternative for public comment. However, the rounded FS costs are used in the ROD to be consistent with documentation provided in the FS and to avoid potential confusion.

These matters are being noted in this section as a matter of clarification, but do not change any essential element described in the Proposed Plan to address principal threats to ground water at the Kerr-McGee site. No significant changes were made to the preferred alternative as presented in the Proposed Plan.

APPENDIX A
STATE LETTER OF CONCURRENCE

IDAHO DEPARTMENT
OF HEALTH AND WELFARE
DIVISION OF
ENVIRONMENTAL QUALITY

RECEIVED

OCT 12 1995

SUPERFUND REMEDIAL BRANCH

1410 North Hilton, Boise, ID 83706-1255, (208) 334-0502

Philip E. Batt, Governor

October 10, 1995

Peter Contreras
US EPA Region 10 HW-113
1200 Sixth Ave.
Seattle, WA 98101

RE: State of Idaho Concurrence on the Kerr McGee Record of Decision

Dear Mr. Contreras:

Thank you for providing representatives of the State of Idaho an opportunity to review and comment on the Kerr McGee, Soda Springs, Idaho Superfund Record of Decision. Staff from our Southeastern Idaho Regional Office, Central Office, and Attorney General's Office, have had opportunity to review and provide editorial comments on the document and it's draft.

The Division of Environmental Quality (DEQ) may not have the authority to enforce any institutional controls related to the drilling of domestic wells outside the boundaries of the Kerr McGee facility. Therefore, should well drilling occur, the DEQ would regard such an activity as a Record of Decision (ROD) remedy failure and expect the EPA to reevaluate and revisit the institutional controls element of the Kerr McGee remedial action.

We appreciate your consideration of our input in the remedy selection process. Having been instrumental in the remedy selection, we concur with the ROD.

Sincerely,

Wallace N Cory

Wallace N. Cory, P.E.
Idaho Division of Environmental Quality
Administrator

WNC:GB:mp

cc: George Spinner, SEIRO Regional Administrator
Dean Nygard, Acting Remediation Bureau Chief
Mike Thomas, Superfund Program Manager
Boyd Roberts, SEIRO Remediation Supervisor
Gordon Brown, SEIRO Remediation Project Officer

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APPENDIX B
RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

1.0 Purpose

This section contains a summary of comments and concerns raised during the public comment period held from August 4 to September 3, 1995. A brief description of community involvement is also included.

2.0 Community Involvement

EPA conducted community interviews in August 1990 and found community interest in the Kerr-McGee Superfund Site to be low. Citizens and local officials have expressed more concern over other environmental issues in the area, such as the Monsanto Superfund Site in Soda Springs, the FMC Superfund Site in Pocatello, and the Southeast Idaho Slag Studies.

EPA offered to hold a public meeting to discuss the Proposed Plan during the the public comment period and notice of opportunity to comment was published in the local newspaper, the Caribou County Sun. No one requested a public meeting. As a result of the Proposed Plan, two newspaper articles were published announcing that EPA was seeking comments and describing the preferred alternative.

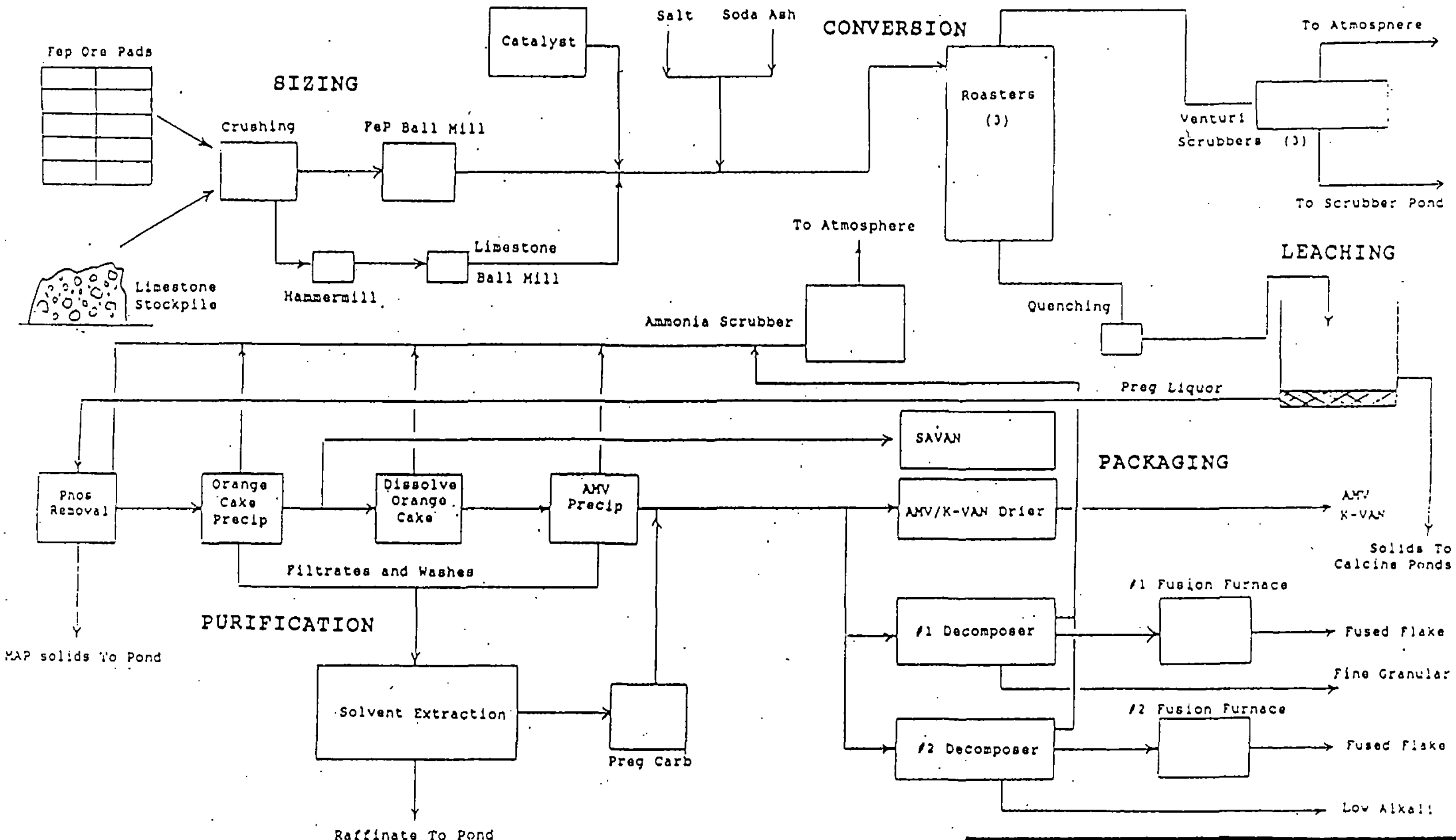
3.0 Summary of Comments Received

EPA held a public comment period from August 4, 1995 to September 3, 1995. The public sent one (1) letter providing public comment. No phone calls were received providing public comment:

<u>Comment:</u> The commentor agreed with EPA's Preferred Alternative 9 and supported it as having a favorable cost/benefit ratio in reaching the goal of clean ground water at the least cost. The commentor believed the more costly alternatives would have a deleterious effect on society because of the high costs and modest benefits.

<u>Response:</u> Comment noted.

APPENDIX C
FIGURES AND TABLES

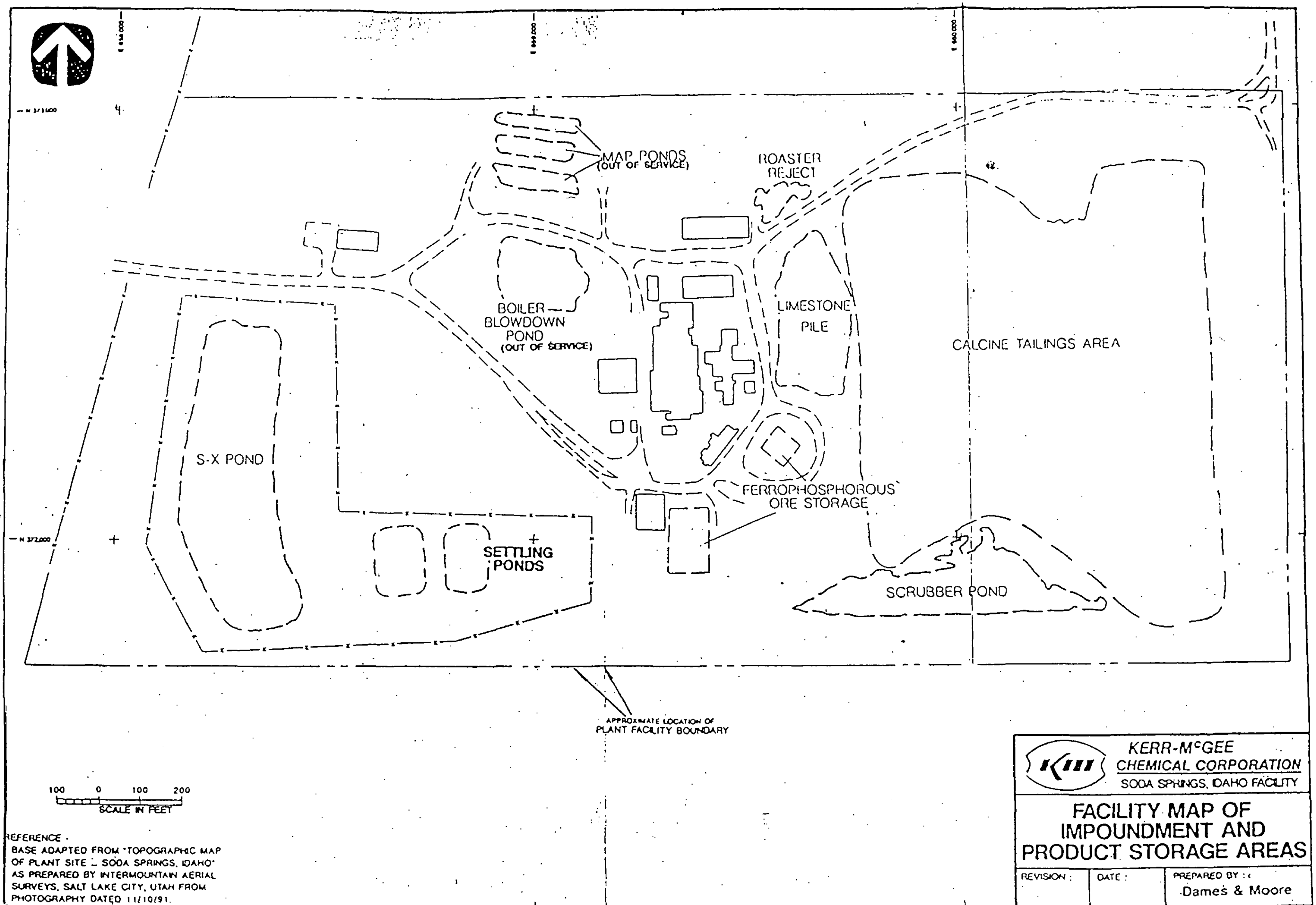


KERR-McGEE CHEMICAL CORPORATION
SODA SPRINGS, IDAHO FACILITY

VANADIUM EXTRACTION AND PROCESSING FLOW SHEET

REVISION :	DATE :	PREPARED BY : Dames & Moore

FIGURE 3



MAP PONDS
(OUT OF SERVICE)
ROASTER REJECT
BOILER BLOWDOWN POND
(OUT OF SERVICE)
LIMESTONE PILE
CALCINE TAILINGS AREA
S-X POND
SETTLING PONDS
FERROPHOSPHOROUS ORE STORAGE
SCRUBBER POND
APPROXIMATE LOCATION OF PLANT FACILITY BOUNDARY
100 0 100 200
SCALE IN FEET
REFERENCE -
BASE ADAPTED FROM "TOPOGRAPHIC MAP OF PLANT SITE – SODA SPRINGS, IDAHO" AS PREPARED BY INTERMOUNTAIN AERIAL SURVEYS, SALT LAKE CITY, UTAH FROM PHOTOGRAPHY DATED 11/10/91.
KERR-McGEE
CHEMICAL CORPORATION
SODA SPRINGS, IDAHO FACILITY
FACILITY MAP OF
IMPOUNDMENT AND
PRODUCT STORAGE AREAS
REVISION :
DATE :
PREPARED BY :
Dames & Moore

FIGURE 4

TABLE 1

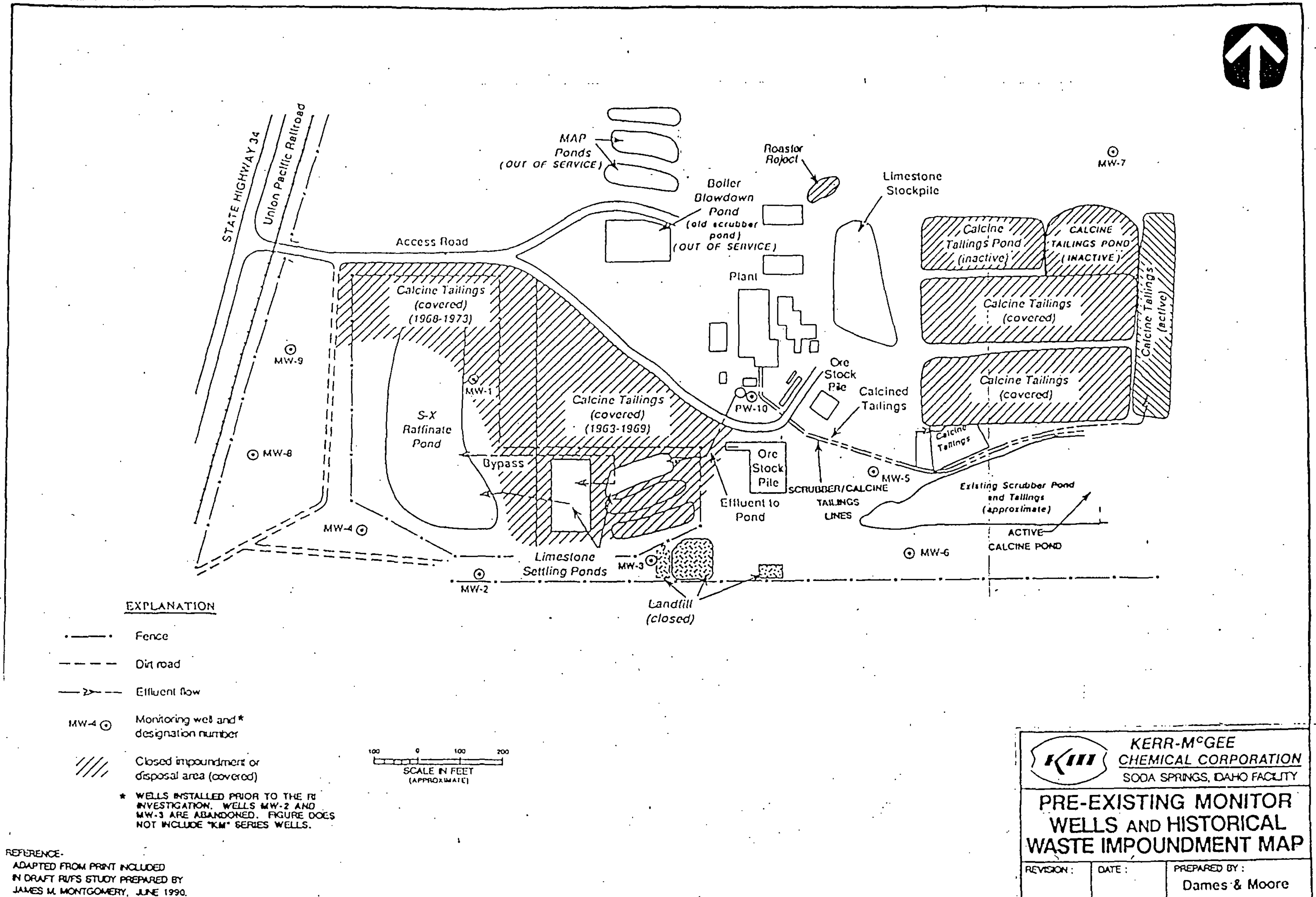
NATURE AND QUANTITY OF MATERIALS
GENERATED AT THE SODA SPRINGS FACILITY

Material	Type	Quantity	Nature/Handling
Ammonium Metavanadate (AMV)	Product	Produced as needed	Light cream colored powder stored on-site in 17.5-gal. fiber drums until shipment.
Potassium Metavanadate (K-VAN)	Product		White powder stored on-site in 30-gal. steel drums or 17.5-gal. fiber drums until shipment.
Sodium Ammonium Decavanadate (SAVAN)	Product		Stored in various size steel and fiber drums on-site until shipment.
Vanadium Pentoxide	Product		Three grades, low alkali granular, fine granular and flaked are stored on-site in various size drums until shipment.
VANOX-13 (V_6O_{13})	Product	Produced as needed	Black powder packaged in 2 kg cans. Cans packaged in boxes for shipment.
Solvent Extraction Raffinate	Waste	50 gpm (1989) 70-85 gpm (1990)	Liquid residuals originating from the solvent extraction circuit. They are discharged to the settling ponds and then to the S-X pond.
Magnesium Ammonium Phosphate (MAP) Residuals	By-product Water	1200-1600 Tons/year 5 gpm (no longer used)	By-product generated by the removal of phosphorus and calcine during the first precipitation stage of vanadium cake. It is stored in the MAP pond. These ponds have been closed.

TABLE 1 (continued)

NATURE AND QUANTITY OF MATERIALS
GENERATED AT THE SODA SPRINGS FACILITY

Material	Type	Quantity	Nature/Handling
Leached Calcine Tailings	Waste Water	100 Tons/day (1989) 140 Tons/day (1990) 153 Tons/day (1991, 1992) 100 Tons/day (1993) 80-100 gpm	Solid residuals from leaching of the calcined ore. They are discharged in a slurry to the calcine tail-ings pond on the east side of the property. In 1988, 34% of this output was sold to a local fertilizer plant. 13% was sold in 1989.
Scrubber Residuals	Waste Water	200 Tons/year (1989) 300 Tons/year (1990) 300 Tons/year (1991) 210 gpm	Residuals from the baghouse on the limestone crushing circuit and scrubber tails from the three roasters. The tails are slurried to pond on the southeast corner of the property. (Prior to February 1990, the limestone crushing circuit used a wet scrubber system for particulate control).
Boiler Blowdown	Water	1.5 gpm	Discharged from the water softener regeneration unit feeding water to the boiler. Discharge goes to the boiler blowdown pond. This pond was closed in 1992. Water is now recycled.
Roaster Reject	Secondary Feedstock	250 Tons/year	Residual from calcining step revised in the roaster feed.



MAP Ponds (OUT OF SERVICE)
Roaster Reject
Boiler Blowdown Pond (old scrubber pond) (OUT OF SERVICE)
Limestone Stockpile
MW-7
STATE HIGHWAY 34
Union Pacific Railroad
Access Road
Plant
Calcine Tailings Pond (inactive)
CALCINE TAILINGS POND (INACTIVE)
Calcine Tailings (covered) (1968-1973)
Calcine Tailings (covered)
Calcine Tailings (active)
MW-9
MW-1
S-X Raffinate Pond
Calcine Tailings (covered) (1963-1969)
Ore Stock Pile
PW-10
Calcined Tailings
Calcine Tailings
MW-8
Bypass
Ore Stock Pile
MW-5
SCRUBBER/CALCINE TAILINGS LINES
Existing Scrubber Pond and Tailings (approximate)
Effluent to Pond
MW-4
ACTIVE CALCINE POND
Limestone Settling Ponds
MW-3
MW-6
MW-2
Landfill (closed)
EXPLANATION
Fence
Dirt road
Effluent flow
Monitoring well and* designation number
Closed impoundment or disposal area (covered)
* WELLS INSTALLED PRIOR TO THE RI INVESTIGATION. WELLS MW-2 AND MW-3 ARE ABANDONED. FIGURE DOES NOT INCLUDE "KM" SERIES WELLS.
100 0 100 200
SCALE IN FEET (APPROXIMATE)
REFERENCE-
ADAPTED FROM PRINT INCLUDED IN DRAFT RI/FS STUDY PREPARED BY JAMES M. MONTGOMERY, JUNE 1990.
KERR-McGEE CHEMICAL CORPORATION
SODA SPRINGS, IDAHO FACILITY
PRE-EXISTING MONITOR WELLS AND HISTORICAL WASTE IMPOUNDMENT MAP
REVISION:
DATE:
PREPARED BY:
Dames & Moore

FIGURE 5

TABLE 2

PAST & PRESENT WASTE PONDS
KERR-McGEE SODA SPRINGS FACILITY

Ponds	Dates Used	Current Status	Quantity/Nature	Other Comments
Calcine Tailings Pond (West) (1)	1963-1973	Closed	244,000 tons of leach residue	This area was covered and seeded in 1973
MAP Ponds (3)	1973-1993	Active	1200-1600 tons/ year of by-product. 5 gpm water.	3 ponds are used in parallel to hold magnesium ammonium phosphate prior to sale of fertilizer. While pond is filled, the by-product from the other is sold.
	1993	Closed		MAP ponds will be closed by the end of 1993. MAP will be discharged to a truck following filtering for fertilizer sales.
Solvent Extraction (S-X) pond (1)	1968-Present	Active	Pond Capacity 5.5 million gallons. Liquid storage of effluent from S-X process. Pond maximum depth measured at 6.75; pond average depth is 3 to 5.5 feet	This pond was rebuilt and expanded in 1981. From October 1987 to May 1989 the pond was not used. Effluent during this period was used to fill the new limestone settling pond. Reuse commenced in May 1989.

TABLE 2 (continued)

PAST & PRESENT WASTE PONDS
KERR-McGEE SODA SPRINGS FACILITY

Ponds	Dates Used	Current Status	Quantity/Nature	Other comments
Limestone Settling Ponds (5)	1974-1983	Closed	500,000 gallons	Covered and seeded in 1983.
	1983-1988	Closed	750,000 gallons	Covered and seeded in 1988.
	1984-1988	Closed	1,000,000 gallons	Covered and seeded in 1988.
	1988-Present	Active	750,000 gallons Used for pH control of S-X tails.	The last pond used to neutralize S-X tails.
	1993	Active		Additional lined pond added similar in size to Limestone Settling Pond #4.
Scrubber Pond	1972-Present	Active	2,500 tons scrubber tails. Pond averages 2 to 3 feet in depth, with maximum depth measured at 6.9 feet.	900 tons of the scrubber bottom tails from this pond were sold to fertilizer plant as feed stock in 1988.
Boiler Blowdown Pond (1)	1963-1992	Closed	1.5 gpm. No solids are discharged to this pond.	Discharged from the water softener regeneration unit feeding water to the boiler. This pond was formerly used as a scrubber pond.

TABLE 2 (continued)

PAST & PRESENT WASTE PONDS
KERR-McGEE SODA SPRINGS FACILITY

Ponds	Dates Used	Current Status	Quantity/Nature	Other Comments
Calcine Tailings Pond (East) (3)	1972-Present	Active	625,000 tons calcine tails	In 1976 the exposed surface area of the tails was reduced to control fugitive dust. Current procedure is to open a trench large enough to hold one year's discharge. Once it is filled, a new trench is dug and the old one is covered. Recently, an old trench has been left open to allow access to tails for sale.
Landfill (Solid Waste Disposal Pits) (3)	1963-1973	Closed	Wood, paper, office trash, cleaned process equipment.	Trash is now taken to the local landfill.

TABLE 3

ESTIMATED MAXIMUM CONCENTRATION BASIS COCs IN GROUND WATER (mg/l)

PLANT BOUNDARIES

COC	KM-2	KM-3	East KM-4	KM-11	Avg. Conc. (mg/l)
Vanadium	15.1	13.2	10.9	0.49	9.92
Molybdenum	1.84	4.91	2.81	5.6	3.79
Arsenic	0.03	0.02	0.02	0.002	0.018
TBP	NA	NA	NA	NA	NA
TPH	NA	NA	NA	NA	NA
Manganese	0.26	0.62	0.95	0.14	0.49

PLANT BOUNDARIES (CONTINUED)

COC	KM-5	KM-6	KM-7	West KM-8	KM-9	KM-13	Avg.	Arithmetical Final Avg. Conc.
Vanadium	15.8	4.8	2.46	28.6	3.59	6.42	10.28	10.10
Molybdenum	1.46	2.14	0.59	119	1.74	6.79	21.95	12.87
Arsenic	0.012	0.006	0.004	0.08	0.005	0.004	0.019	0.018
TBP	NA	0.11	NA	4.4	NA	NA	2.26	2.26
TPH	NA	NA	NA	2.2	NA	NA	2.20	2.20
Manganese	0.4	0.23	0.11	8.63	0.18	0.13	1.61	1.05

PLANT BOUNDARIES TO FINCH SPRING

COC	KM-15	KM-16	KM-17	KM-18	Finch Spring	Arithmetical Final Avg. Conc.
Vanadium	3.13	3.54	0.07	2.99	0.009	1.95
Molybdenum	6	1.82	0.38	5.92	0.689	2.96
Arsenic	0.004	0.007	0.001	0.004	0.002	0.004
TBP	0.48	0.005	0.086	0.41	0.008	0.198
TPH	0.5	0.5	0.5	1	0.5	0.60
Manganese	0.54	0.36	0.08	0.33	0.005	0.26

FINCH SPRING TO BIG SPRING

COC	Finch Spring	Big Spring	Arithmetical Final Avg. Conc.
Vanadium	0.009	0.007	0.008
Molybdenum	0.689	0.375	0.532
Arsenic	0.002	0.001	0.002
TBP [a]	0.008	0.001	0.005
TPH	0.50	0.50	0.50
Manganese	0.005	0.006	0.006

Notes:

1) All data is the maximum concentration given for each chemical measured in the respective sample location from Appendix B of the Draft RI Report. Data for Big Spring is from analytical results from sampling rounds in December 1993 or May 1994.

2) Any value in Appendix B preceded with a "<" is given a value of one half the detection limit in the table above.

3) Any Value in Appendix B with a NA or NR designation indicates that no data was available and is not figured into the calculations in this table.

4) Refer to Table of Acronyms for explanation of abbreviations.

(a) No TBP data is available for Finch Spring. TBP data at the Finch Spring boundary is taken from monitoring well TW-56, which is the nearest point to Finch Spring at which TBP data is available.

TABLE 4

ESTIMATED MASS AND CONCENTRATIONS OF COCs IN LIQUID SOURCES

S-X POND

	Contaminants of concern							
	Arsenic	Manganese	Molybdenum	Vanadium	TBP	TPH	Total mass (lb)[1]	Total Volume (gal)[2]
WWT Flow Rate (gpm)[3]	65	65	65	65	65	65	NA	NA
Chemical Conc. (mg/L)[3]	0.19	0.16	155	117	16	41	NA	NA
Chemical mass (lb) 1 Year	54	46	44,000	33,000	4,557	12,000	94,000	34,164,000

SCRUBBER POND

	Contaminants of concern							
	Arsenic	Manganese	Molybdenum	Vanadium	TBP	TPH	Total mass (lb)	Total Volume (gal)
WWT Flow Rate (gpm)[3]	210	210	210	210	210	210	NA	NA
Chemical Conc. (mg/L)[3]	0.008	0.08	1.03	22	0	0	NA	NA
Chemical mass (lb) 1 Year	7	74	948	20,000	0	0	21,000	110,376,000

CALCINE POND

	Contaminants of concern							
	Arsenic	Manganese	Molybdenum	Vanadium	TBP	TPH	Total mass (lb)	Total Volume (gal)
WWT Flow Rate (gpm)[3]	100	100	100	100	100	100	NA	NA
Chemical Conc. (mg/L)[3]	0	0.12	2.4	90	0	0	NA	NA
Chemical mass (lb) 1 Year	0	53	1,052	39,000	0	0	41,000	52,560,000

TOTAL

	Contaminants of concern							
	Arsenic	Manganese	Molybdenum	Vanadium	TBP	TPH	Total mass (lb)	Total Volume (gal)
Chemical mass (lb) 1 Year	61	172	46,000	93,000	4,557	12,000	1.56E + 05	1.97E + 08

1) Total mass rounded to nearest 1000 lbs.

2) Total Volume of Liquid Source.

3) Flow rate and concentration data from Table A-2, Appendix A, of the attached Revised Draft Ground Water Modeling Report. Chemical concentrations are based on one sampling round.

4) Refer to Table of Acronyms for explanation of abbreviations.

TABLE 5

ESTIMATED MASS AND VOLUME OF COCs IN SOLID SOURCES

POND SOLIDS

	COC						
	Arsenic	Manganese	Molybdenum	Vanadium	TBP	TPH	Total
Soil Volume (tons)	550	550	550	550	550	550	NA
Chemical Conc. (mg/Kg)	7.7	182	444	7770	140	NA	NA
Chemical Mass (lbs)	8.5	200	488	8.55E+03	154	NA	9.40E+03

SCRUBBER SOLIDS

	COC						
	Arsenic	Manganese	Molybdenum	Vanadium	TBP	TPH	Total
Soil Volume (tons)	4230	4230	4230	4230	4230	4230	NA
Chemical Conc. (mg/Kg)	3.6	557	1040	10700	NA	NA	NA
Chemical Mass (lbs)	30	4.71E+03	8.80E+03	9.05E+04	NA	NA	1.04E+05

CALCINE SOLIDS

	COC						
	Arsenic	Manganese	Molybdenum	Vanadium	TBP	TPH	Total
Soil Volume (tons)	681750	681750	681750	681750	681750	681750	NA
Chemical Conc. (mg/Kg)	0	915	13.3	2000	NA	NA	NA
Chemical Mass (lbs)	0.00	1.25E+06	1.81E+04	2.73E+06	NA	NA	3.99E+06

TOTAL

	COC						
	Arsenic	Manganese	Molybdenum	Vanadium	TBP	TPH	Total
Soil Volume (tons)	686530	686530	686530	686530	686530	686530	NA
Chemical Mass (lbs)	39	1.25E+06	2.74E+04	2.83E+06	154	NA	4.11E+06

Notes:

1) NA - Not Analyzed or Not Applicable

2) Concentration data extracted from Table B-3-8, Appendix B, Draft Remedial Investigation Report Dames & Moore, November, 1993. Chemical concentrations shown in this table are the maximum concentrations encountered in Table B-3-8.

3) See text for basis of source volume quantities.

4) Refer to Table of Acronyms for explanation of abbreviations.

Table 6
Identification of Chemicals of Potential Concern in Onsite Source Piles

Analyte	Range of Site Concentrations (mg/kg)	Maximum Back-ground Soil	Noncancer RBCs HQ=0.1	No. of Exc.	Carcinogenic RBCs 1E-7
Aluminum	313-12,300	17,400	200,000		
Antimony	U-19.1	6	82		
Arsenic	U-7.0	5.2	61		33.0
Barium	11.5-153	172	140,000		
Beryllium	U-1.8	2	1,000		13
Cadmium	U-18.2	9.7	100		
Calcium	7,370-246,000	9,140			
Chromium (Total)	16.1-4,860	16.7	2,000,000		
Chromium VI	<0.05-17	Not Analyzed	1,000		
Cobalt	1.8-48.6	9.4			
Copper	26-13,700	22.8	7,600	1/18	
Fluoride	U-22.2	66.1	12,000		
Iron	591-75,500	23,000			
Lead	0.7-94.7	81			
Magnesium	821-157,000	4,520			
Manganese	20.9-915	696	29,000		
Molybdenum	U-1,040	Not Analyzed	1,000	(7/18)	
Nickel	14.1-2,070	53	4,100		
Nitrate as N	No Data	13	330,000		
Selenium	U-13.1	0.8	1,000		

Table 6 (Continued)
Identification of Chemicals of Potential Concern in Onsite Source Piles

Analyte	Range of Site Concentrations (mg/kg)	Maximum Back-ground Soil	Noncancer RBCs HQ=0.1	No. of Exc.	Carcinogenic RBCs 1E-7
Silver	U-174	1	1000	1/18	
Titanium	23.5-1,350	337			
Vanadium	51.7-24,300	42	1,400		
Zinc	8.8-330	123	61000		

Radionuclides in Onsite Source Piles

Analyte	Range of Concentrations (pCi/g)	Maximum Back-ground Soil	Carcinogenic RBCs 1E-7
K-40	0.75-13.0	20	4.0E-02
Lead-210+D	0.4-1.1	3	4.9E-01
Polonium-210	<450 Est. value of 1.1	3.8	2.1E+00
Radium-226+D	0.14-2.29	1.3	3.6E-03
Radium-228+D	0.71-1.08	1.69	7.5E-03
Thorium-228	0.12-1.01	1.6	3.9E-03
Thorium-230	5.3-10	1.5	2.3E+01
Thorium-232	0.008-0.715	1.7	2.6E+01
Uranium-234	9.2-14	**0.5	2.0E+01
Uranium-235+D	0.07-2.5	**0.03	9.0E-02
Uranium-238+D	0.09-31.4	**0.5	5.7E-01

U = Not Detected

** = Uranium-238, U234, and U235 values have been converted from mg/kg to Pci/g using the equation given in Section 6 of this document.

RBC = Risk-Based Concentrations +D indicates that radionuclide progeny are included in risk calculations

Shading indicates exceedences of column values; shading in the analyte column indicates identification of a COPC.

Sources: 1 IRIS Database (1993)
2 HEAST, (USEPA 1993)
3 USEPA (1992f,g,h)

Table 7
Identification of Chemicals of Potential Concern in Offsite Soil
(All values reported in mg/kg)

Analyte (2 Soil Depths Represented)	Range of Site Concentrations	Maximum Background	Noncancer RBC HQ=0.1	No. of Exc.	Carcinogenic RBCs 1E-7	
Aluminum (0-1")	7,340-17,900	16,500	27,000			
(0-6")	6,860-23,500	17,400				
Antimony	u	6	11			
	u	6				
Arsenic	2.0-6.1	5.2	8.2		0.037	<det lim
	u-7.2	5				<det lim
Barium	89.2-185	148	1,900			
	84-222	172				
Beryllium	u-0.88	1	140		0.015	<det lim
	u-1.1	2				<det lim
Cadmium	u-14.2	9.7	27.0			
	u-7.8	7				
Calcium	6,980-83,000	8,100				
	5,840-64,500	9,140				
Chromium (Total)	18.2-229	16	27,000			
	16.8-186	16.7				
Cobalt	6.0-20.9	8.1				
	7.4-17.9	9.4				
Copper	23.5-537	19.6	1,000			
	15.6-445	22.8				
Fluoride	1.3-11.2	46.6	1,600			
	1.4-16.8	66.1				

Table 7 (Continued)
Identification of Chemicals of Potential Concern in Offsite Soil
(All values reported in mg/kg)

Analyte (2 Soil Depths Represented)	Range of Site Concentrations	Maximum Background	Noncancer RBCs HQ=0.1	No. of Exc.	Carcinogenic RBCs 1E-7
Iron (0-1")	9930-18900	19200			
(0-6")	11100-17300	23000			
Lead	8.7-25.6	39			
	9.8-17.5	81			
Magnesium	2950-10000	4280			
	3380-7130	4520			
Manganese	475-722	696	3800		
	463-727	681			
Molybdenum	u-5.2	u	140		
	u- 3.1	u			
Nickel	22.3-667	43	550	2/14	
	20.2-555	53		1/13	
Selenium	u	0.8	140		
	u	0.6			
Silver	u-4.2	1	140		
	u-2.4	1			
Titanium	272-710	333			
	266-868	337			
Vanadium	52.6-766	42	190	4/13	
	30.4-569	42		2/13	
Zinc	39.8-248	123	8100		
	40.3-163	78.3			

Table 7 (Continued)
Identification of Chemicals of Potential Concern in Offsite Soil

Radionuclides (2 Soil Depths Represented)	Range of Conc. pCi/g	Max. Bckgd	RBC @ 1E-7	
Thorium-232 (0-1")	0.45-0.85	1.7	6.4E+00 <bckgd	
(0-6")	0.50-1.2	1.6		
Uranium-238+D	0.39-5.6	1.4	1.1E-01 <bckgd	
	0.26-4.9	1.2		

u = Nondetect

a = Reference dose is based on soluble salts (IRIS).

b = Shading in the analyte column indicates a COPC; shading in value columns indicates that the maximum detected concentration exceeds that specific parameter.

Uranium-238 values have been converted from mg/kg to pCi/g using the equation given in Section 6 of this document.

RfD = Reference Dose SF = Slope Factor RBC = Risk-Based Concentrations +D indicates that radionuclide progeny are included in risk calculations

Sources for toxicity values:

1 = IRIS Database, (1993)
2 = Health Effects Assessment Summary Tables (USEPA 1993)
3 = USEPA 1992f,g,h

Table 8
Identification of Chemicals of Potential Concern in Ground Water

Analyte	Range of Site Concentrations (mg/l)	Maximum Background	MCL	MCLG	Human Health RBC (residential scenario) HQ=0.1
Aluminum	U-19.6	0.1	[0.05SMCL]	[0.05]	3.6E+00
Antimony	U-0.03	0.03	[0.01]	[0.003]	1.5E-03
Arsenic	U-0.08	0.005	0.05	[0.05]	1.1E-03
Barium	U-0.39	0.1	2	2	2.6E-01
Beryllium	U-8.006	0.0025	0.004	[0]	1.8E-02
Cadmium	U-0.006	0.0025	0.005	0.005	1.9E-03
Calcium	89-625	162	-	-	-
Chloride	5-12,100	7	250SMCL	-	3.1E+03
Chromium (Total)	U-0.062	0.005	0.1	0.1	3.6E-01
Cobalt	U-0.079	0.025	-	-	9.1E-02
Copper	U-0.375	0.0125	0.2		1.4E-01
Fluoride	U-0.48	0.3	2.0SMCL, 4	4	2.2E-01
Iron	U-22.1	0.3	0.3	-	-
Lead	U-0.013	0.0025	0.015	0	-
Magnesium	39.3-291	45.1	-	-	-
Manganese	U-6.8	0.0075	-	-	1.8E-02
Mercury	U-0.0008	0.0001	0.002	0.002	1.1E-03
Molybdenum	U-119	not analyzed	-	-	1.8E-02
Nickel	U-0.384	0.02	[0.1]	[0.1]	7.3E-01
Nitrate as N	0.50-157	0.4	10	10	5.8E+00
Potassium	1.5-972	2.5	-	-	-
Selenium	U-0.143	0.0025	0.05	0.05	1.8E-02
Silver	U-0.035	0.005	0.1 SMCL	-	1.8E-02
Sodium	3.3-8800	5.5	-	-	-
Sulfate Ion	28-23,100	38.1	250SMCL	-	-
Vanadium	U-28.6	0.01	-	-	2.6E-02
Zinc	U-0.44	0.01	[5]SMCL	-	7.3E-01

Table 8 (Continued)
Identification of Chemicals of Potential Concern in Ground Water

Radionuclides	Range of Concentrations (pCi/l)	Maximum Background	MCL	MCLG	Radionuclide RBC (Residential) 1E-07
Radium-226	U-4.13	3.4	20	0	0.04
Radium-228	U-39	nondetects	20	0	0.049
Uranium-238	U-3.22	3	30	0	0.3
					Human Health RBC (residential scenario)
ORGANIC CHEMICALS	mg/l				HQ=0.1
TPH	2.1-2.6	0			7.3E-02[a]
Di-n-octyl Phthalate	U-0.003J	0			7.3E-02
Bis(2-Ethylhexyl) Phthalate	U-0.006J				7.3E-02
Butyl Benzyl Phthalate	U-0.009J	0	0.1		7.3E-01
Tributyl Phosphate	0.003-14	0			1.8E-02

[a] = The RBC for TPH was derived from the RfD for JP-5 fuel.

J = Estimated Value

U = Not Detected

Parentheses in the MCL and MCLG columns indicate a proposed value.

Wells used in this screening include KM-1 through KM-13, the Lewis and Finch Wells, Boy Scout, Kelly Park and Spring Organic data are from wells KM-6 and KM-8.

Shading indicates maximum detected concentration exceeds column values, shading in the analyte column indicates a COPC.

Table 12
Current Industrial Scenario Exposure Factors[a]

Ferrophosphorous Pile Route	RME Exposure Factors	
	Noncarcinogens	Carcinogens
Source Material Ingestion		
Intake Rate	6.25 mg/day	6.25 mg/day
Exposure Frequency	180 days/year	180 days/year
Exposure Duration	25 years	25 years
Body Weight	70 kg	70 kg
Averaging Time	9,125 days	25,550 days
Dust Inhalation		
Intake Rate	2.5 m3/day	2.5 m3/day
Exposure Frequency	180 days/year	180 days/year
Exposure Duration	25 years	25 years
Body Weight	70 kg	70 kg
Averaging Time	9,125 days	25,550 days
External Gamma Exposure		
Gamma Shielding Factor (S_e) unitless	-	0.0
Gamma Exposure Factor (T_e)	-	0.021
Source Material Calcine Tailings 1 Route	**RME Exposure Factors**	
	Noncarcinogens	**Carcinogens**
Source Material Ingestion		
Intake Rate	2.1 mg/day	2.1 mg/day
Exposure Frequency	250 days/year	250 days/year
Exposure Duration	25 years	25 years
Body Weight	70 kg	70 kg
Averaging Time	9,125 days	25,550 days
Dust Inhalation		
Intake Rate	0.83 m3/day	0.83 m3/day
Exposure Frequency	250 days/year	250 days/year
Exposure Duration	25 years	25 years
Body Weight	70 kg	70 kg
Averaging Time	9,125 days	25,550 days

Table 12 (Continued)
Current Industrial Scenario Exposure Factors

Roaster Reject Pile (Continued) Route	RME Exposure Factor	
	Noncarcinogens	Carcinogens
External Gamma Exposure		
Gamma Shielding Factor (S_e) unitless	-	0.0
Gamma Exposure Factor (T_e) unitless	-	0.009
Calcine Tailings Pond 2 Route	**RME Exposure Factors**	
	Noncarcinogens	**Carcinogens**
Source Material Ingestion		
Intake Rate	25 mg/day	25 mg/day
Exposure Frequency	12 days/year	12 days/year
Exposure Duration	25 years	25 years
Body Weight	70 kg	70 kg
Averaging Time	9,125 days	25,550 days
Dust Inhalation		
Intake Rate	10 m3/day	0.83 m3/day
Exposure Frequency	12 days/year	250 days/year
Exposure Duration	25 years	25 years
Body Weight	70 kg	70 kg
Averaging Time	9,125 days	25,550 days
External Gamma Exposure		
Gamma Shielding Factor (S_e) unitless	-	0.0
Gamma Exposure Factor (T_e) unitless	-	.005
Roaster Reject Pile Route	**RME Exposure Factor**	
	Noncarcinogens	Carcinogens
Source Material Ingestion		
Intake Rate	6.25 mg/day	6.25 mg/day
Exposure Frequency	104 days/year	104 days/year
Exposure Duration	25 years	25 years
Body Weight	70 kg	70kg
Averaging Time	9,125 days	25,550 days
Dust Inhalation		
Intake Rate	2.5 m3/day	2.5 m3/day
Exposure Frequency	104 days/year	250 days/year
Exposure Duration	25 years	25 years
Body Weight	70 kg	70 kg
Averaging Time	9,125 days	25,550 days
External Gamma Exposure		
Gamma Shielding Factor (S_e) unitless	-	0.0
Gamma Exposure Factor (T_e) unitless	-	0.012

* Average exposure factors were not developed for the current industrial receptors because site-specific data were used.

Specific intake rates for the current industrial scenarios are derived by dividing EPA default industrial intake rates by (hours spent at source material each day/8 hours).

Table 13
Future On-site Industrial Scenario Exposure Factors

Route	RME Exposure Factors	
	Noncarcinogens	Carcinogens
Source Material Ingestion		
Intake Rate	50 mg/day	50 mg/day
Exposure Frequency	250 days/year	250 days/year
Exposure Duration	25 years	25 years
Body Weight	70 kg	70 kg
Averaging Time	9,125 days	25,550 days
Dust Inhalation		
Intake Rate	20 m3/day	20 m3/day
Exposure Frequency	250 days/year	250 days/year
Exposure Duration	25 years	25 years
Body Weight	70 kg	70 kg
Averaging Time	9,125 days	25,550 days
External Gamma Exposure		
Gamma Shielding Factor (S_e) unitless	-	0.0
Gamma Exposure Factor (T_e) unitless	-	0.23

Table 14
Future Offsite Residential Scenario Exposure Factors

Route	RME Exposure Factors		AVG Exposure Factors	
	Noncarcinogens	Carcinogens	Noncarcinogens	Carcinogens
Soil Ingestion				
Ingestion Factor[a] (age and body weight adjusted)	114 mg/year / kg/day	114 mg/year / kg/day	100 mg/day	100 mg/day
Exposure Frequency	350 days/year	350 days/year	275 days/year	275 days/year
Averaging Time	10,950 days	25,550 days	3,285 days	25,550 days
Dust Inhalation				
Intake Rate	20 m^3/day	20 m^3/day	20 m^3/day	20 m^3/day
Exposure Frequency	350 days/year	350 days/year	275 days/year	275 days/year
Exposure Duration	30 years	30 years	9 years	9 years
Body Weight	70 kg (adult)	70 kg (adult)	70 kg	70 kg (adult)
Averaging Time	10,950 days	25,550 days	3,285 days	25,550 days
Water Ingestion				
Intake Rate	2 l/day	2 l/day	1.4 l/day	1.4 l/day
Exposure Frequency	350 days/year	350 days/year	275 days/year	275 days/year
Exposure Duration	30 years	30 years	9 years	9 years
Body Weight	70 kg	70 kg	70 kg	70 kg
Averaging Time	10,950 days	25,550 days	3,285 days	25,550 days
Dermal Contact With Water				
Contact Rate	0.17 hr/day (bathing) 2.6 hr/day (swimming)	0.12 hr/day (bathing) 2.6 hr/day (swimming)	0.12 hr (bathing) 2.6 hr (swimming)	0.6 mg/cm^2
Exposure Frequency	350 days/year (bathing) 7 days/year (swimming)	350 days/year (bathing) 7 days/year (swimming)	275 days/year (bathing) 7 days/year (swimming)	275 days/year (bathing) 7 days/year (swimming)
Skin Surface Area Exposed	20,000 cm^2	20,000 cm^2	20,000 cm^2	20,000 cm^2
Exposure Duration	30 years	30 years	9 years	9 years
Body Weight	70 kg	70 kg	70 kg	70 kg
Averaging Time	10,950 days	25,550 days	3,285 days	25,550 days
Absorption	Chemical Specific		Chemical Specific	
Garden Produce Ingestion				
Intake Rate[b] (Roots) Intake Rate[b] (Fruits) Intake Rate[b] (Leafs) B_v (dry wt)	dry weight 37 g/day 12 g/day 3 g/day Chemical-Specific	37 g/day 12 g/day 3 g/day Chemical-Specific	Not Evaluated	
Exposure Frequency	120 days/year	120 days/year		
Exposure Duration	30 years	30 years		
Body Weight	70 kg	70 kg		
Averaging Time	10,950 days	25,550 days		
External Gamma Exposure				
Gamma Shielding Factor (S_e) unitless		0.0		
Gamma Exposure Factor (T_e) unitless		0.012		

a = Based on intake rates of 200 mg/day child and 100mg/day adult and body weight child of 15 kg and body weight adult of 70 kg.

b = Belcher and Travis (1989)

Table 15
Summary of Human Health Risks
Current Industrial Scenarios

INGESTION PATHWAY - NONCARCINOGENIC RISKS

COPC	Source Area			
	FeP	CAL 1	CAL 2	ROR
Molybdenum	< .01	< .01	< .01	< .01
Vanadium	0.03	0.01	0.01	0.09

INGESTION AND EXTERNAL PATHWAYS - CARCINOGENIC RISKS

COPC	Source Area													
	FeP				CAL 1			CAL 2			ROR			
	oral[a]	Ext	Inhalation[b]	Total	oral	Ext	Total	oral	Ext	Total	oral	Ext	Inhalation	Total
Ra-226+D	4.7E-09	4.3E-06	1.5E-05	1.9E-05										
U-235+D	1.1E-09	3.1E-07		3.1E-07	1.1E-10	3.1E-08	3.1E-08	1.6E-09	1.8E-08	1.9E-09	4.4E-09	4.9E-08		5.4E-08
U-238+D	1.3E-08	3.0E-07		3.1E-07	7.1E-09	1.7E-07	1.7E-07	1.0E-07	9.7E-08	2.0E-07	2.1E-07	2.0E-07		4.0E-07
All Radionuclides Combined				1.9E-05										

INHALATION PATHWAY - CARCINOGENIC RISKS

COPC	Source Area			
	FeP	CAL 1	CAL 2	ROR
Arsenic	8.5E-09	3.9E-09	2.3E-09	4.9E-09
Nickel	5.0E-09	2.3E-09	3.1E-09	1.8E-08

[a] = See Table C-2
[b] = See Table E-1, 2
FEP = Ferrophosphorus Pile
CAL 1, 2 = Calcine Tailings
ROR = Roaster Rejects

Table 16
Summary of Human Health Risks
Future Industrial Scenarios

COPC	Source Piles													
	Boiler Blowdown		Calcine Tailings		Ferrophos		Map Ponds		Roaster Rejects		Scrubber Pond		S-X Pond	
	Cancer[a]	HQ	Cancer[a]	HQ	Cancer[a]	HQ	Cancer[a]	HQ	Cancer[a]	HQ	Cancer[a]	HQ	Cancer[a]	HQ
Copper		---		---		---		---		---		0.18		---
Molybdenum		0.01		0.00		0.01		0.01		0.04		0.10		0.02
Vanadium		0.27		0.14		0.37		0.73		1.70		0.75		0.15
Ra-226	2.2E-04		---		2.1E-04		---		---		---		3.5E-04	
U-235	3.1E-07		6.0E-07		2.8E-06		2.7E-07		7.7E-07		5.4E-06		1.4E-06	
U-238	1.3E-06		3.5E-06		2.8E-06		1.6E-06		3.3E-06		6.3E-07		3.2E-07	
TOTAL	2.2E-04		4.1E-06		2.2E-04		1.9E-06		4.1E-06		6.0E-06		3.5E-04	

a = total cancer risk (oral, external, and inhalation)

Background industrial risk for Ra-226, U-235, and U-238 = 2.0E-04

Uranium-238 values are estimated from a mass value reported for total uranium; ppm (total uranium) x 0.332 = pCi/mg U-238

--- Chemical is not a COPC for these source piles.

Table 17
Summary of Human Health Risks
Future Residential Scenario, Northern Border

Soil COPC	Non-Cancer Risk (HQ)	Cancer Risk
Nickel	<.01	---
Vanadium	.03	---
Air COPC	Non-Cancer Risk (HQ)	Cancer Risk
Arsenic	---	1.7E-09
Nickel	---	1.2E-08

Table 18
Summary of Human Health Risks
Future Residential Scenario, Southern Border

Ground Water COPC	Non-Cancer Risk (HQ)		Cancer Risk	
	(RME) HQ	(AVG) HQ	RME	AVG
Aluminum	0.35	0.05		
Arsenic	0.63	0.25	1.4E-04	1.0E-04[a]
Barium	0.05	0.01		
Cadmium	0.00	0.00		
Copper	0.04	0.01		
Fluoride	0.15	0.07		
Manganese	2.93	1.06		
Molybdenum	32.40	13.17		
Nickel	0.05	0.02		
Nitrate	0.18	0.07		
Selenium	0.02	0.01		
Silver	0.00	0.00		
Vanadium	13.50	6.39		
TPH	3.00	0.56		
Tributyl Phosphate	2.59	0.66		
Soil COPC	**Non-Cancer Risk (HQ)**		**Cancer Risk**	
	(RME) HQ	(AVG) HQ	RME	AVG
Nickel	0.01	0.00		
Vanadium	0.14	0.03		
U-238+D			1.3E-06[b]	

[a] = This risk is equivalent to background risks (at concentrations of 0.005 mg/l)

[b] = The average concentration was less than background; therefore, no average risk calculated.

Table 18 (Continued)
Summary of Human Health Risks
Future Residential Scenario, Southern Border

Air COPC	Non-Cancer Risk (HQ)		Cancer Risk
	(RME) HQ	(AVG) HQ	
Arsenic			1E-07
Nickel			1.6E-07
Dermal Exposure to Ground Water COPC	Non-Cancer Risk (HQ)		Cancer Risk
	(RME) HQ	(AVG) HQ	
TPH	<.01		
Tributyl Phosphate	<.01		
Garden Scenario COPC	Non-Cancer Risk (HQ)		Cancer Risk
	(RME) HQ	(AVG) HQ	
Nickel	0.18		
Vanadium	0.01		
Uranium-238+D			1.3E-08

APPENDIX D
ADMINISTRATIVE RECORD INDEX

KERR-McGEE CHEMICAL CORPORATION
ADMINISTRATIVE RECORD
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September 26, 1995

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

ADMINISTRATIVE RECORD INDEX

for

KERR-MCGEE CHEMICAL CORPORATION

SUPERFUND SITE

Soda Springs, Idaho

September 27, 1995

(KMCAR) KERR MCGEE CHEMICAL CORPORATION - ADMINISTRATIVE RECORD INDEX

HEADING: 1. 0. . SITE IDENTIFICATION

SUB-HEAD: 1. 2. . Site Inspection Report

1. 2. . - 0000001
DATE: 04/01/88 PAGES: 154
AUTHOR: Unknown/Ecology & Environment, Inc.
ADDRESSEE: John E. Osborn/EPA
DESCRIPTION: Final Site Inspection Report for Kerr McGee Chemical Corporation (KMCC) Soda Springs, Idaho

SUB-HEAD: 1. 3. . Sampling and Analysis Data

1. 3. . - 0000001
DATE: 03/14/87 PAGES: 17
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Analyses required on metals and physical & general inorganics and ion chromatograph. Also includes seven organics traffic reports (raw data located at EPA Region 10, Seattle, WA)

1. 3. . - 0000002
DATE: 07/31/87 PAGES: 18
AUTHOR: Mark A. Ader/Ecology & Environment, Inc.
ADDRESSEE: J. Osborn/EPA
DESCRIPTION: Field Sample Data and Chain of Custody Sheets for samples taken at Kerr McGee (raw data located at EPA Region 10, Seattle, WA)

1. 3. . - 0000003
DATE: 09/09/87 PAGES: 36
AUTHOR: Patrick McGrath/Ecology & Environment, Inc.
ADDRESSEE: John E. Osborn/EPA
DESCRIPTION: QA of Case 7718 (Organics) Kerr McGee Chemical Company (raw data located at EPA Region 10, Seattle, WA)

1. 3. . - 0000004
DATE: 09/09/87 PAGES: 20
AUTHOR: Patrick McGrath/Ecology & Environment, Inc.
ADDRESSEE: John E. Osborn/EPA
DESCRIPTION: QA of Case 7718 (Organics) Kerr McGee Chemical Company (raw data located at EPA Region 10, Seattle, WA)

1. 3. . - 0000005
DATE: 01/07/88 PAGES: 28
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA Region X Management System Sample/Project Analysis Results Kerr-McGee Industries (raw data located at EPA Region 10, Seattle, WA)

SUB-HEAD: 1. 4. . Hazardous Ranking Score (HRS) Package

1. 4. . - 0000001
DATE: 10/26/88 PAGES: 22
AUTHOR: L. S. Russell/The Mitre Corporation
ADDRESSEE: David Bennett/EPA
DESCRIPTION: Transmittal letter with attached Hazardous Ranking Score Package

HEADING: 2. 0. . REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS)

SUB-HEAD: 2. 1. . Correspondence

2. 1. . - 0000001
DATE: 05/13/91 PAGES: 6
AUTHOR: George W. Condrat/Dames & Moore
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter summarizing the proposed methodologies and locations for seismic geophysical surveys - KMCC, Idaho Facility

2. 1. . - 1035894
DATE: 09/25/91 PAGES: 15
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter regarding review of the Source Characterization Memorandum dated September, 1991

2. 1. . - 1035895
DATE: 10/09/91 PAGES: 3
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Summary of key points discussed in a teleconference held 10/05/91

2. 1. . - 1035896
DATE: 10/21/91 PAGES: 6
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: EPA comments on the Gamma Survey Plan

2. 1. . - 1035897
DATE: 10/22/91 PAGES: 3
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter regarding Enseco and TMA/Eberline Laboratory Quality Assurance Plans and EPA comments on the Air Modeling Plan

2. 1. . - 1035898
DATE: 10/24/91 PAGES: 4
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter and enclosures related to the Soda Springs RI/FS project

2. 1. . - 1035421
DATE: 12/13/91 PAGES: 5
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter stating that Enseco may have exceeded holding times on some of the parameters being analyzed for the Soda Springs remedial investigation project (with attachments)

2. 1. . - 1035422
DATE: 01/10/92 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Follow up letter to a telephone conference on 01/10/92 regarding detection limit for Polonium 210

2. 1. . - 1035423
DATE: 01/24/92 PAGES: 3
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter and attached technical memorandum which discusses the rationale behind the approach used for analysis Po-210 in the ferrophos

2. 1. . - 1035424
DATE: 01/30/92 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: File/EPA
DESCRIPTION: Record of Communication documenting a telephone call with Rick Poeton of Air Programs on 01/30/92

2. 1. . - 1035425
DATE: 03/13/92 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter regarding review of the preliminary data package submitted to EPA at a meeting on 02/11/92

2. 1. . - 1035426
DATE: 04/07/92 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter requesting that specified wells be resampled

2. 1. . - 1035427
DATE: 04/30/92 PAGES: 2
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Charles Polityka/DOI
DESCRIPTION: Letter of transmittal for the Preliminary Site Characterization Report for Phase 1, Volumes 1 and 2 (not included).

2. 1. . - 1035428
DATE: 05/07/92 PAGES: 2
AUTHOR: William D. Loughlin/Dames & Moore
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter regarding revisions to the Phase I Preliminary Site Characterization Report of 04/24/92

2. 1. . - 1035429
DATE: 05/07/92 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: EPA comments on the Dames & Moore sample plans for the sampling round that begins 05/11/92

2. 1. . - 1035430
DATE: 05/28/92 PAGES: 13
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter and attached EPA comments on the Preliminary Site Characterization Report

2. 1. . - 1035899
DATE: 06/18/92 PAGES: 3
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter regarding SAIC site visit to Soda Springs on June 23rd and 24th

2. 1. . - 1035431
DATE: 07/07/92 PAGES: 14
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Follow up letter to a telephone conference of 07/02/92 regarding EPA comments on Kerr-McGee's Phase II Sampling and Analysis Plan (with attachments)

2. 1. . - 1035432
DATE: 08/11/92 PAGES: 7
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter with attachments regarding EPA and IDHW comments on the Phase II Sampling and Analysis Plan

2. 1. . - 1035433
DATE: 09/09/92 PAGES: 2
AUTHOR: Beth Feeley/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter providing approval for the August 1992 RI/FS Phase II Sampling and Analysis Plan

2. 1. . - 1035900
DATE: 11/13/92 PAGES: 8
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Response to EPA's request for information regarding outdoor work practices at the Soda Springs facility and commercial agricultural production in the vicinity of the site

2. 1. . - 1035901
DATE: 01/29/93 PAGES: 3
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Summary of Kerr-McGee Chemical Corporation's comments on the Preliminary Ecological Evaluation Report

2. 1. . - 1035902
DATE: 06/08/93 PAGES: 10
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Letter and attached comments on SAIC's Preliminary Draft Human Health Risk Assessment

2. 1. . - 1035904
DATE: 09/15/93 PAGES: 1
AUTHOR: Timothy H. Brincefield/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter of transmittal for the Draft Human Health and Ecological Risk Assessments (filed as document number 2.8-1035461)

2. 1. . - 1035903
DATE: 10/11/93 PAGES: 2
AUTHOR: Carol Sweeney/EPA
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Memo regarding comments on revised Risk Assessment for Kerr-McGee Chemical Corp. Site

2. 1. . - 1035905
DATE: 10/22/93 PAGES: 2
AUTHOR: Timothy H. Brincefield/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter regarding Kerr-McGee Soda Springs Facility Risk Assessments and RI/FS Schedule

2. 1. . - 1035906
DATE: 09/29/94 PAGES: 3
AUTHOR: Timothy H. Brincefield/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Fax memo and attachments regarding the table of potential effluent limitations consistent with NPDES requirements

2. 1. . - 1035908
DATE: 03/27/95 PAGES: 2
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Response letter regarding changes to be made to the Remedial Investigation Report dated 12/17/93

2. 1. . - 1035909
DATE: 04/20/95 PAGES: 1
AUTHOR: Peter Contreras/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Approval of the Draft Sampling Plan for Finch Spring

2. 1. . - 1040466
DATE: 07/11/95 PAGES: 4
AUTHOR: Peter Contreras/EPA
ADDRESSEE: Scott Sprague/Kerr-McGee
DESCRIPTION: Letter to document telephone conversation of 06/29/95 regarding the upcoming Record of Decision anticipated for the summer and the current status of Kerr-McGee's process changes

2. 1. . - 1040467
DATE: 07/17/95 PAGES: 2
AUTHOR: Scott B. Sprague/Kerr-McGee
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Letter regarding schedule for implementing process changes

2. 1. . - 1040468
DATE: 08/23/95 PAGES: 2
AUTHOR: Scott B. Sprague/Kerr-McGee
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Letter regarding schedule for implementing process changes

SUB-HEAD: 2. 2. . Work Plan

2. 2. . - 0000001
DATE: 08/01/91 PAGES: 171
AUTHOR: Unknown/James M. Montgomery Consulting Engineers, Inc.
ADDRESSEE: Unknown/KMCC
DESCRIPTION: Remedial Investigation/Feasibility Study Work Plan Kerr-McGee Chemical Corporation Soda Springs, Idaho (RI/FS Project Plans Volume 1 of 2. See AR 2.3 0001 for Volume 2)

2. 2. . - 1035439
DATE: 09/13/91 PAGES: 1
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter to clarify a point in the Radionuclide section of the Source Chracterization Memorandum submitted on 09/04/91

SUB-HEAD: 2. 2. 1. Comments

2. 2. 1. - 0000001
DATE: 01/16/91 PAGES: 16
AUTHOR: John Meyer/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Comments on draft RI/FS Work Plan and draft Sampling and Analysis Plan for Kerr-McGee Soda Springs facility

2. 2. 1. - 0000002
DATE: 04/19/91 PAGES: 26
AUTHOR: John Meyer/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Transmittal of EPA Comments on the Kerr-McGee RI/FS Work Plan for the Soda Springs Facility, March 1991

2. 2. 1. - 0000003
DATE: 05/14/91 PAGES: 8
AUTHOR: Russell H. Jones/KMCC
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Record of Understanding Kerr-McGee Chemical Corporation Soda Springs RI/FS Project Plans

2. 2. 1. - 0000004
DATE: 05/15/91 PAGES: 3
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Summary of differences in EPA's understanding of how RI/FS Work Plan issues were resolved

2. 2. 1. - 0000005
DATE: 05/15/91 PAGES: 4
AUTHOR: Russell H. Jones/KMCC
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter submitted to record telephone conversation between EPA and KMCC on 5/9/91 regarding clarification of EPA comments on the Soda Springs RI/FS Work Plan dated 4/19/91

2. 2. 1. - 0000006
DATE: 05/16/91 PAGES: 3
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Notice that although EPA and KMCC are in agreement on the majority of comments on the KMCC RI/FS Work Plan, further clarification of differences in understanding is provided

2. 2. 1. - 0000007
DATE: 05/21/91 PAGES: 15
AUTHOR: Russell H. Jones/KMCC
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Cover letter and attached summary prepared by Dames & Moore which responds point by point to the comments contained in EPA's 4/19/91 letter

2. 2. 1. - 0000008
DATE: 07/03/91 PAGES: 13
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: EPA Comments on and Direction for Revising the RI/FS Work Plan for the Kerr-McGee Superfund Site in Soda Springs

2. 2. 1. - 0000009
DATE: 08/02/91 PAGES: 6
AUTHOR: George W. Condrat/Dames & Moore
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: August, 1991 Work Plan Revision Response to EPA Comments KMCC Soda Springs RI/FS

2. 2. 1. - 0000010
DATE: 08/08/91 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter regarding a few minor adjustments to the KMCC August 1991 page revisions to the RI/FS Work Plan

SUB-HEAD: 2. 3. . Sampling and Analysis Plan (SAP)

2. 3. . - 0000001
DATE: 08/01/91 PAGES: 545
AUTHOR: Unknown/James M. Montgomery Consulting Engineers, Inc.
ADDRESSEE: Unknown/KMCC
DESCRIPTION: RI/FS Sampling and Analysis Plan (RI/FS Project Plans Volume 2 of 2. See AR 2.2 0001 for Volume 1)

2. 3. . - 1035445
DATE: 09/18/91 PAGES: 15
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Air Modeling Plan for Kerr-McGee Chemical Corporation RI/FS

2. 3. . - 1035892
DATE: 10/21/91 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Memo regarding review of Laboratory Quality Assurance Project Plan for Kerr-McGee Chemical Corporation RI/FS Soda Springs, Id, 10/03/91, Enseco, Inc.

2. 3. . - 1035893
DATE: 10/22/91 PAGES: 5
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Enseco Product Summary; Extractable Petroleum Hydrocarbons by GC/FID

2. 3. . - 1035446
DATE: 04/28/92 PAGES: 12
AUTHOR: William D. Loughlin/Dames & Moore
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter and attached proposed sample collection and analysis plan for the May 1992 sample round

2. 3. . - 1035447
DATE: 05/05/92 PAGES: 12
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter and attached revised sampling plan for the May 11th sampling event at the Soda Springs facility

2. 3. . - 1035448
DATE: 08/26/92 PAGES: 72
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: August 1992 RI/FS Phase II Sampling and Analysis Plan

SUB-HEAD: 2. 4. . Health and Safety Plan

2. 4. . - 0000001
DATE: 10/01/90 PAGES: 71
AUTHOR: John G. Danby/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Health and Safety Plan Remedial Investigation Kerr-McGee Chemical Corporation Soda Springs, Idaho

SUB-HEAD: 2. 5. . RI/FS Data

2. 5. . - 1035449
DATE: 01/08/92 PAGES: 14
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Memo and attached data validation report of fluoride analysis

2. 5. . - 1035450
DATE: 01/24/92 PAGES: 26
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Memo and attached inorganic data validation report

2. 5. . - 1035451
DATE: 06/17/92 PAGES: 9
AUTHOR: J. Blazevich/EPA
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Report of data validation of BNA's for the Kerr-McGee Chemical Company project

2. 5. . - 1035452
DATE: 06/26/92 PAGES: 16
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Memo and attached data validation report of volatile organic analysis of samples

2. 5. . - 1035453
DATE: 06/30/92 PAGES: 9
AUTHOR: J. Blazevich/EPA
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Report of data validation of BNA's for the Kerr-McGee Chemical Company project

2. 5. . - 1035454
DATE: 07/06/92 PAGES: 27
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Memo and attached data validation report of inorganic analyses of samples

2. 5. . - 1035455
DATE: 07/06/92 PAGES: 13
AUTHOR: Katherine York/CSC
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Memo and attached corrected data report for Kerr McGee

SUB-HEAD: 2. 6. . Interim Reports and Technical Memoranda

2. 6. . - 1035456
DATE: 09/01/91 PAGES: 132
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Kerr-McGee
DESCRIPTION: Source Characterization Memorandum for Kerr-McGee Soda Springs RI/FS

2. 6. . - 1035457
DATE: 09/18/91 PAGES: 21
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Off-Site Ground Water and Surface Water Sampling Memorandum for Kerr-McGee Chemical Corporation RI/FS

2. 6. . - 1035458
DATE: 11/20/92 PAGES: 250
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Final Air Pathway Analysis Report for Kerr-McGee Chemical Corporation

SUB-HEAD: 2. 7. . Preliminary Site Characterization Report

2. 7. . - 1035459
DATE: 04/24/92 PAGES: 250
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Preliminary Site Characterization Report for Phase I at Soda Springs, Idaho Facility; RI/FS Phase I Report Volume 1 of 2 Report Text

2. 7. . - 1035460
DATE: 04/24/92 PAGES: 500
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Preliminary Site Characterization Report for Phase I at Soda Springs, Idaho Facility; RI/FS Phase I Report Volume 2 of 2 Appendices

SUB-HEAD: 2. 8. . Risk Assessment

2. 8. . - 1035462
DATE: 03/05/92 PAGES: 5
AUTHOR: Gary Pascoe/Environmental Toxicology International
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Memorandum regarding proposed exposure scenarios

2. 8. . - 1035461
DATE: 10/01/93 PAGES: 193
AUTHOR: Unknown/Science Applications International Corporation
ADDRESSEE: Unknown/EPA
DESCRIPTION: Draft Human Health and Ecological Risk Assessments for Kerr-McGee Chemical Corporation

SUB-HEAD: 2. 9. 1. Draft RI Report

2. 9. 1. - 1040255
DATE: 11/01/93 PAGES: 250
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Draft Remedial Investigation Report Volume 1 of 4 Main Text

2. 9. 1. - 1040256
DATE: 11/01/93 PAGES: 500
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Draft Remedial Investigation Report Volume 2 of 4 Appendices

2. 9. 1. - 1040257
DATE: 11/01/93 PAGES: 200
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Draft Remedial Investigation Report Volume 3 of 4 Appendices

2. 9. 1. - 1040258
DATE: 11/01/93 PAGES: 20
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Draft Remedial Investigation Report Volume 4 of 4 Attachments

SUB-HEAD: 2. 9. 2. Correspondence/Comments

2. 9. 2. - 1035934
DATE: 11/09/93 PAGES: 1
AUTHOR: James C. Eldridge/Science Applications International Corporation
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comments on Round 6 Proposed Ground Water Sampling

2. 9. 2. - 1035935
DATE: 01/28/94 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comments on the Draft Remedial Investigation Report

2. 9. 2. - 1035936
DATE: 01/28/94 PAGES: 4
AUTHOR: Lorraine Edmond/EPA
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comments on the Draft Remedial Investigation Report

2. 9. 2. - 1035937
DATE: 02/02/94 PAGES: 1
AUTHOR: Joe Goulet/EPA
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comments on the Draft Remedial Investigation Report

2. 9. 2. - 1035938
DATE: 02/02/94 PAGES: 15
AUTHOR: Andrew Hafferty/Ecology & Environment, Inc.
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comments on the Draft Remedial Investigation Report

2. 9. 2. - 1035939
DATE: 02/07/94 PAGES: 2
AUTHOR: James C. Eldridge/Science Applications International Corporation
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Response to US Fish and Wildlife Service Comments on the Draft Remedial Investigation Report

2. 9. 2. - 1035940
DATE: 06/13/94 PAGES: 14
AUTHOR: Timothy H. Brincefield/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: EPA comments on the Draft Remedial Investigation Report

2. 9. 2. - 1035941
DATE: 07/12/94 PAGES: 36
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Response to EPA's comments on the Draft Remedial Investigation Report

2. 9. 2. - 1035942
DATE: 01/26/95 PAGES: 3
AUTHOR: Timothy H. Brincefield/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter addressing outstanding issues and comments with respect to the Draft Remedial Investigation Report

2. 9. 2. - 1035987
DATE: 05/18/95 PAGES: 3
AUTHOR: Raymond Wayne/Ecology & Environment, Inc.
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Modem transmission of comments on the Final Remedial Investigation Report

SUB-HEAD: 2. 9. 3. Final RI Report

2. 9. 3. - 1040251
DATE: 04/25/95 PAGES: 500
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Final Remedial Investigation Report Volume 1 of 4 Main Text

2. 9. 3. - 1040252
DATE: 04/25/95 PAGES: 800
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Final Remedial Investigation Report Volume 2 of 4 Appendices A-B

2. 9. 3. - 1040253
DATE: 04/25/95 PAGES: 250
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Final Remedial Investigation Report Volume 3 of 4 Appendices C-D

2. 9. 3. - 1040254
DATE: 04/25/95 PAGES: 500
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Final Remedial Investigation Report Volume 4 of 4 Attachments 1-2

SUB-HEAD: 2. 9. 4. Finch Spring Sediment Characterization Program

2. 9. 4. - 1035944
DATE: 08/12/94 PAGES: 15
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Letter and attached report titled Evaluation of the US Fish and Wildlife Service Recommendation for Further Environmental Sampling at Finch and Big Springs

2. 9. 4. - 1035945
DATE: 09/26/94 PAGES: 22
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Letter and revised report titled Evaluation of the US Fish and Wildlife Service Recommendation for Further Environmental Sampling at Finch and Big Springs

2. 9. 4. - 1035946
DATE: 11/11/94 PAGES: 2
AUTHOR: Bill/Dames & Moore
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Fax message and attached calculation sheet for Theoretical Hazards of Ingesting Sediment from Finch Pond to Mallard Ducks

2. 9. 4. - 1035947
DATE: 11/22/94 PAGES: 3
AUTHOR: Rone A. Brewer/Ecology & Environment, Inc.
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Modem transmission of the notes from the conference call regarding the need for further sampling at Finch Spring

2. 9. 4. - 1035948
DATE: 11/30/94 PAGES: 2
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Letter regarding the need for sediment sammpling in Finch Pond

2. 9. 4. - 1035949
DATE: 12/06/94 PAGES: 2
AUTHOR: Rone A. Brewer/Ecology & Environment, Inc.
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Modem transmission to comment on the waterfowl sediment ingestion risk assessment notes provided to EPA by Dames & Moore for Kerr-McGee Chemical Corporation

2. 9. 4. - 1035907
DATE: 12/28/94 PAGES: 2
AUTHOR: Peter Contreras/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter regarding Finch Spring sediment sampling

2. 9. 4. - 1035951
DATE: 01/20/95 PAGES: 2
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Letter and attached outline of the Approach to Sediment Characterization at Finch Pond

2. 9. 4. - 1035952
DATE: 02/01/95 PAGES: 1
AUTHOR: Joe Goulet/EPA
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Comments on the Approach to Sediment Characterization at Finch Pond

2. 9. 4. - 1035953
DATE: 02/06/95 PAGES: 3
AUTHOR: Rone A. Brewer/Ecology & Environment, Inc.
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Modem transmission to comment on the proposed Approach to Sediment Characterization at Finch Pond

2. 9. 4. - 1035954
DATE: 02/17/95 PAGES: 2
AUTHOR: Andrew Hafferty/Ecology & Environment, Inc.
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Modem transmission to document the teleconference on the PRP's proposed Approach to Sediment Characterization at Finch Pond

2. 9. 4. - 1035955
DATE: 03/30/95 PAGES: 32
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Draft Sample Collection and Analysis Plan for Finch Pond Sediment Characterization Program for Kerr-McGee Soda Springs, Idaho RI/FS

2. 9. 4. - 1035956
DATE: 04/06/95 PAGES: 3
AUTHOR: Rone A. Brewer/Ecology & Environment, Inc.
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Modem transmission to provide review and comment on the Draft Sample Collection and Analysis Plan for Finch Pond Sediment Characterization Program

2. 9. 4. - 1035957
DATE: 04/12/95 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Memo with comments on the draft Field Operations Work Plan for Oversight at Finch Pond Soda Spring ID

2. 9. 4. - 1035958
DATE: 04/19/95 PAGES: 12
AUTHOR: Andrew Hafferty/Ecology & Environment, Inc.
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Letter and attached Final Work Plan for Field Oversight at the Kerr-McGee/Finch Spring Site

2. 9. 4. - 1035959
DATE: 04/20/95 PAGES: 1
AUTHOR: Peter Contreras/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Approval of the Draft Sample Collection and Analysis Plan, Finch Pond Sediment Characterization Program for Kerr-McGee Soda Springs Idaho RI/FS

2. 9. 4. - 1040469
DATE: 06/01/95 PAGES: 21
AUTHOR: Unknown/Ecology & Environment, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Trip Report for Field Oversight at the Kerr-McGee/Finch Spring Site in Soda Springs, Idaho

2. 9. 4. - 1040470
DATE: 06/09/95 PAGES: 30
AUTHOR: Maricia M. Alforque/EPA
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Quality assurance review of the analysis for aluminum, molybdenum, and vanadium of twenty soil samples from the Kerr-McGee/Finch Spring site

2. 9. 4. - 1040471
DATE: 06/16/95 PAGES: 1
AUTHOR: Andrew Hafferty/Ecology & Environment, Inc.
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Letter of transmittal for Trip Report for Field Oversight of PRP Sampling of Finch Spring sediments and nearby soils (report is filed as document number 2.9.4-1040469)

2. 9. 4. - 1040472
DATE: 07/24/95 PAGES: 66
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Letter and attached statistical analysis of the Finch pond sampling results

2. 9. 4. - 1040473
DATE: 07/27/95 PAGES: 1
AUTHOR: Andrew Hafferty/Ecology & Environment, Inc.
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Modem transmission regarding preliminary evaluation of findings presented in the 07/24/95 Kerr-McGee Statistical Analysis of Finch Pond Sampling Results

2. 9. 4. - 1040474
DATE: 08/16/95 PAGES: 1
AUTHOR: Andrew Hafferty/Ecology & Environment, Inc.
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Modem transmission regarding data validation summary check

2. 9. 4. - 1040475
DATE: 08/16/95 PAGES: 1
AUTHOR: Andrew Hafferty/Ecology & Environment, Inc.
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Modem transmission regarding preliminary evaluation of findings presented in the 07/24/95 Kerr-McGee Statistical Analysis of Finch Pond Sampling Results

2. 9. 4. - 1040476
DATE: 08/18/95 PAGES: 6
AUTHOR: Rone A. Brewer/Ecology & Environment, Inc.
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Modem transmission to compare the data obtained for the EPA during oversight procedures with data obtained by the PRPs during sediment sampling at Finch Spring/Pond in Soda Springs, Idaho

2. 9. 4. - 1040477
DATE: 08/18/95 PAGES: 2
AUTHOR: Rone A. Brewer/Ecology & Environment, Inc.
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Modem transmission to review the ecological assessment for Finch Spring using the recent sediment sampling data (KMCC 1995) for aluminum, molybdenum, and vanadium

2. 9. 4. - 1040478
DATE: 08/24/95 PAGES: 1
AUTHOR: Peter Contreras/EPA
ADDRESSEE: Susan Burch/U. S. Fish & Wildlife Service
DESCRIPTION: Letter regarding results of Kerr-McGee's sediment sampling activities at Finch pond conducted the week of 05/15/95 (enslosure not attached)

2. 9. 4. - 1040479
DATE: 09/20/95 PAGES: 2
AUTHOR: Peter Contreras/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter stating that based on EPA's review of information provided by Kerr-McGee, EPA is not planning further actions to characterize ecological effects at Finch Pond stemming from releases at the Kerr-McGee Superfund site

SUB-HEAD: 2.10. 1. Correspondence/Comments

2.10. 1. - 1035960
DATE: 11/23/93 PAGES: 5
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Letter and attached Remedial Action Objectives Memorandum

2.10. 1. - 1035961
DATE: 12/14/93 PAGES: 2
AUTHOR: Carol Sweeney/EPA
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comments on Remedial Action Objectives Memorandum

2.10. 1. - 1035962
DATE: 12/20/93 PAGES: 1
AUTHOR: Andrew Hafferty/Ecology & Environment, Inc.
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comment on the Remedial Action Objectives Memorandum

2.10. 1. - 1035963
DATE: 01/06/94 PAGES: 8
AUTHOR: Andrew Hafferty/Ecology & Environment, Inc.
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Letter and attached comments on the Development and Screening Alternatives Memorandum

2.10. 1. - 1035964
DATE: 01/06/94 PAGES: 9
AUTHOR: James C. Eldridge/Science Applications International Corporation
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comments on the Remedial Action Objectives Memorandum and the Development and Screening Alternatives Memorandum

2.10. 1. - 1035965
DATE: 01/07/94 PAGES: 2
AUTHOR: Lorraine Edmond/EPA
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Memo regarding comments on the Screening Alternatives Memorandum

2.10. 1. - 1035927
DATE: 01/17/94 PAGES: 2
AUTHOR: Ray Wayne/Ecology & Environment, Inc.
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comments on EPA memoranda on the PRP's proposed approach to groundwater modeling at Kerr-McGee

2.10. 1. - 1035967
DATE: 02/10/94 PAGES: 4
AUTHOR: James C. Eldridge/Science Applications International Corporation
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Revised comments on Development and Screening Alternatives Memorandum

2.10. 1. - 1035968
DATE: 03/24/94 PAGES: 4
AUTHOR: Lorraine Edmond/EPA
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comments on Ground Water Modeling Plan

2.10. 1. - 1035969
DATE: 04/06/94 PAGES: 11
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Response to comments on the draft Ground Water Modeling Plan

2.10. 1. - 1035970
DATE: 06/17/94 PAGES: 6
AUTHOR: Timothy H. Brincefield/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Comments on Remedial Action Objectives and Development of Screening Alternatives Memoranda

2.10. 1. - 1035971
DATE: 07/06/94 PAGES: 4
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Response to EPA comments providing additional information on adsorption coefficient values to be used in the modeling effort

2.10. 1. - 1035972
DATE: 07/08/94 PAGES: 1
AUTHOR: Timothy H. Brincefield/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter granting extension for submission of the revised Remedial Action Objectives Memorandum and the Development and Screening Alternatives Memorandum

2.10. 1. - 1035974
DATE: 10/26/94 PAGES: 12
AUTHOR: Timothy H. Brincefield/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter and comments on revised Development and Screening Memorandum

2.10. 1. - 1035975
DATE: 11/02/94 PAGES: 3
AUTHOR: Lorraine Edmond/EPA
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comments on the draft interim Ground Water Modeling Report

2.10. 1. - 1035977
DATE: 11/07/94 PAGES: 2
AUTHOR: David Anderson/Ecology & Environment, Inc.
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Modem transmission regarding comments on the draft Interim Ground Water Modeling Report

2.10. 1. - 1035976
DATE: 11/14/94 PAGES: 4
AUTHOR: Peter Contreras/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter and attached comments on the draft Interim Groundwater Modeling Report

2.10. 1. - 1040183
DATE: 12/21/94 PAGES: 5
AUTHOR: Timothy H. Brincefield/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter and approval of the Draft Final Development and Screening Alternatives Memorandum dated 11/15/94

2.10. 1. - 1035979
DATE: 01/23/95 PAGES: 10
AUTHOR: Unknown/State of Idaho
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Handwritten transmittal page from Gordon Brown with attached KMCC Raffinate Evaporation Pond information

2.10. 1. - 1035980
DATE: 02/01/95 PAGES: 2
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Fax cover sheet and attached letter requesting an extension to the submittal deadline for the Comparative Analysis Report

2.10. 1. - 1035981
DATE: 02/02/95 PAGES: 3
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Fax cover sheet with attached letter and proposed agenda for the meeting on 02/07/95 between Kerr-McGee Chemical Corporation and EPA

2.10. 1. - 1035982
DATE: 02/03/95 PAGES: 1
AUTHOR: Peter Contreras/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter granting an extension of the submittal due date for the Comparative Analysis Report

2.10. 1. - 1035983
DATE: 02/17/95 PAGES: 3
AUTHOR: Scott B. Sprague/Kerr-McGee
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Letter describing the plant process changes that Kerr-McGee Chemical Corporation is planning to implement in order to become a zero discharge facility

2.10. 1. - 1040262
DATE: 02/24/95 PAGES: 2
AUTHOR: David Anderson/Ecology & Environment, Inc.
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Modem transmission to comment on the Revised Draft Groundwater Modeling Report and Volume 3 of the Comparative Analysis for Kerr-McGee Superfund site

2.10. 1. - 1035984
DATE: 02/27/95 PAGES: 2
AUTHOR: Lorraine Edmond/EPA
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Memo regarding comments on the draft Comparative Analysis Report

2.10. 1. - 1040261
DATE: 03/15/95 PAGES: 4
AUTHOR: Andrew Hafferty/Ecology & Environment, Inc.
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Modem transmission to document the EPA/PRP meeting that took place on 03/01/95

2.10. 1. - 1040260
DATE: 03/31/95 PAGES: 17
AUTHOR: John Chen/Ecology & Environment, Inc.
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Modem transmission to provide Revised Final Review and Comment on the Draft Comparative Analysis Report

2.10. 1. - 1035985
DATE: 04/04/95 PAGES: 22
AUTHOR: Peter Contreras/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Letter and attached comments on the draft Comparative Analysis Report

2.10. 1. - 1035986
DATE: 04/20/95 PAGES: 2
AUTHOR: Peter Contreras/EPA
ADDRESSEE: Russell H. Jones/Kerr-McGee
DESCRIPTION: Approval of the request for extension to Feasibility Study submittal

2.10. 1. - 1040259
DATE: 06/30/95 PAGES: 15
AUTHOR: Peter Contreras/EPA
ADDRESSEE: Scott Sprague/Kerr-McGee
DESCRIPTION: Transmittal letter with attachments and comments on the Draft Comparative Analysis Report

SUB-HEAD: 2.10. 2. Remedial Action Objectives

2.10. 2. - 1035988
DATE: 08/05/94 PAGES: 16
AUTHOR: Scott B. Sprague/Kerr-McGee
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Letter and attached revised Remedial Action Objectives Memorandum and response to comments provided by EPA

SUB-HEAD: 2.10. 3. Development and Screening

2.10. 3. - 1035989
DATE: 12/01/93 PAGES: 72
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Development and Screening Alternatives Memorandum

2.10. 3. - 1035990
DATE: 11/01/94 PAGES: 113
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Draft Final Development and Screening Alternatives Memorandum

2.10. 3. - 1035991
DATE: 12/06/94 PAGES: 13
AUTHOR: Scott B. Sprague/Kerr-McGee
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Letter and attachments regarding refinement of alternatives for detailed analysis

SUB-HEAD: 2.10. 4. Comparative Analysis Report

2.10. 4. - 1035992
DATE: 02/15/95 PAGES: 250
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Draft Comparative Analysis Report Volume 1 of 3 Main Text

2.10. 4. - 1035993
DATE: 02/15/95 PAGES: 250
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Draft Comparative Analysis Report Volume 2 of 3 Appendices

2.10. 4. - 1035994
DATE: 02/15/95 PAGES: 450
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Draft Comparative Analysis Report Volume 3 of 3 Revised Draft Ground Water Modeling Report

SUB-HEAD: 2.10. 5. Feasibility Study

2.10. 5. - 1040263
DATE: 06/01/95 PAGES: 350
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Draft Feasibility Study Report Volume 1 of 2 Main Text

2.10. 5. - 1040264
DATE: 06/01/95 PAGES: 250
AUTHOR: Unknown/Dames & Moore
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Draft Feasibility Study Report Volume 2 of 2 Appendices

SUB-HEAD: 2.10. 7. NPDES Application

2.10. 7. - 1036000
DATE: 07/13/93 PAGES: 75
AUTHOR: Scott B. Sprague/Kerr-McGee
ADDRESSEE: Cindi Hamiel/EPA
DESCRIPTION: Letter and attached NPDES Permit Application for the Kerr-McGee Chemical Corporation Soda Springs Vanadium Facility

2.10. 7. - 1035999
DATE: 06/16/94 PAGES: 1
AUTHOR: Scott B. Sprague/Kerr-McGee
ADDRESSEE: Cindi Godsey/EPA
DESCRIPTION: Letter regarding harmonic mean flow for the Bear River

2.10. 7. - 1035997
DATE: 01/10/95 PAGES: 3
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Gordon Brown/State of Idaho
DESCRIPTION: Letter regarding intention to meet with the State to discuss issues relating to the proposed waste water discharges from the Soda Springs facility

SUB-HEAD: 2.11. . Proposed Plan

2.11. . - 1040369
DATE: 08/01/95 PAGES: 11
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Proposed Plan for Kerr-McGee Superfund Site

SUB-HEAD: 2.11. 1. Comments

2.11. 1. - 1040480
DATE: 08/07/95 PAGES: 1
AUTHOR: Ralph R. Reeves/Unknown
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Letter commenting on the Proposed Plan and stating that Alternative 9 appears to provide a way of reaching the goal of clean ground water at the least cost

(KMCAR) KERR MCGEE CHEMICAL CORPORATION - ADMINISTRATIVE RECORD INDEX

HEADING: 3. 0. . RECORD OF DECISION (ROD)

SUB-HEAD: 3. 2. . ROD

3. 2. . - 1040465
DATE: 09/28/95 PAGES: 129
AUTHOR: Chuck Clarke/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Record of Decision for Kerr-McGee Superfund Site, Caribou County, Idaho

HEADING: 4. 0. . STATE COORDINATION

SUB-HEAD: 4. 1. . Correspondence

4. 1. . - 1035434
DATE: 12/24/91 PAGES: 1
AUTHOR: Gordon Brown/Idaho Department of Health and Welfare
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter to confirm telephone conversation of 12/23/91 and to respond to request for information regarding Idaho Solid Waste Regulations

4. 1. . - 1035435
DATE: 06/17/92 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Gordon Brown/IDHW
DESCRIPTION: Formal request to the state to identify applicable or relevant and appropriate requirements (ARARs) or other requirements to be considered (TBCs) in evaluating potential cleanup measures

4. 1. . - 1035436
DATE: 07/07/92 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Gordon Brown/IDHW
DESCRIPTION: Letter regarding the issue of secular equilibrium, Po-210 detection limits for the ferrophosphorus

4. 1. . - 1035437
DATE: 08/03/92 PAGES: 5
AUTHOR: Rob Hanson/Idaho Department of Health and Welfare
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter and attached list of potential State ARARs for the Kerr-McGee Chemical Superfund site

4. 1. . - 1035911
DATE: 01/04/93 PAGES: 2
AUTHOR: Gordon Brown/State of Idaho
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comments on the Development and Screening Alternatives Memorandum for Kerr McGee, Soda Springs

4. 1. . - 1035912
DATE: 08/24/93 PAGES: 1
AUTHOR: Gordon Brown/State of Idaho
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comments on the Draft Human Health and Ecological Risk Assessments for Kerr-McGee Chemical Corporation, Soda Springs, Idaho

4. 1. . - 1035913
DATE: 12/17/93 PAGES: 1
AUTHOR: Gordon Brown/State of Idaho
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comments on the Remedial Action Objectives Memorandum

4. 1. . - 1035914
DATE: 01/13/94 PAGES: 1
AUTHOR: Cecil D. Andrus/State of Idaho
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Letter stating no objection to the major conclusions and recommendations of the draft Remedial Investigation Report

4. 1. . - 1035915
DATE: 02/23/94 PAGES: 1
AUTHOR: Gordon Brown/State of Idaho
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comment on the Kerr McGee Ground Water Modeling Plan

4. 1. . - 1035916
DATE: 06/27/94 PAGES: 5
AUTHOR: Gordon Brown/State of Idaho
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Letter and enclosures regarding current status of the Kerr McGee permit to construct and modify the air operating parameters at the site

4. 1. . - 1035917
DATE: 10/31/94 PAGES: 2
AUTHOR: Gordon Brown/State of Idaho
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Letter regarding the Kerr McGee Chemical Corp. NPDES Application

4. 1. . - 1035918
DATE: 12/15/94 PAGES: 1
AUTHOR: Gordon Brown/State of Idaho
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Comments on the Refinement of Alternatives for Detailed Analysis Document

4. 1. . - 1035919
DATE: 03/10/95 PAGES: 1
AUTHOR: Gordon Brown/State of Idaho
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Letter regarding comments on the Comparative Analysis Report that were given directly to Bill McLoughlin during a meeting on 03/01/95

4. 1. . - 1035920
DATE: 04/12/95 PAGES: 1
AUTHOR: Gordon Brown/State of Idaho
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Comments on the draft Sample Collection and Analysis Plan Finch Pond Sediment Characterization Program

4. 1. . - 1035921
DATE: 04/21/95 PAGES: 3
AUTHOR: Peter Contreras/EPA
ADDRESSEE: Gordon Brown/State of Idaho
DESCRIPTION: Formal request for identification of applicable or relevant and appropriate requirements or other requirements to be considered in evaluating potential cleanup measures for the Kerr-McGee Superfund site

4. 1. . - 1040481
DATE: 06/02/95 PAGES: 37
AUTHOR: Gordon Brown/Idaho Department of Health and Welfare
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Letter and attached submittal of ARARs (applicable or relevant and appropriate requirements) and TOCs (to be considered) for the Kerr-McGee site in Soda Springs

4. 1. . - 1040482
DATE: 07/06/95 PAGES: 2
AUTHOR: Peter Contreras/EPA
ADDRESSEE: Gordon Brown/IDHW
DESCRIPTION: Letter regarding inquiry of phosphoric acid plant permit application

4. 1. . - 1040483
DATE: 07/14/95 PAGES: 2
AUTHOR: Gordon Brown/Idaho Department of Health and Welfare
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: State of Idaho response to the status of Kerr McGee permits to construct and operate a phosphoric acid plant

4. 1. . - 1040484
DATE: 09/09/95 PAGES: 2
AUTHOR: Peter Contreras/EPA
ADDRESSEE: Gordon Brown/IDHW
DESCRIPTION: Formal request for State concurrence and review of the draft Record of Decision for the Kerr-McGee Superfund site

HEADING: 5. 0. . ENFORCEMENT

SUB-HEAD: 5. 1. . Correspondence

5. 1. . - 1035910
DATE: 06/23/94 PAGES: 1
AUTHOR: Rodman H. Frates/C. L. Frates and Company
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Certificate of Insurance

SUB-HEAD: 5. 2. . Notice Letters and Responses

5. 2. . - 0000001
DATE: 03/01/90 PAGES: 8
AUTHOR: Charles E. Findley/EPA
ADDRESSEE: G. B. Rice/KMCC
DESCRIPTION: Notice of Potential Liability

5. 2. . - 0000002
DATE: 04/03/90 PAGES: 16
AUTHOR: Barbara Hoffman/KMCC
ADDRESSEE: Wally Scarburgh/EPA
DESCRIPTION: KMCC response to 3/5/90 104(e) request for information

5. 2. . - 0000003
DATE: 04/03/90 PAGES: 46
AUTHOR: Unknown/KMCC
ADDRESSEE: Unknown/EPA
DESCRIPTION: 104(e) Response: Attachment 1: Copies of Farming Leases

5. 2. . - 0000004
DATE: 04/03/90 PAGES: 2
AUTHOR: Unknown/KMCC
ADDRESSEE: Unknown/EPA
DESCRIPTION: 104(e) Response: Attachment 2: List of Insurance Policies

5. 2. . - 0000005
DATE: 04/03/90 PAGES: 75
AUTHOR: Unknown/KMCC
ADDRESSEE: Unknown/EPA
DESCRIPTION: 104(e) Response: Attachment 3: 1980 Hydrologic Assessment and Graphs

5. 2. . - 0000006
DATE: 04/03/90 PAGES: 18
AUTHOR: Unknown/KMCC
ADDRESSEE: Unknown/EPA
DESCRIPTION: 104(e) Response: Appendix A (Climatological Data)

5. 2. . - 0000007
DATE: 04/03/90 PAGES: 3
AUTHOR: Unknown/KMCC
ADDRESSEE: Unknown/EPA
DESCRIPTION: 104(e) Response: Appendix B (Well Inventory Data) (Confidential document located at EPA Region 10, Seattle, WA)

5. 2. . - 0000008
DATE: 04/03/90 PAGES: 19
AUTHOR: Unknown/KMCC
ADDRESSEE: Unknown/EPA
DESCRIPTION: 104(e) Response: Appendix C (Chemical Data)

5. 2. . - 0000009
DATE: 04/03/90 PAGES: 16
AUTHOR: Unknown/KMCC
ADDRESSEE: Unknown/EPA
DESCRIPTION: 104(e) Response: Appendix A Product, By-Product, Waste Chemical Analysis List

5. 2. . - 0000010
DATE: 04/03/90 PAGES: 2
AUTHOR: Unknown/KMCC
ADDRESSEE: Unknown/EPA
DESCRIPTION: 104(e) Response: Appendix B Water Assays for April 1981

5. 2. . - 0000011
DATE: 04/03/90 PAGES: 2
AUTHOR: Unknown/KMCC
ADDRESSEE: Unknown/EPA
DESCRIPTION: 104(e) Response: Appendix C NRC Notification

5. 2. . - 0000012
DATE: 04/03/90 PAGES: 4
AUTHOR: Unknown/KMCC
ADDRESSEE: Unknown/EPA
DESCRIPTION: 104(e) Response: Appendix D Leach Residue Pond Permit Sample Analysis

5. 2. . - 0000013
DATE: 04/03/90 PAGES: 40
AUTHOR: Unknown/KMCC
ADDRESSEE: Unknown/EPA
DESCRIPTION: 104(e) Response: Appendix E 1980-1990 Sample Summaries

5. 2. . - 0000014
DATE: 04/03/90 PAGES: 13
AUTHOR: Unknown/KMCC
ADDRESSEE: Unknown/EPA
DESCRIPTION: 104(e) Response: Appendix F RCRA Part A Withdrawal

5. 2. . - 0000015
DATE: 04/03/90 PAGES: 9
AUTHOR: Unknown/KMCC
ADDRESSEE: Unknown/EPA
DESCRIPTION: 104(e) Response: Appendix G Well Completion Data

5. 2. . - 0000016
DATE: 07/03/90 PAGES: 59
AUTHOR: Charles E. Findley/EPA
ADDRESSEE: Robert Griffin/KMCC
DESCRIPTION: Notice of potential liability with respect to the Kerr-McGee Superfund Site in Soda Springs, Idaho

SUB-HEAD: 5. 3. . Administrative Order on Consent

5. 3. . - 0000001
DATE: 09/14/90 PAGES: 83
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: U.S. EPA Docket No. 1090-02-22-105 Administrative Order on Consent for Remedial Investigation/Feasibility Study in the Matter of: Kerr-McGee Site

HEADING: 6. 0. . HEALTH ASSESSMENTS

SUB-HEAD: 6. 2. . Preliminary Health Assessment

6. 2. . - 0000001
DATE: 09/12/90 PAGES: 12
AUTHOR: Unknown/Agency for Toxic Substances and Disease Registry
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Preliminary Health Assessment for Kerr-McGee Corporation Soda Springs, Idaho CERCLIS No. IDD041310707

HEADING: 7. 0. . NATURAL RESOURCES TRUSTEES

SUB-HEAD: 7. 1. . Correspondence

7. 1. . - 0000001
DATE: 06/12/91 PAGES: 6
AUTHOR: Jonathan P. Deason/U. S. Department of Interior
ADDRESSEE: Charles E. Findley/EPA
DESCRIPTION: Preliminary natural resources survey on the Kerr-McGee Chemical Corporation site in Soda Springs, Idaho

7. 1. . - 1035438
DATE: 08/27/91 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Charles Polityka/DOI
DESCRIPTION: Letter regarding the stage in the Superfund process of the Kerr-McGee site so that the Trustees can provide the necessary input if they so choose

7. 1. . - 1035440
DATE: 04/29/92 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Charles Polityka/DOI
DESCRIPTION: Letter inviting comment on the draft Preliminary Site Characterization Report for Kerr-McGee

7. 1. . - 1035441
DATE: 05/27/92 PAGES: 1
AUTHOR: Charles H. Lobdell/Dept. of the Interior
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Comments on the Preliminary Site Characterization Report

7. 1. . - 1035922
DATE: 09/03/93 PAGES: 2
AUTHOR: Timothy H. Brincefield/EPA
ADDRESSEE: William Mullins/U. S. Fish & Wildlife Services
DESCRIPTION: Request for review of the Draft Human Health and Ecological Risk Assessments for the Kerr-McGee Superfund Site

7. 1. . - 1035923
DATE: 09/03/93 PAGES: 2
AUTHOR: Timothy H. Brincefield/EPA
ADDRESSEE: Dan Thayer/BIA
DESCRIPTION: Request for review of the Draft Human Health and Ecological Risk Assessments for the Kerr-McGee Superfund Site

7. 1. . - 1035924
DATE: 09/03/93 PAGES: 2
AUTHOR: Timothy H. Brincefield/EPA
ADDRESSEE: Cecil D. Andrus/State of Idaho
DESCRIPTION: Request for review of the Draft Human Health and Ecological Risk Assessments for the Kerr-McGee Superfund Site

7. 1. . - 1035925
DATE: 09/20/93 PAGES: 2
AUTHOR: Charles H. Lobdell/U. S. Fish and Wildlife Service
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comments on the Draft Human Health and Ecological Risk Assessments

7. 1. . - 1035442
DATE: 12/29/93 PAGES: 2
AUTHOR: Timothy H. Brincefield/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Memo to the Natural Resource Trustees requesting comments on the draft Remedial Investigation Report

7. 1. . - 1035926
DATE: 12/29/93 PAGES: 2
AUTHOR: Timothy H. Brincefield/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Memo to the Kerr-McGee Site Team and Natural Resource Trustees requesting assistance to review the draft Remedial Investigation Report

7. 1. . - 1035928
DATE: 01/25/94 PAGES: 2
AUTHOR: Greg Tourtlotte/Idaho Fish & Game
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comments on the draft Remedial Investigation Report

7. 1. . - 1035443
DATE: 01/26/94 PAGES: 2
AUTHOR: Charles H. Lobdell/Dept. of the Interior
ADDRESSEE: Timothy H. Brincefield/EPA
DESCRIPTION: Comments on the Draft Remedial Investigation Report

7. 1. . - 1035930
DATE: 02/02/94 PAGES: 1
AUTHOR: Timothy H. Brincefield/EPA
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Memo regarding request from Dan Kotansky of BLM for the Kerr-McGee Remedial Investigation Executive Summary, list of COPCs, and Conclusions

7. 1. . - 1035931
DATE: 04/05/95 PAGES: 1
AUTHOR: Peter Contreras/EPA
ADDRESSEE: Susan Burch/U. S. Fish & Wildlife Services
DESCRIPTION: Request for review and comment on the Draft Sample Collection and Analysis Plan, Finch Pond Sediment, Characterization Progam

7. 1. . - 1035933
DATE: 04/14/95 PAGES: 2
AUTHOR: Charles H. Lobdell/U. S. Fish and Wildlife Service
ADDRESSEE: Peter Contreras/EPA
DESCRIPTION: Comments on the Finch Spring Sediment Sampling

HEADING: 8. 0. . PUBLIC PARTICIPATION

SUB-HEAD: 8. 1. . Mailing List

8. 1. . - 1040464
DATE: 05/23/95 PAGES: 4
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Kerr-McGee Mail List

SUB-HEAD: 8. 2. . Community Relations Plan

8. 2. . - 0000001
DATE: 08/12/91 PAGES: 11
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Community Relations Plan Kerr-McGee, Inc. Soda Springs, Idaho

SUB-HEAD: 8. 3. . Fact Sheets/Press Releases

8. 3. . - 0000001
DATE: 09/01/89 PAGES: 1
AUTHOR: Wally Scarburgh/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Press release regarding the addition of the Kerr-McGee Chemical Corporation plant in Soda Springs, Idaho to the National Priorities List

8. 3. . - 1040485
DATE: 12/01/91 PAGES: 2
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA Fact Sheep to introduce the Superfund process and the related activities at the Kerr-McGee Chemical Corporation north of Soda Springs, Idaho

8. 3. . - 1040486
DATE: 05/08/92 PAGES: 2
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Superfund Fact Sheet announcing that Kerr-McGee is to conduct additional testing this Spring and Summer

8. 3. . - 1040487
DATE: 02/28/94 PAGES: 3
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Superfund Fact Sheet stating that site investigation is on schedule for cleanup decision by October 1994

8. 3. . - 1040488
DATE: 11/22/94 PAGES: 2
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Superfund Fact Sheet regarding evaluation of options for groundwater cleanup

8. 3. . - 1040489
DATE: 06/16/95 PAGES: 3
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Superfund Fact Sheet stating that site investigation and risk assessment is complete

SUB-HEAD: 8. 4. . Newspaper Articles

8. 4. . - 1040490
DATE: 08/16/95 PAGES: 1
AUTHOR: Tim Jackson/The Journal
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Kerr-McGee's new ponds halt chemical leaching

8. 4. . - 1040491
DATE: 08/17/95 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA Wants Comments on K-M Clean Up

SUB-HEAD: 8. 5. . Notices of Availability of Information

8. 5. . - 1040492
DATE: 08/03/95 PAGES: 1
AUTHOR: Unknown/Caribou County Sun
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Notice of Opportunity to Comment on the U.S. Environmental Protection Agency's Proposed Cleanup Plan for the Kerr-McGee Chemical Corporation Site

HEADING: 9. 0. . TECHNICAL SOURCES/GUIDANCE DOCUMENTS

SUB-HEAD: 9. 1. . Technical Sources

9. 1. . - 1035444
DATE: 01/28/92 PAGES: 8
AUTHOR: Russell H. Jones/Kerr-McGee
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter and attached technical memorandum outlining Kerr-McGee's approach for determining the appropriate valance state of chromium in ores and tailings located at the Soda Springs facility