

FINAL CLOSE OUT REPORT Uravan Mill and Adjacent Areas Montrose County, Colorado

I. Introduction

This Final Close Out Report documents that Umetco Minerals Corporation (Umetco) has completed all remedial actions at the Uravan Superfund Site (Uravan) in accordance with Close Out Procedures for National Priorities Sites (U.S. EPA, 2000). In December 1983, the State of Colorado filed a natural resources damages (NRD) claim in civil action 83-C-2384 against Union Carbide and Carbon (UCC) and Umetco under CERCLA. The State's 1983 NRD action was subsequently amended to include a CERCLA cost recovery claim in April, 1985. The site was proposed to the NPL in 1984 and finalized in 1986. Uravan is a 693 acre tract of land that includes the former Uravan Mill, Club Ranch Ponds, the Secure Tailing Repositories, and the Alternative Soil Standards areas. Residual waste in these areas will be managed under a long term surveillance program by the U.S. Department of Energy (DOE).

II. Summary of Site Conditions

A. Background

The Uravan Facility is located in Montrose County, Colorado approximately fifty (50) miles southwest of Grand Junction on State Highway 141, along the San Miguel River and on Club Mesa to the west of the San Miguel River. The site is characterized by an arid climate, sparse vegetation, and rugged topography. Topographic features at Uravan are dominated by broad mesas and incised canyons.

Mining operations in this area of Colorado began in the early 1900s. The Uravan Site was contaminated by radioactive residues resulting from the processing of vanadium- and uranium-containing ores from the early 1900's through the mid-1980's. From the time UCC/Umetco began operations at Uravan, in the 1920's, until it was shut down the mill processed over ten million tons of uranium-vanadium ore. During this time, operations produced in excess of ten million tons of tailing, 38 million gallons of waste liquid raffinate, raffinate crystal residue, and other milling wastes containing radioactive materials, metals and other inorganic contaminants.

In December 1983, the State of Colorado filed a natural resources damages claim in civil action 83-C-2384 against UCC and Umetco under CERCLA. The State's 1983 NRD action was subsequently amended to include a CERCLA cost recovery claim in April, 1985. UCC and Umetco have been identified as the sole Potentially Responsible Party (PRP) for the Uravan Site. The site was proposed to the NPL in 1984 and finalized in 1986.

B. Remedial Investigation/Feasibility Study Results

In 1985, Umetco and the State of Colorado began discussions concerning remedial action and cleanup of the site. A 1986 Memorandum of Agreement between EPA and CDPHE designated the State as the lead agency for discussions. EPA was consulted and provided technical support as needed. The result of these discussions was the preparation of a Consent Decree and a Remedial Action Plan (RAP) in 1986 that outlined the requirements for Umetco to remediate the site. This document is the functional equivalent of the EPA Remedial Investigation/Feasibility Study and Record of Decision. The United States District Court for the State of Colorado approved the Consent Decree and RAP on February 12, 1987.

A joint group consisting of Umetco, and the Colorado Department of Public Health and Environment (CDPHE) and their consultants, developed the RAP on the basis of previous site characterization work.

C. Remedial Decision Findings

Solid wastes at Uravan were comprised of milling and cleanup residues that included mill tailing; evaporation crystals and sludge; milling refuse; and mill debris. These wastes totaled over 10,000,000 cubic yards and contained radioactive elements, metals, and inorganic compounds. Liquid wastes from seepage collection and ground water extraction systems totaled over 350 million gallons at the end of 2004. These liquids also contained radioactive elements, metals and inorganic compounds.

Objectives of the remedial activities were to:

- Protect surface and ground water resources;
- Stabilize and control the tailing and other waste materials;
- Minimize radon emissions from the tailing and waste repositories; and
- Perform the remediation in a safe manner that minimizes impact on the environment and to the remediation personnel.

Meeting these objectives assured the protection of human health and the environment.

D. Cleanup Activities Performed

The general site remedies chosen to achieve the remedial objectives included:

- Removal and cleanup of dispersed materials and contaminated soil from approximately 400 acres;
- Relocation of more than 3 million cubic yards of mill wastes and contaminated materials to secure repositories on Club Mesa:
- Construction of waste and tailing repository covers, liquid evaporation and retention ponds, and permanent runoff control structures – utilizing more than 1.7 million cubic vards of earthen materials;
- Construction of 5 double-lined ponds (totaling 40 acres) for the evaporation of hillside seepage, tailing pile seepage and extracted ground water;
- Construction and utilization of a new repository in the B-Plant area capable of disposing in excess of 1.8 million cubic yards of evaporative pond demolition debris and radioactive waste;
- Demolition and removal of about 50 major mill facility structures and buildings, including the process systems and circuits, and removal of over 260 buildings in the town of Uravan;
- Collection of over 70 million gallons of hillside and tailing seepage, containing approximately 6,000 tons of contaminated inorganic compounds. Hillside and tailing seepage that was collected was transferred to Club Ranch ponds for management by evaporation;
- Extraction of approximately 245 million gallons of contaminated liquids from the ground water with the removal of approximately 14,500 tons of contaminated inorganic compounds. Contaminated ground water that was collected was transferred to Club Ranch Ponds for management by evaporation, and,
- Removal of contaminated materials from the Old and New Town Dumps with placement into the Club Mesa Tailing repository.

From 1987 through 2004, remedial work included the excavation and consolidation of the vast majority of contaminants from the San Miguel River Valley and Club Mesa, decommissioning and demolition of the

mill facility complex, installation and operation of the ground water withdrawal system and the removal of dispersed contaminated soil and debris from the Uravan site and nearby locations.

Throughout the remediation of the Uravan site there have been numerous facility inspections conducted by the Colorado Department of Public Health and Environment (CDPHE), EPA and Nuclear Regulatory Commission (NRC) to document that Union Carbide Corporation/Umetco Minerals Corporation (UCC/Umetco) has performed the remedial activities in accordance with the requirements in the Consent Decree and RAP. The CDPHE has at a minimum conducted annual site inspections of the work as well as end of project segment verification inspections. As required by CERCLA section 121(c), 42 U.S.C. 9621(c), the EPA has completed Five-Year Reviews of the progress at the Uravan site. Although not required, since the State of Colorado is an agreement state and is the lead agency in regard to licensing, the NRC has made several visits to the Uravan site to observe the progress made toward completion of the remedial action.

E. Community Involvement

Throughout the process from development of the Consent Decree to completion of the Remedial Activities, all phases of the Uravan remediation have been an open process with input from Federal and State Regulators, Montrose County Government and members of the public. Over the life of the project there have been numerous public comment periods and hearings to ensure that the local residents were able to contribute to the process and express their opinions.

Public involvement has been sought either by UCC/Umetco, CDPHE or EPA for many remediation and operation documents including the Consent Decree, RAP, the Colorado Radioactive Material Licenses and renewal of those licenses, License Amendments, and EPA Five-Year Reviews.

F. Redevelopment

Umetco has donated an office building used during remediation of Uravan and a piece of property immediately adjacent to the site to the Rimrocker Historical Society. This local organization will use the donation to develop a museum memorializing the history of uranium mining in western Colorado.

Remediation at Uravan included a portion of State Highway 141. The land underlying the highway and within the easement is now available for unrestricted use and unlimited exposure. Following the removal of radioactive tailing from within the road bed, EPA deleted that portion of the road from the National Priorities List (NPL) on September 4, 2007.

In addition to the deletion of State Highway 141, EPA deleted 9.84 acres, including two historic structures, from the site on February 18, 2005. The structures, which included the Boarding House and the Community Center, were originally planned for use as a museum by the Rimrocker Historical Society. The Boarding House and the Community Center were demolished in 2007, with approval from CDPHE, after determining that they were not structurally salvageable.

County Road Y-11 was also remediated as part of the Uravan cleanup. While there is some residual contamination beneath County Road Y-11, institutional controls have been implemented and the road will remain in use allowing public access across the site.

The remainder of the site will most likely revert to open space; DOE will manage use of the property in the future through their legacy management program.

III. Quality Assurance and Quality Control (QA/QC)

A. QA/QC Protocol

Final Remediation Activities as specified in the RAP were completed under direction of the 1987, Quality Plans (QP-GEN-1, Umetco 1987) and Addendum to Quality Plans (Umetco, 1988a) which provided

quality assurance and quality control requirements and set forth site specific mechanisms to evaluate the performance of the remedial activities.

B. Sampling and Analysis Protocol

After completion of an individual construction segment the QC Officer verified that the tasks were performed in compliance with the final plans and specifications and then provided a Compliance Report (similar to a Remedial Action Report) detailing the applicable points from the Quality Plans for approval by the Site Manager and the CDPHE On-Site Coordinator.

The Quality Control (QC) activities implemented used standardized QC procedures and provided the necessary tests and observations for the construction, sampling and monitoring process at the Uravan site. Quality Assurance audits and reviews provided the needed oversight of the QC Activities. In addition, for each project the respective quality plan required a Compliance Report at the successful completion of a Construction Segment.

C. Results of On-Site Inspections

After the completion of a construction segment the QC Officer verified that the construction tasks were in compliance with the final plans and specifications and then wrote a Compliance Report detailing the applicable points from the quality plan for approval by the Site Manager and the CDPHE On-Site Coordinator.

IV. Monitoring Results

The Uravan RAP (Umetco, 1987), the Soil Cleanup Methodology (Umetco, 1999), and Uravan Alternate Concentration Limits (ACL) Application (Umetco, 2003) detail the sampling and analysis program for the Uravan remedial action. The sampling program was bifurcated. The first program specified site monitoring for the health protection of the site workers and members of the public, and the second program addressed verification of compliance with remedial objectives.

A. Monitoring for Protection of Human Health of Site Workers and the Public

The RAP and Colorado Radioactive Materials License 660-02 detailed a rigorous sampling and analysis program for protection of health for onsite workers and off-site members of the public.

The sampling program included:

- Daily perimeter air monitoring for total particulates and radionuclides;
- Daily personnel air sampling of exclusion-zone workers for radionuclides;
- External exposure using dosimeters;
- Internal exposure calculation from air monitoring data and Breathing Zone data.

Specifics of the program are detailed in the Policies and Procedures manual for Uravan.

The Uravan License required that the Radiation Safety Officer (RSO) audit annually the site inspection logs, reports and monitoring data for adherence to operating procedures, license requirements, and safety practices affecting radiological safety. The license further required an annual independent audit of these programs, the results of which were reported with the RSO audit in the Uravan Annual Reports submitted for approval to the Colorado Department of Public Health and Environment.

B. Monitoring for Verification of Attainment of Remedial Objectives.

Requirements for verification of the remedial activities are outlined in the Remedial Action Plan, individual Quality Plans (Umetco, 1987) by project number, the Soil Cleanup Methodology Manual (Umetco, 1999) and the Uravan ACL Application (Umetco, 2003).

The sampling program included:

- Exposure surveys
- Confirmatory soil sample(s) for all site contaminants, wherever contamination was suspected or known to occur;
- Complete sampling of borrow materials for all site contaminants; and
- Groundwater and surface water sampling for site contaminants.

Monitoring results have been documented by individual project area as the segments were completed.

The Uravan Site has been cleaned up to the criteria specified in the RAP and the Soil Cleanup Methodology Manual (Umetco, 1999). The clean-up criteria in the Soil Cleanup Methodology Manual are similar to the State of Colorado's *Soil Remediation Objectives Policy Document*, EPA Region III's Risk-Based Concentration (RBC) Table, and EPA's *Soil Screening Guidance*.

Alternative soil standards have been requested for four locations in the Uravan area where Radium-226 is in excess of the Soil Cleanup Criteria. The alternative standards areas are within the area to be transferred to the DOE for long-term surveillance activities and are termed the Mill Hillside, A-Plant North, River Ponds, and County Road Y-11 areas. The Alternative Soil Standards Application contains a description of the alternative standard areas and information to support the application for alternative soil standards in the subject areas. Development of the application utilized the DOE's Supplemental Standards Justification Checklist (1992). This application is currently under review by the NRC with an anticipated Fall 2008 approval.

As previously described, Compliance reports detailing the applicable points from the quality plan were approved by the Site Manager and the CDPHE On-Site Coordinator. These compliance reports are available in the Administrative Record for the Site.

C. Groundwater Monitoring

The Club Ranch Ponds (Ponds) were constructed in 1963 as a seepage and evaporation system to dispose of raffinate solutions from the mill. A contaminant plume developed beneath the Ponds due to seepage during the approximately 25 years of operations. In 1983, 14 monitoring wells were constructed to monitor the plume beneath the Ponds with another 4 wells added in 1986 for the same purpose. A groundwater model and remedial plan was developed by evaluating the hydrogeologic conditions in the Club Ranch Pond area. This study predicted future Total Dissolved Solid (TSD) concentrations in the Kayenta aquifer and identified optimal locations for extraction wells. The Uravan RAP, Section A5.4.3.3, required that the performance of the groundwater remedial system be optimized and addressed in a Performance Evaluation Report. Monitoring data was acquired in accordance with the CDPHE approved groundwater monitoring procedures.

In 1998, modification to the Ponds groundwater extraction program was developed in concert with the EPA, CDPHE, and the Colorado Geologic Survey. The objective of the program modification was to remove high TDS liquids from low permeability zones in the Kayenta Formation. The report recommended a change in remedial strategy from groundwater volume removal to mass contaminant removal. Accomplishing this change in strategy involved installing new monitor and extraction wells in highly contaminated, low permeability areas.

The new extraction and monitoring wells in the low permeability zones in the Kayenta aquifer were added in 1998 by drilling eight boreholes. Four of the boreholes were completed as withdrawal wells; three were completed as monitoring wells; and one borehole was abandoned.

Throughout the life of the groundwater remedial action, the groundwater monitoring procedures were modified with CDPHE approval to ensure optimum performance of the extraction program and monitor compliance with groundwater protection standards.

The Kayenta aquifer had reached steady state conditions by 2002. The groundwater performance evaluations showed that future groundwater extraction would not significantly enhance aquifer restoration.

In 2003, a groundwater Alterative Concentration Limit (ACL) application was approved by CDPHE. ACLs were proposed for eleven (11) groundwater constituents at the Uravan site. The ACLs were developed using a Point of Exposure (POE) in the San Miguel River. ACLs were calculated using a mass balance approach for aquifer concentrations that did not exceed the surface water quality for the San Miguel River. Action levels well below the ACL values were established so that corrective actions could be identified and implemented prior to degradation of the river. The ACL Application implemented a monitoring program that consisted of quarterly monitoring with annual performance evaluations for a period of three years. After three years of monitoring and annual evaluations the program showed that there were no contaminants in the Kayenta Aquifer above the ACLs and the ACL monitoring program was terminated. Currently, as required by the ACL Application, groundwater is monitored in accordance with the anticipated DOE Long Term Monitoring for the Uravan Site.

The DOE's long term monitoring of groundwater will be implemented upon their assumption of ownership of the site and will be undertaken to ensure that the groundwater plume under the Club Ranch Ponds Area continues to dissipate in accordance with the groundwater mixing model and that the granted ACLs are not exceeded (Stoller, 2007). The effectiveness of groundwater remediation will be assessed by the DOE in the future.

D. Surface Water Monitoring

The San Miguel River at Uravan has been monitored since the early 1960's at various times by the EPA, CDPHE and Umetco. Prior to and during the initial stages of site remedial activities in the 1980s, water quality standards were exceeded for some contaminants.

Water quality in the San Miguel River has been monitored on a quarterly basis since 1987 at six monitoring stations in accordance with the RAP section 5.1.1.4(6) and the Colorado Radioactive Materials License (RML) 660-02. The monitoring station locations were selected to monitor improvements in the San Miguel River as remedial actions were conducted.

As remedial actions progressed, exceedances of the San Miguel River water quality standards decreased. Remedial activities at Uravan resulted in a direct improvement in San Miguel River water quality through: (1) removal of tailing material from the flood plain of the San Miguel River; (2) construction of new, lined evaporation ponds; (3) removal of contaminated solids and liquids from the unlined Club Ranch Ponds; and through (4) extraction of and containment of contaminated groundwater from beneath the Club Ranch Ponds. For a ten year period from 1993 to 2003 there were no significant or consistent exceedances of surface water quality standards in the San Miguel River at Uravan.

In 2003, a groundwater Alterative Concentration Limit (ACL) application was approved by CDPHE. The ACLs were developed using a Point of Exposure (POE) in the San Miguel River. ACLs were calculated using a mass balance approach for aquifer concentrations that did not exceed the surface water quality for the San Miguel River. Action levels well below the ACL values were established so that corrective actions could be identified and implemented prior to degradation of the river. The ACL Application implemented a monitoring program that consisted of quarterly monitoring with annual performance evaluations for a period of three years. After three years of monitoring and annual evaluations the program showed that there have been no impacts to the San Miguel River from the Club Ranch Pond ground water plume. The river monitoring data shows that human health and the environment is protected at the Point of Exposure established in the San Miguel River.

Currently, the San Miguel River is monitored on a semi-annual basis at three locations in accordance with the DOE's Long Term Surveillance Plan.

V. Summary of Operation and Maintenance (Long Term Surveillance)

The clean up of the site complies with the requirements of CERCLA and Colorado Rules and Regulation Pertaining to Radiation Control, Part 18. As required by 6 CCR 1007-1, Part 3.9.5.10 the long term surveillance and maintenance for the site will be managed by the Department of Energy.

Funding for the long term surveillance and maintenance is to be provided by UCC/Umetco to the DOE at the termination of the State of Colorado Source Materials License 660-02 and transfer of ownership to the Federal Government. As-builts and other site specific documentation as requested by the DOE will be provided prior to the time of site transfer.

Section 300.425(e) of the National Contingency Plan provides that sites may be deleted from the NPL when no further response is appropriate.

The confirmation investigations, compliance reports, and other associated reports show that the site poses no significant threat to public health or the environment and, therefore, the taking of further remedial measures is not appropriate and the site is ready for deletion from the National Priorities List.

VI. Summary of Remediation Costs

The original 1986 Uravan RAP total cost estimate for the remediation was \$40 million and did not include administrative costs, license renewal fees, the long term surveillance fund or state oversight costs. This estimate also excluded the costs associated with initial remediation designs and the tailing stabilization done prior to the Consent Decree and NPL listing. A total of \$127 million has been spent on the remediation of the Uravan site in the twenty-two years since approval of the Consent Decree and NPL listing.

Additionally, the PRP will provide \$750,000 to DOE to fund Long Term Surveillance of the Uravan Site.

VII. Protectiveness

This site meets all the site completion requirements as specified in OSWER Directive 9320.2-09-A-P, Close-out Procedures for National Priorities List Sites.

All cleanup actions specified in the RAP have been implemented and the site has achieved the RAP cleanup objectives or been cleaned up to acceptable risk levels. Confirmatory sampling and backfilling of the various project areas with clean soil provides further assurance that the site no longer poses any threats to human health or the environment.

The one area of the site under management of the DOE that will remain open to members of the public is Montrose County Road Y-11 which passes through the site. The 1998 Risk analysis and 2004 As Low As Reasonably Achievable (ALARA) analysis showed that the calculated doses to hypothetical individual members of the public from the residual radioactivity above background on and along the Y-11 Road are all less than 10 percent of the decommissioning dose limit of 25 mrem/year.

As this is a county road, all maintenance of the road will be completed with the CDPHE Uranium Mill Tailing Management Plan (UMTMP) (Colorado, 2001) as the guiding document to ensure that worker contact with potentially present radioactive materials is kept as low as reasonably achievable (ALARA). The UMTMP describes the responsibilities and procedures for managing uranium mill tailing encountered or disturbed during construction activities in Western Colorado.

Remaining O&M activities to be performed and the Uranium Mill Tailing Management Plan will ensure long term protectiveness to human health and the environment.

VIII. Five Year Review

Waste will be left in place at the Uravan Site at levels that will not allow for unrestricted use and unlimited exposure. The site will be transferred to DOE to become part of that agency's legacy management program. DOE will be responsible for all future operation and maintenance, implementation of institutional controls, and ensuring that the remedy remains protective into the future.

A periodic review of the remedy is required by CERCLA. DOE will conduct these reviews at least every 5 years for approval by EPA. The reviews will determine whether the remedy at Uravan remains protective of human health and the environment, or it additional actions need to be taken by DOE.

The DOE's long term monitoring of groundwater will be implemented upon their assumption of ownership of the site. Monitoring will be undertaken to ensure that the groundwater plume under the Club Ranch

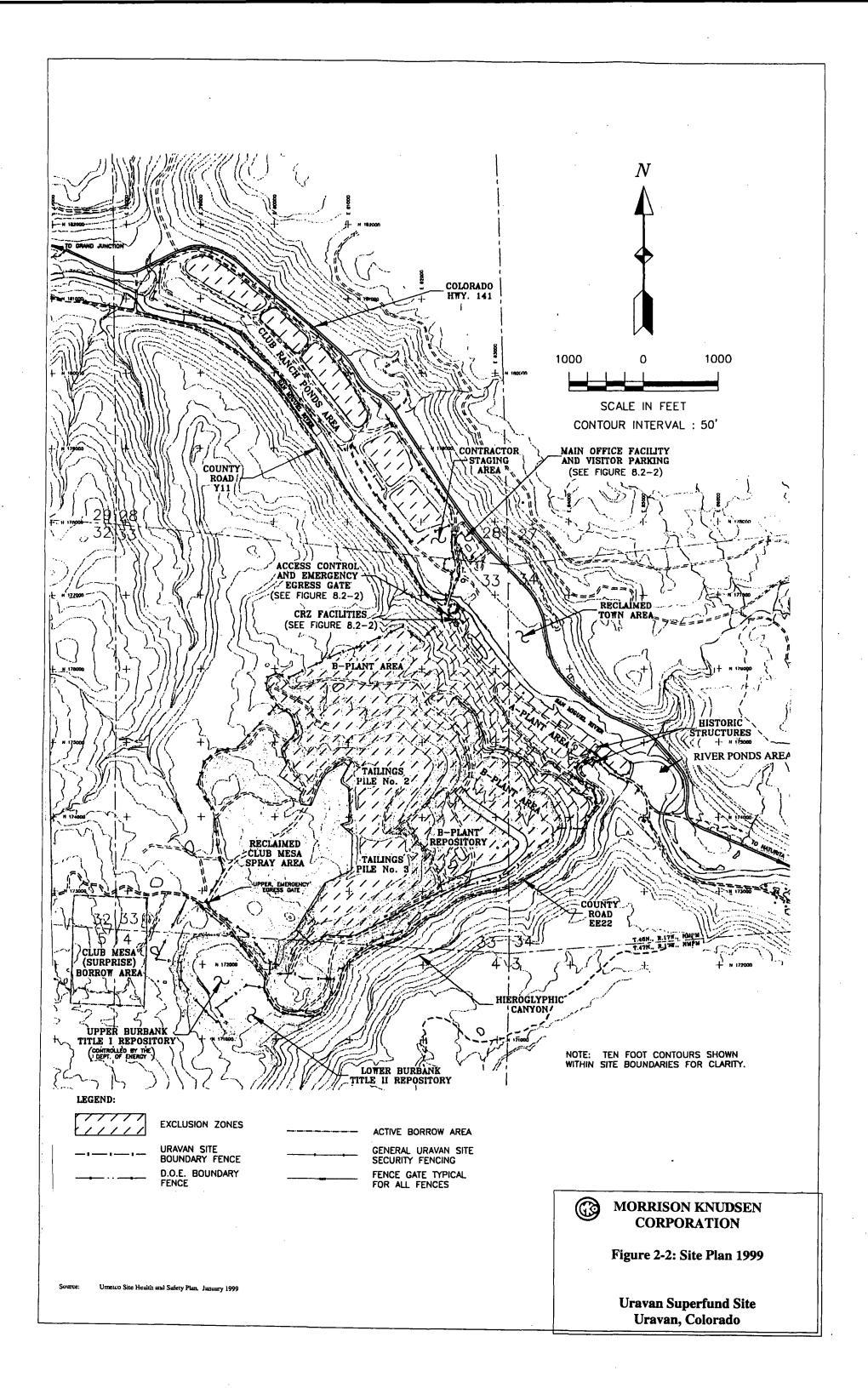
Ponds area continues to dissipate in accordance with the groundwater mixing model and that the granted ACLs are not exceeded (Stoller, 2007). The effectiveness of groundwater remediation will be assessed by the DOE in the future.

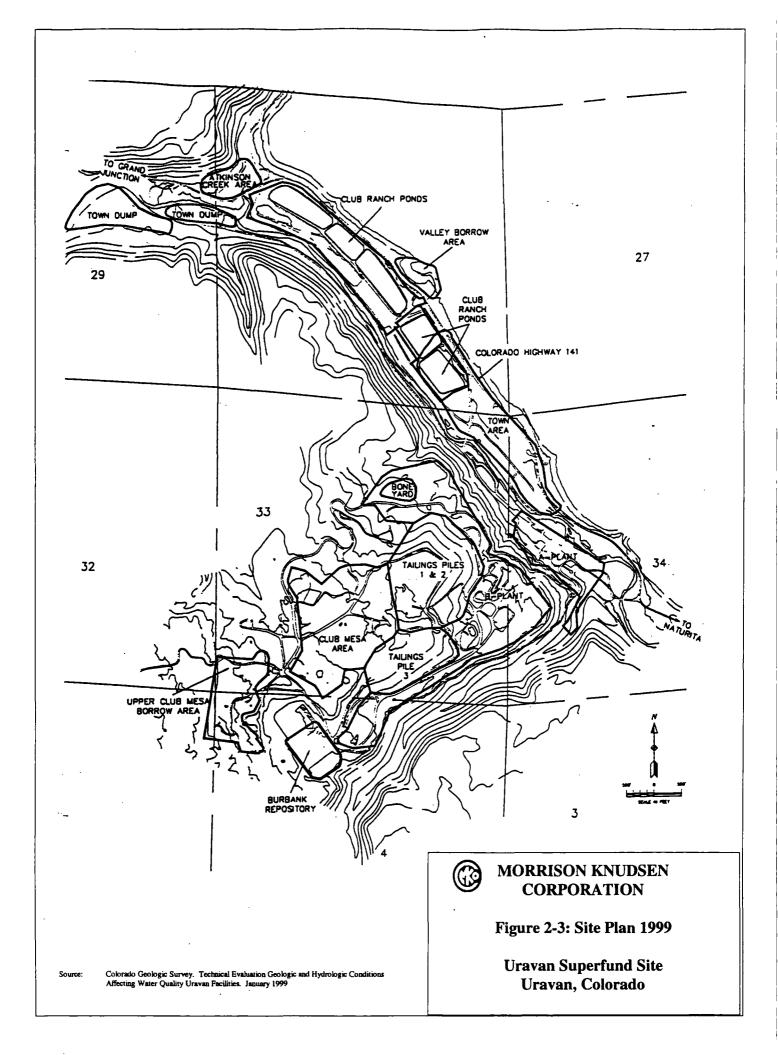
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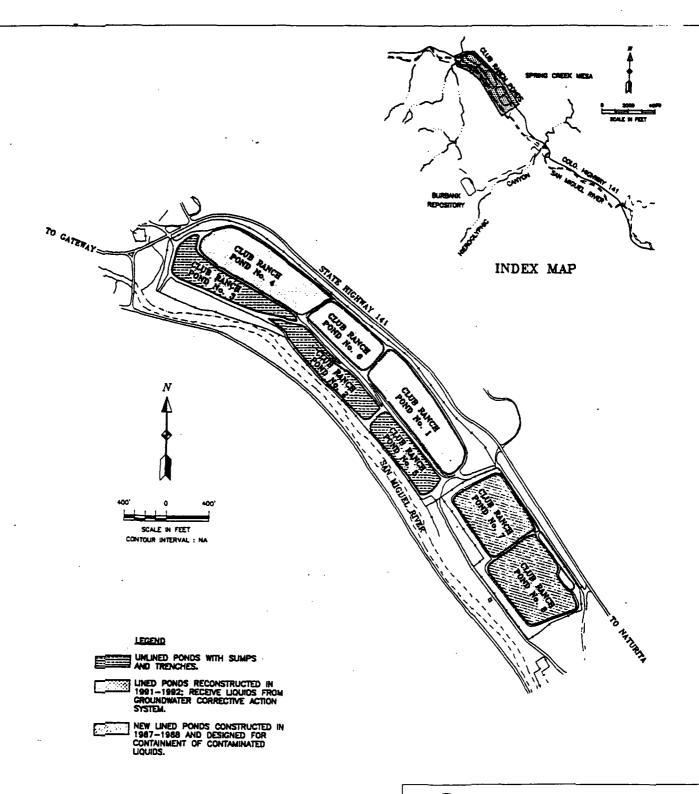
Carol Rushin

Acting Regional Administrator

Date









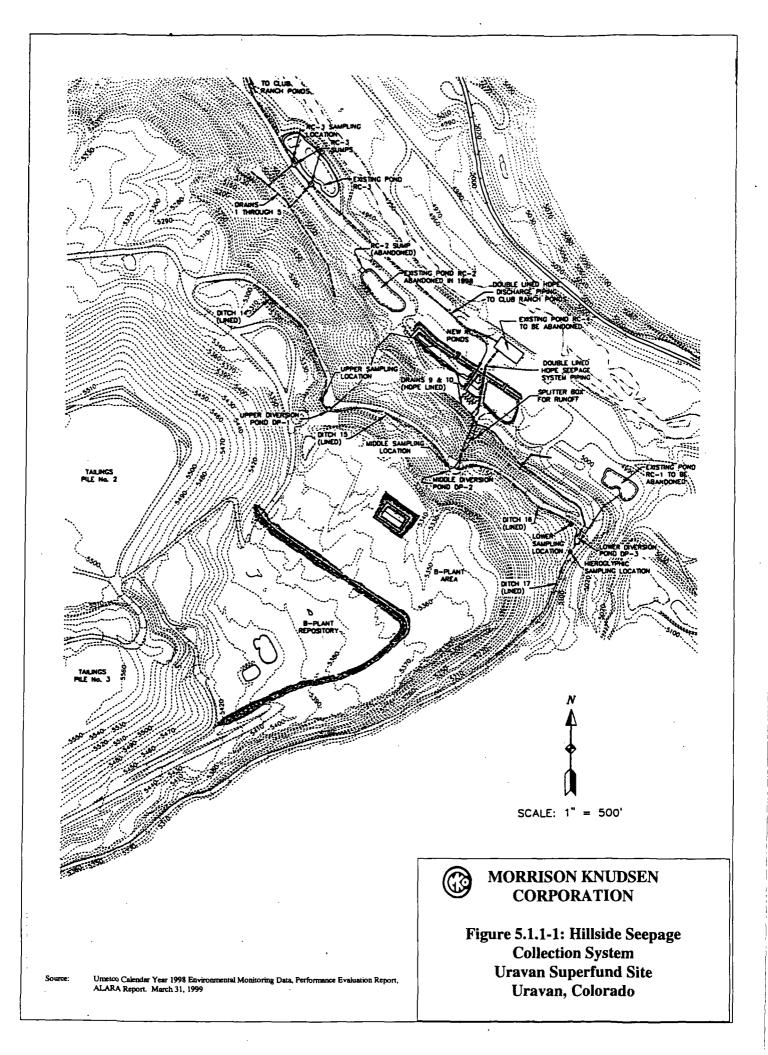
MORRISON KNUDSEN CORPORATION

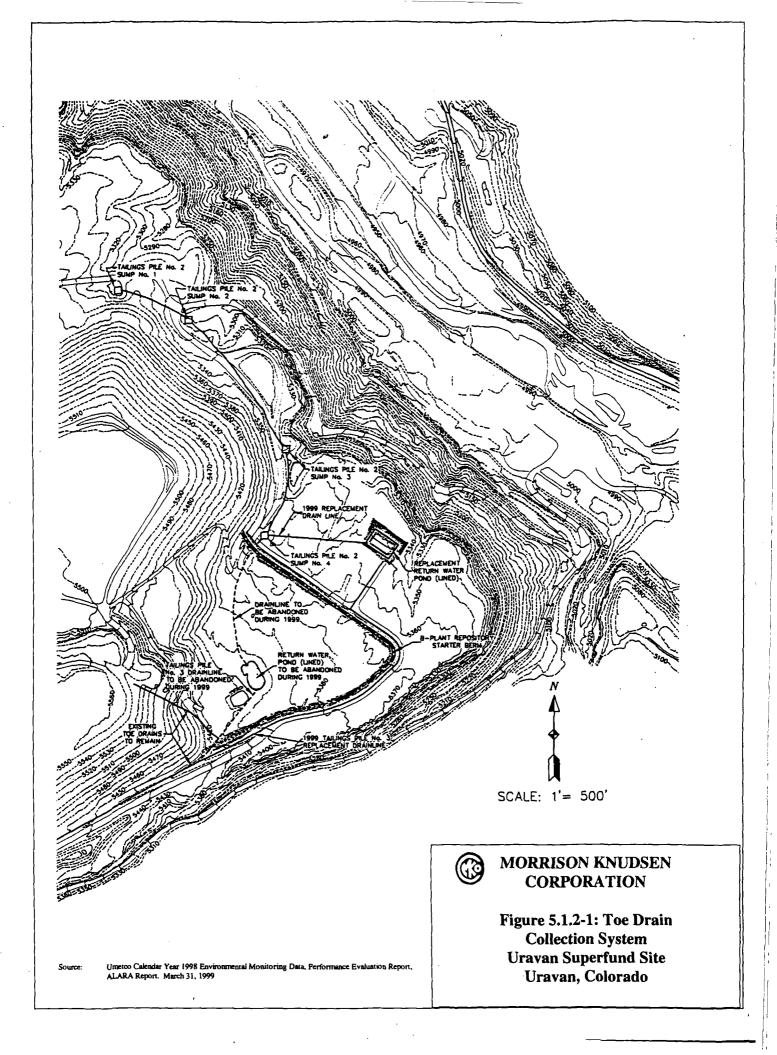
Figure 4-1: Club Ranch Ponds

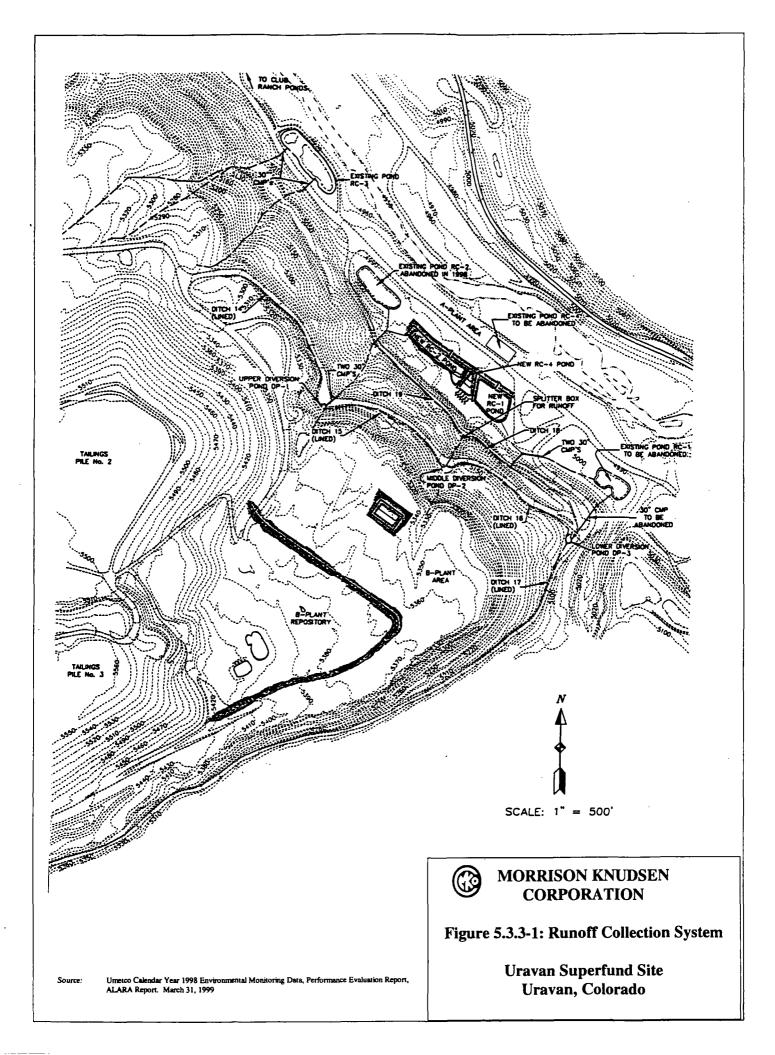
Uravan Superfund Site Uravan, Colorado

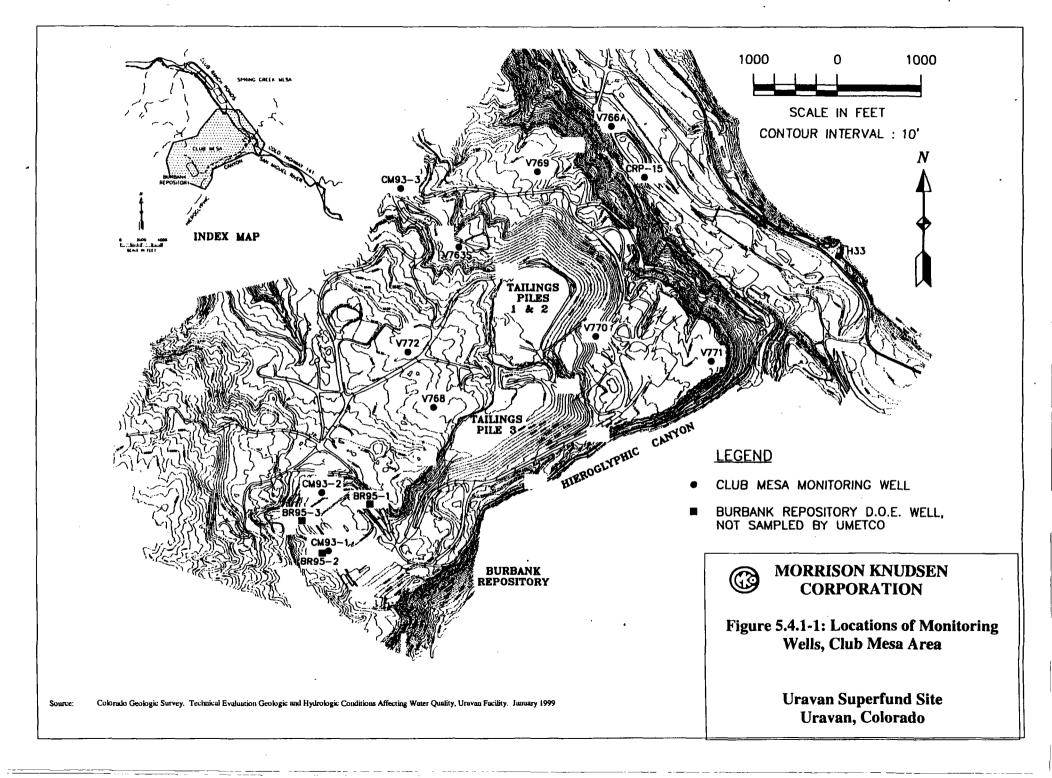
e: Umetco Revised Calendar Year 1996 Environmental Report Uravan Project. November 14, 1997

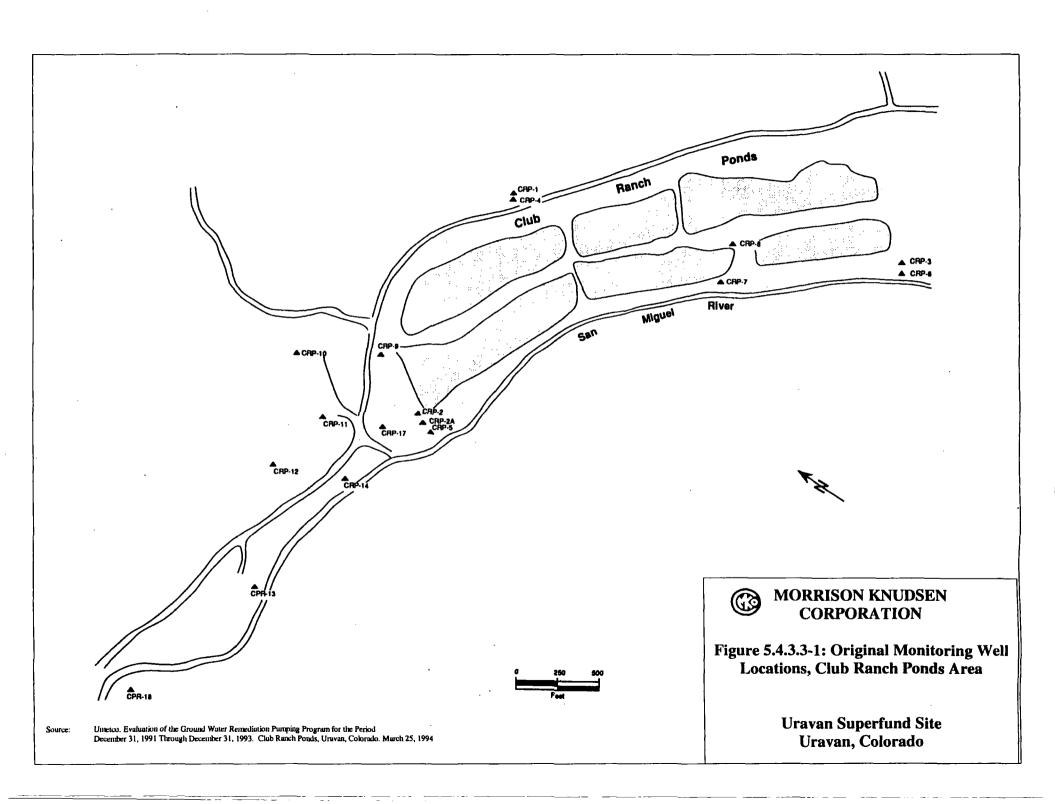
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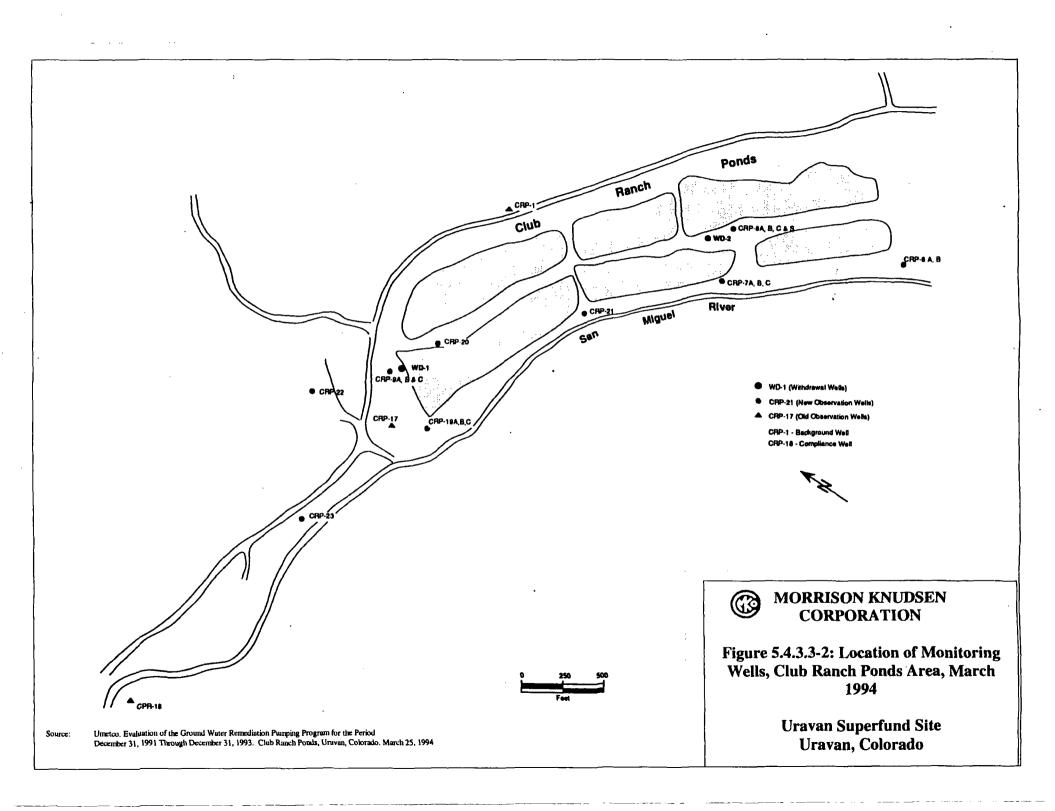


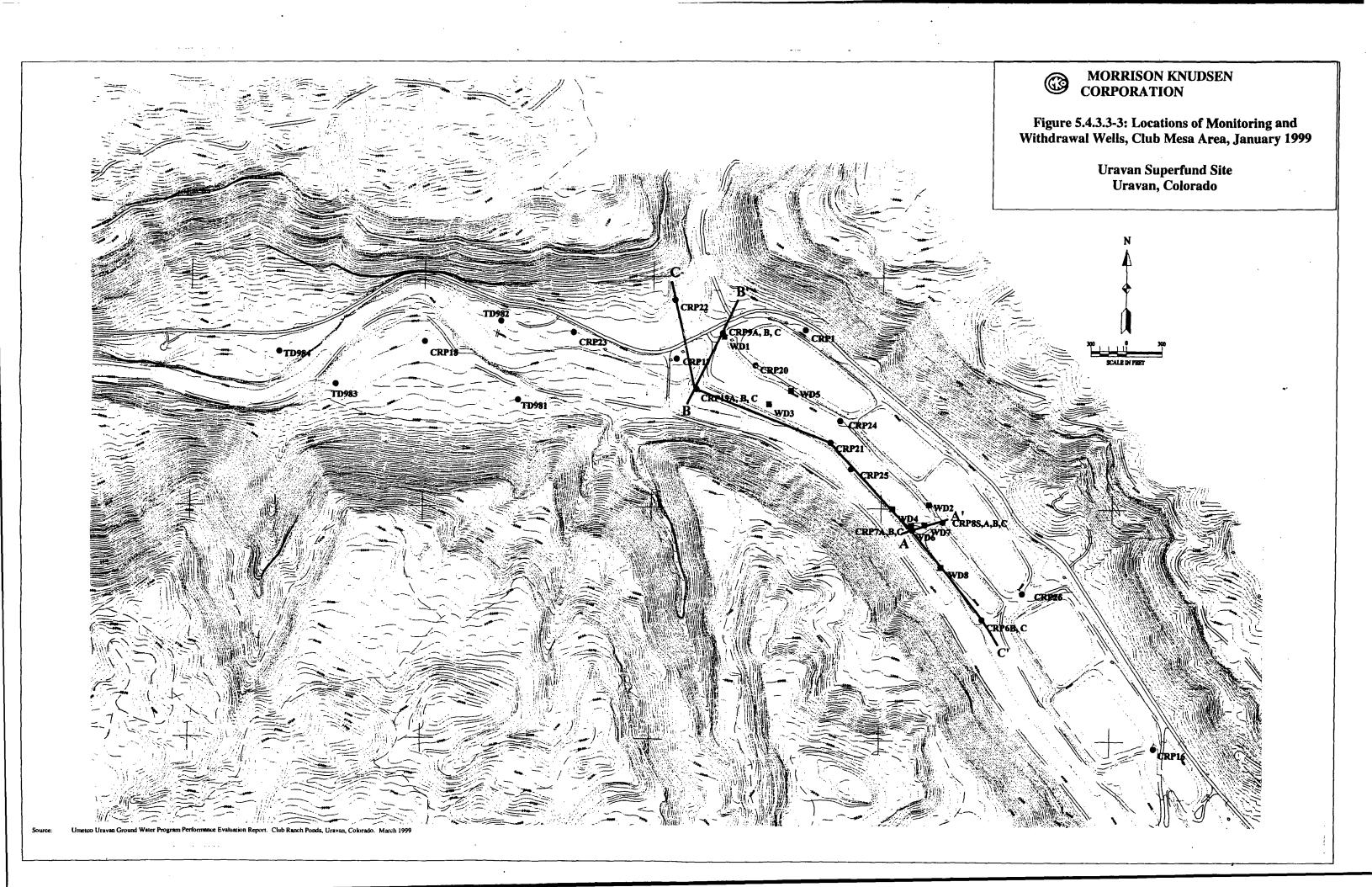


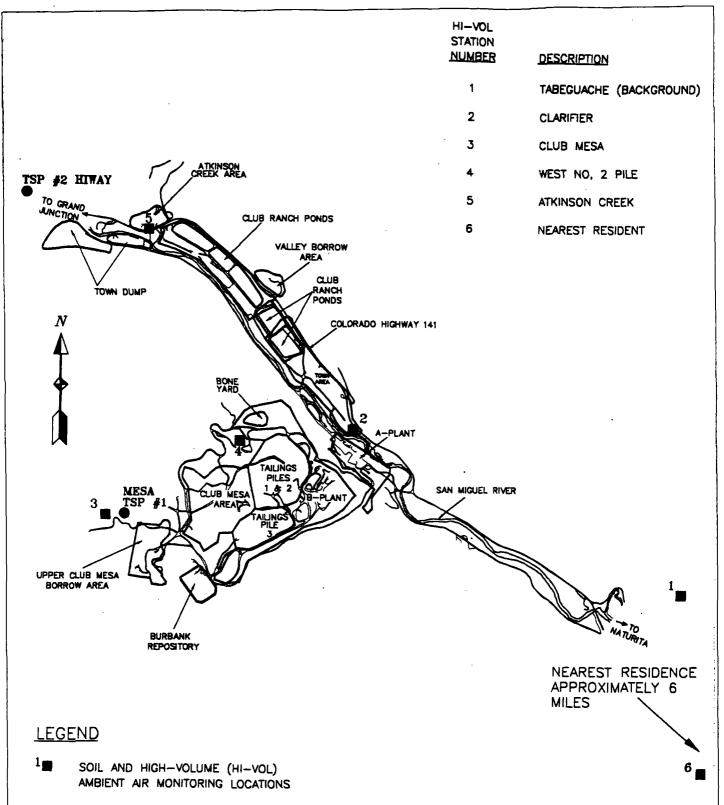












TOTAL SUSPENDED PARTICULATE (TSP) MONITORING STATION

NOTE:

ALL LOCATIONS APPROXIMATE

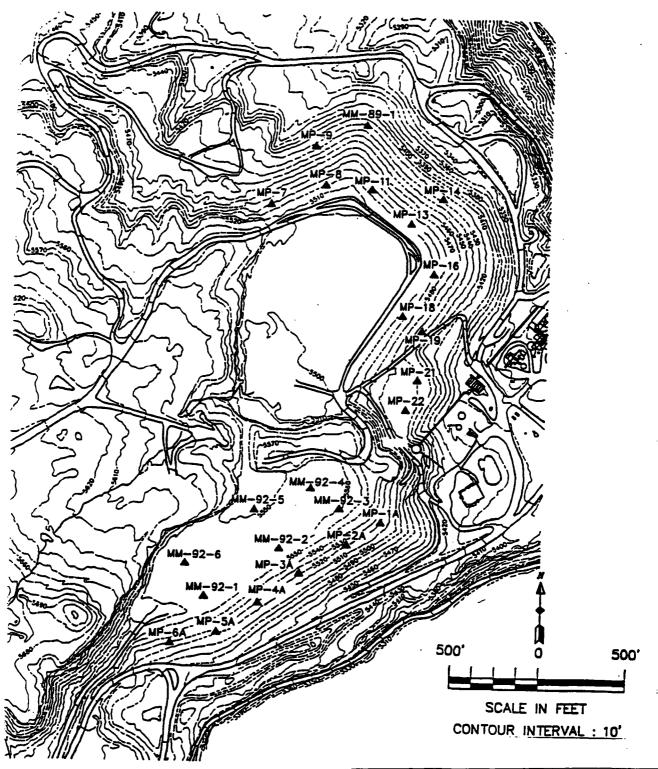
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Figure 6.6.3-1: Locations of Soil and Ambient Air Monitoring Stations

Uravan Superfund Site Uravan, Colorado



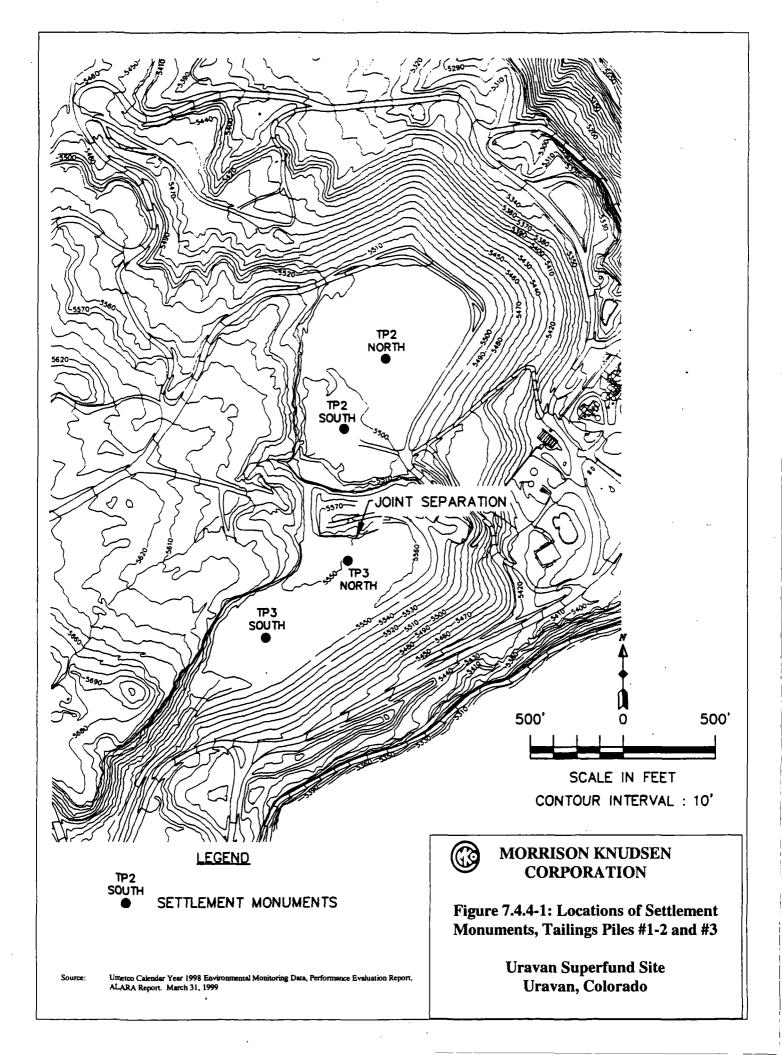
LEGEND MOVEMENT MONUMENTS

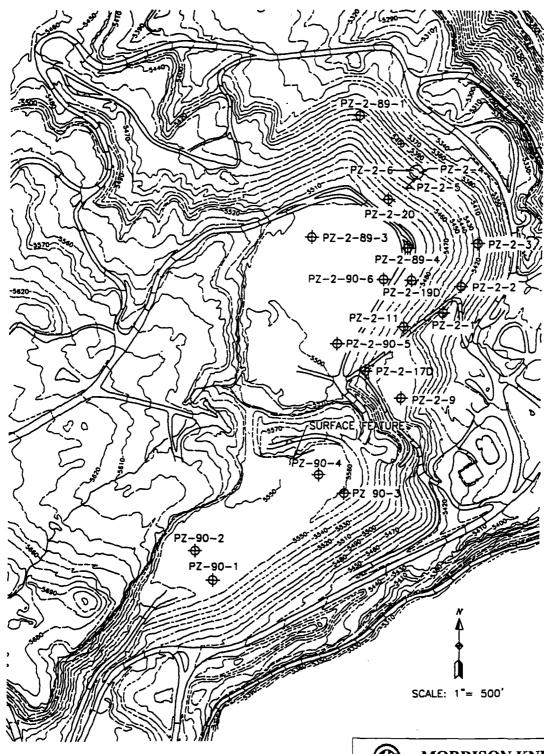


Figure 7.4.1-1: Locations of Movement Monuments, Tailings Piles #1-2 and #3

> **Uravan Superfund Site** Uravan, Colorado

Umetco Calendar Year 1998 Environmental Monitoring Data, Performance Evaluation Rep ALARA Report. March 31, 1999





<u>LEGEND</u>
PZ-90-2

→ PIEZOMETER LOCATIONS



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Figure 7.4.7-1: Locations of Piezometers, Tailings Piles #1-2 and #3

Uravan Superfund Site Uravan, Colorado

Source

Umetco Calendar Year 1998 Environmental Monitoring Data, Performance Evaluation Report, ALARA Report. March 31, 1999

APPENDIX 2

PHOTOGRAPHS



Photo 2-1: Aerial photograph of Uravan Superfund Site, July 1989



Photo 2-2: Aerial photograph of Uravan Superfund Site, August 1997

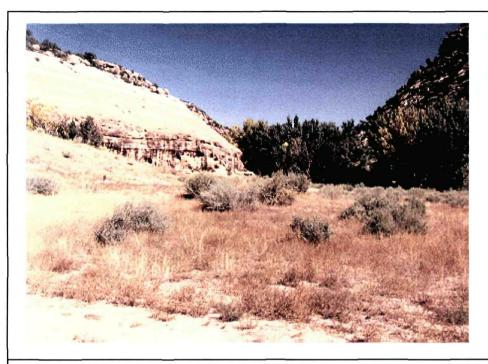


Photo 4.1-1: Atkinson Creek Disposal Area, October 1999

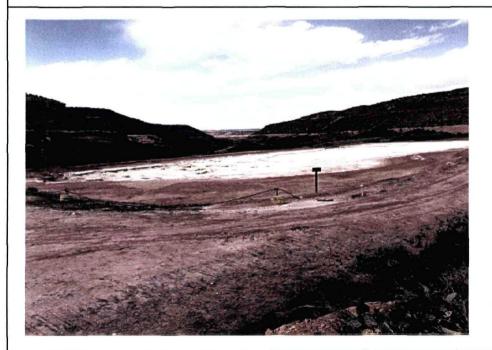


Photo 4.2-1: Lower Club Ranch Evaporation Ponds, May 1989



Photo 4.1-2: Atkinson Creek Disposal Area, October 1999



Photo 4.2-2: Lower Club Ranch Evaporation Ponds, May 1989



Photo 4.2-3: Club Ranch Ponds #1, #4, #6, #7, and #8, October 1999

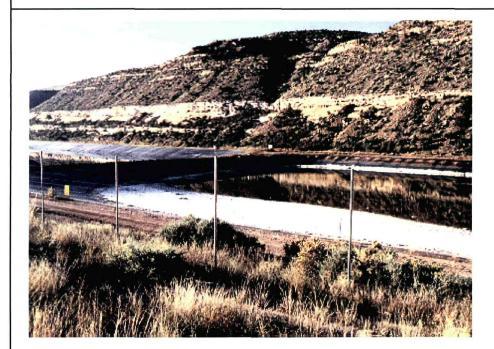


Photo 4.2-5: Club Ranch Pond #1, With Raffinate Crystals, October 1999

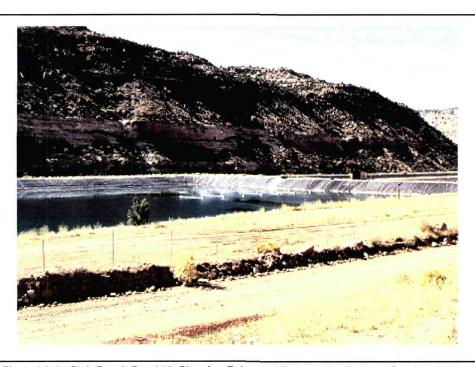


Photo 4.2-4: Club Ranch Pond #8, Showing Enhanced Evaporation System, October 1999



Photo 4.2-6: Raffinate Crystals Below Club Ranch Pond !1, June 1987

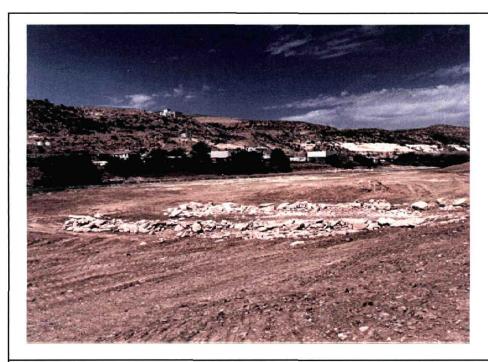


Photo 4.3-1: River Ponds Area Cleanup, Ongoing, May 1989

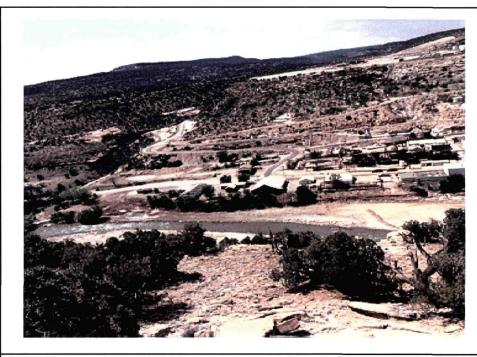


Photo 4.3-2: River Ponds Area Cleanup, Complete, July 1989



Photo 4.3-3: River Ponds Area, Foreground With Trees, October 1999



Photo 4.4-1: Regrading and Contouring of Tailing Pile #1-2 Slope, May 1989



Photo 4.4-2: Regrading of Tailing Pile #1-2 Slope, B-Plant in Background, May 1989



Photo 4.4-4: Joint Separation in Tailings Pile #3, October 1999



Photo 4.4-3: Top of Tailings Pile #3, October 1999

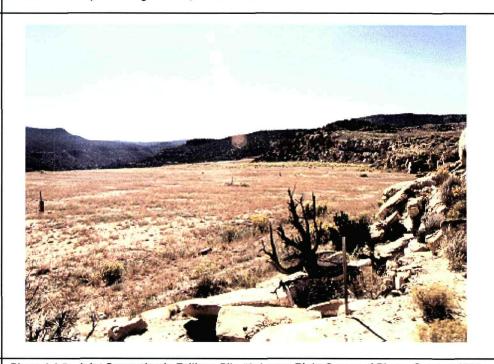


Photo 4.4-5: Joint Separation in Tailings Pile #3, Lower Right Corner of Photo, October 1999



Photo 4.4-6: Top of Tailings Pile #1-2, October 1999



Photo 4.4-8: Slope of Tailings Pile #1-2, October 1999

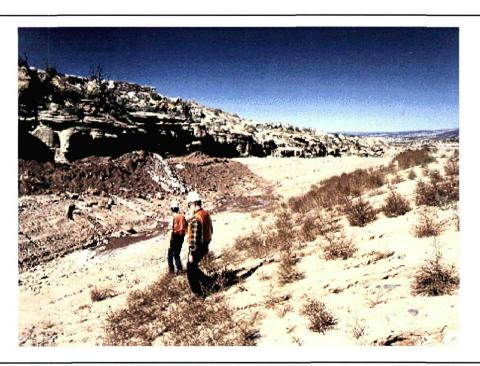


Photo 4.4-7: Diversion Ditch on Top of Tailings Pile #1-2, October 1999

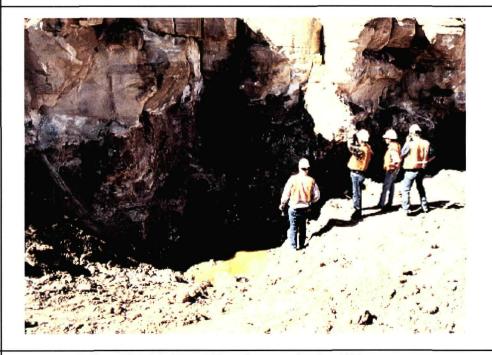


Photo 4.4-9: Tailings Pile #1-2, Ground Water Seepage, October 1999

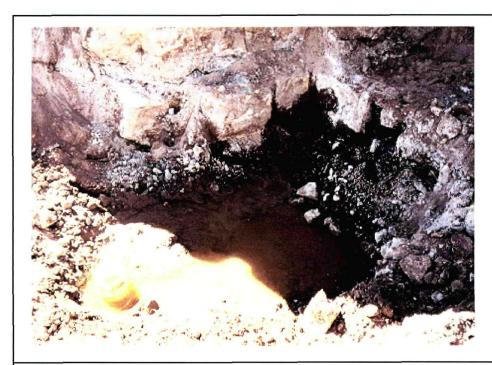


Photo 4.4-10: Tailings Pile #1-2, Ground Water Seepage, October 1999

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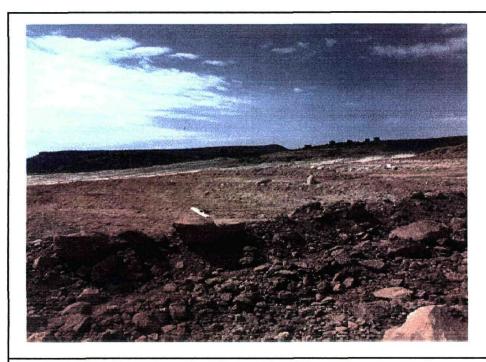


Photo 4.5-1: Club Mesa Disposal Area Cleanup, May 1989

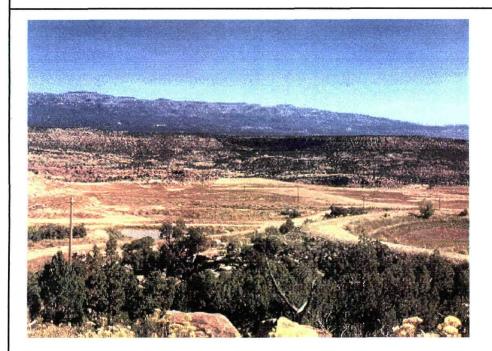


Photo 4.5-3: Club Mesa Disposal Area, October 1999

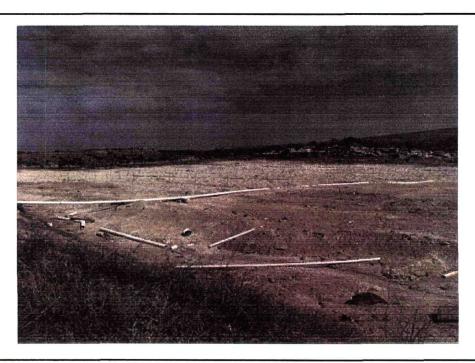


Photo 4.5-2: Club Mesa Disposal Area Cleanup, May 1989

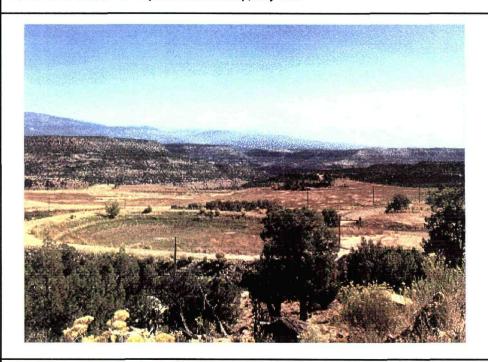


Photo 4.5-4: Club Mesa Disposal Area, October 1999

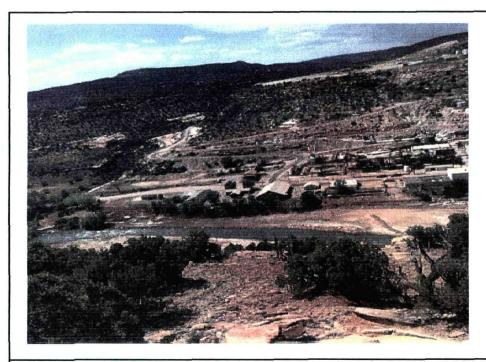


Photo 4.6-1: A-Plant Area, July 1989



Photo 4.6-3: B-Plant, May 1989

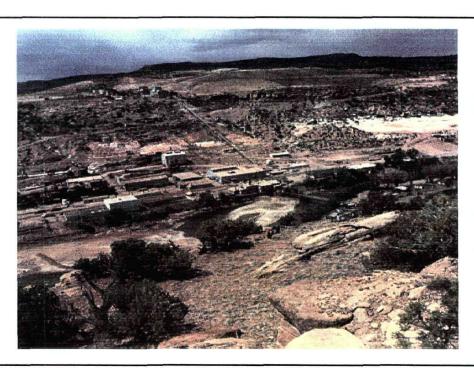


Photo 4.6-2 A-Plant Area, Foreground, B-Plant on Top of Mesa, July1989



Photo 4.6-4: A-Plant, October 1999

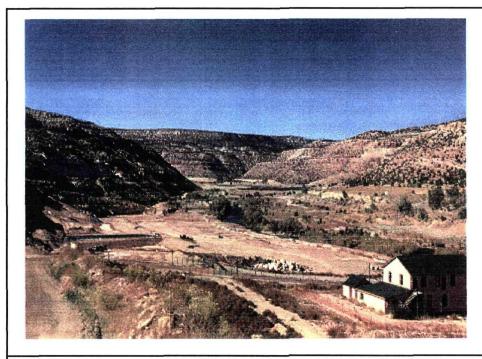


Photo 4.6-5: A-Plant Area, October 1999

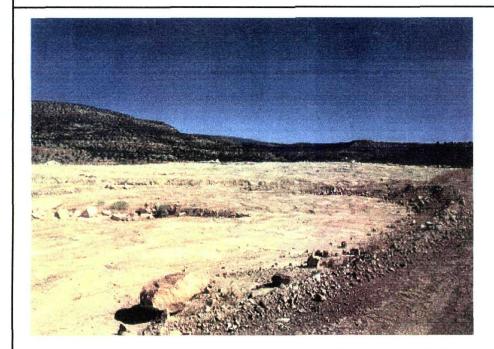


Photo 4.6-7: B-Plant Area, October 1999

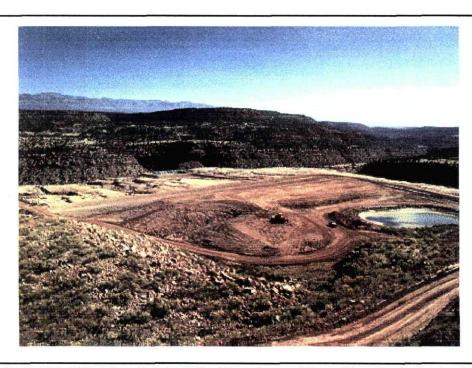


Photo 4.6-6: B-Plant Area, Showing B-Plant Repository and Return Water Ponds, October 1999

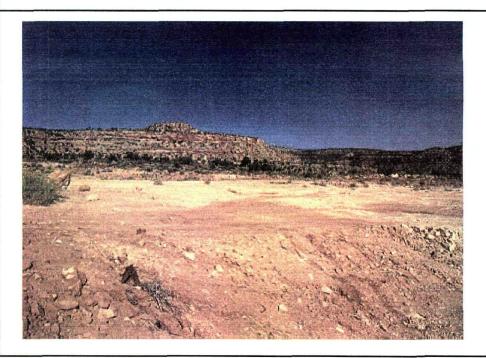


Photo 4.6-8: Former Boneyard Area, October 1999



Photo 4.7-1: Panorama Plate 1 of 3, Town of Uravan, July 1989



Photo 4.7-3: Panorama Plate 3 of 3, Town of Uravan, July 1989

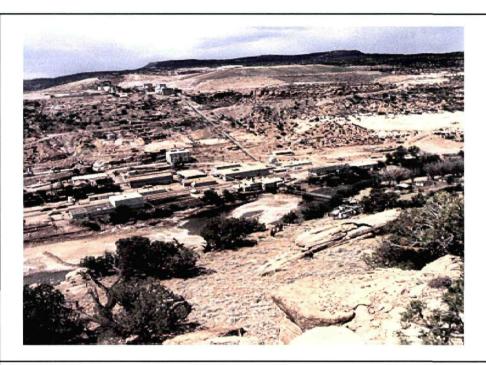


Photo 4.7-2: Panorama Plate 2 of 3, Town of Uravan, July 1989

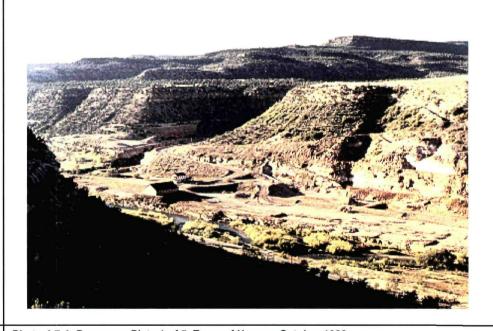


Photo 4.7-4: Panorama Plate 1 of 5, Town of Uravan, October 1999



Photo 4.7-5: Panorama Plate 2 of 5, Town of Uravan, October 1999



Photo 4.7-7: Panorama Plate 4 of 5, Town of Uravan, October 1999

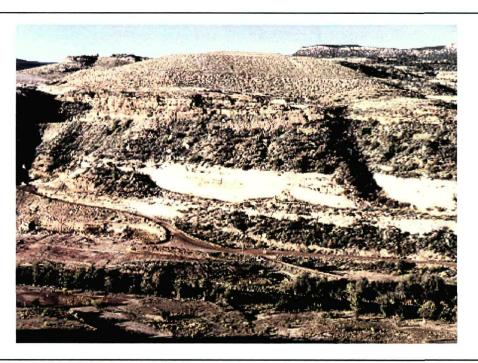


Photo 4.7-6: Panorama Plate 3 of 5, Town of Uravan, October 1999

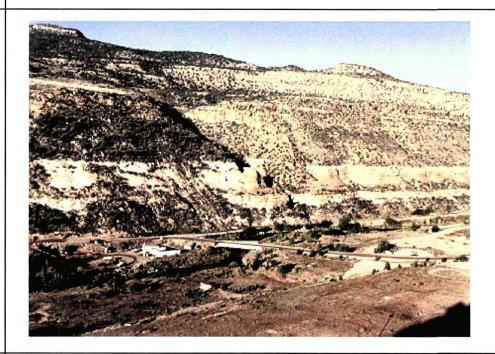


Photo 4.7-8: Panorama Plate 5 of 5, Town of Uravan, October 1999

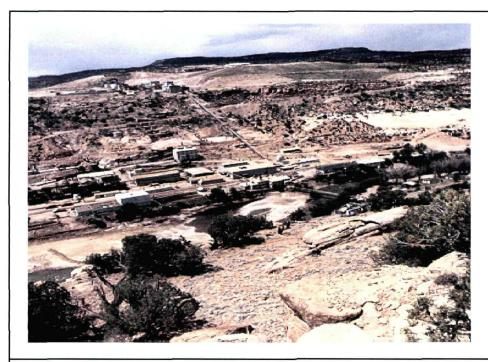


Photo 4.7-9: Hillside Area Below B-Plant With Concrete Structures, July 1989



Photo 4.8-1: Burbank Quarry Repository, May 1989



Photo 4.7-10: Hillside Area Below B-Plant Without Concrete Structures, October 1999

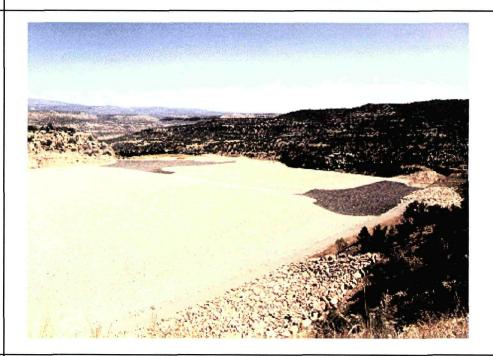


Photo 4.8-2: Burbank Quarry Repository, October 1999



Photo 4.8-4: Burbank Quarry Repository, October 1999



Photo 4.9-2: Club Mesa Borrow Areas, October 1999

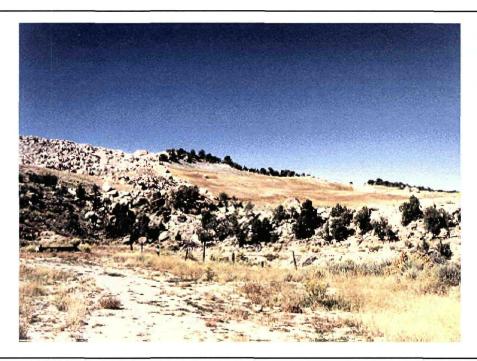


Photo 4.9-1: Club Mesa Borrow Areas, October 1999

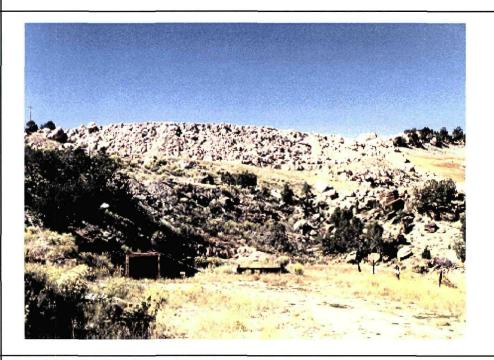


Photo 4.9-3: Club Mesa Borrow Areas, October 1999

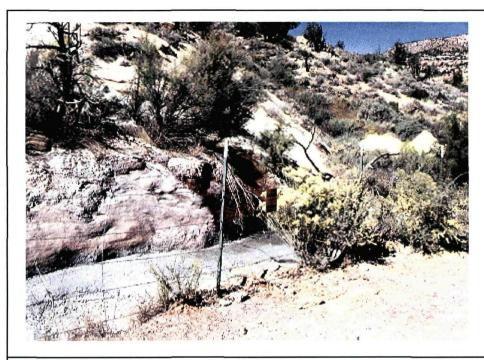


Photo 5.1.1.5-1: Hillside Collection System Along County Road EE-22, October 1999

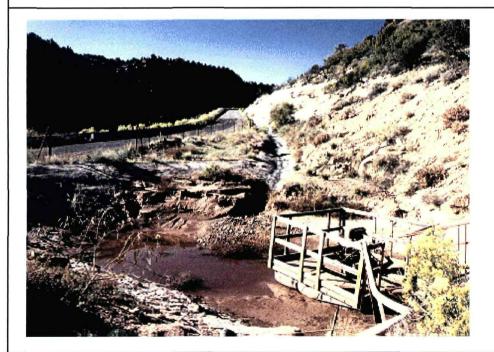


Photo 5.1.1.5-3: Hillside Collection System Along County Road EE-22, October 1999

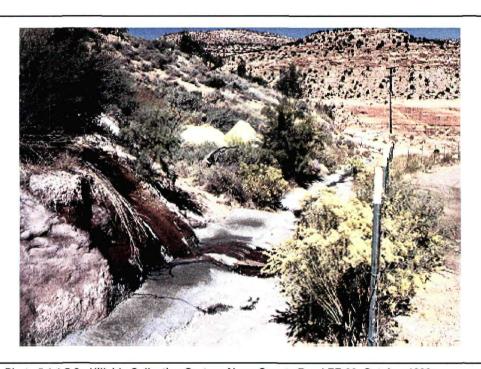


Photo 5.1.1.5-2: Hillside Collection System Along County Road EE-22, October 1999



Photo 5.1.1.5-4: Lower Pond Along County Road EE-22, October 1999



Photo 5.1.1.5-5: Middle Pond Along B-Plant Road, October 1999



Photo 5.1.2.5-1: Toe Drain Collection Sump#2 and Associated Piping, October 1999

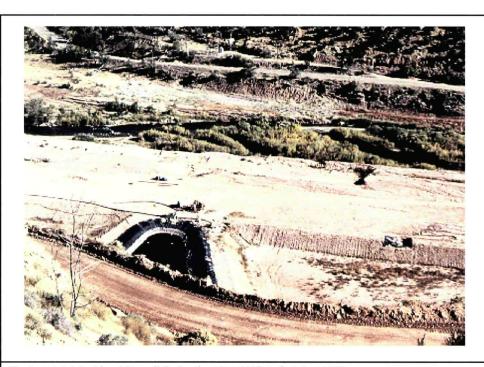


Photo 5.1.1.5-6: Lined Runoff Collection Pond RC-4, October 1999



Photo 6.6.5-1: TSP-2 Air Monitoring Station, October 1999

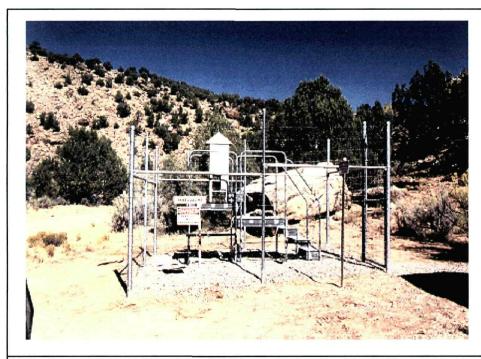


Photo 6.6.5-2: Tabeguache Air Monitoring Station, October 1999



Photo 6.6.5-4: Club Mesa Air Monitoring Station, October 1999



Photo 6.6.5-3: Tabeguache Air Monitoring Station Radon Track Etch Cups, October 1999

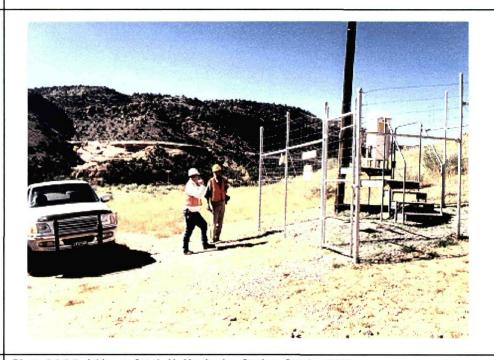


Photo 6.6.5-5: Atkinson Creek Air Monitoring Station, October 1999

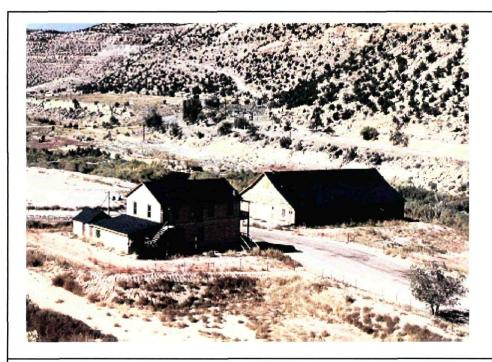


Photo 9.4-1: Boarding House (Left) and Community Center (Right), October 1999

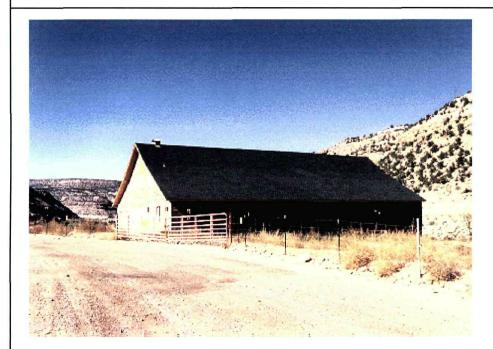


Photo 9.4-3: Community Center, October 1999

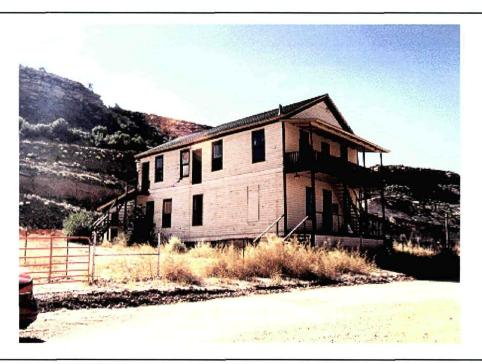


Photo 9.4-2: Boarding House, October 1999

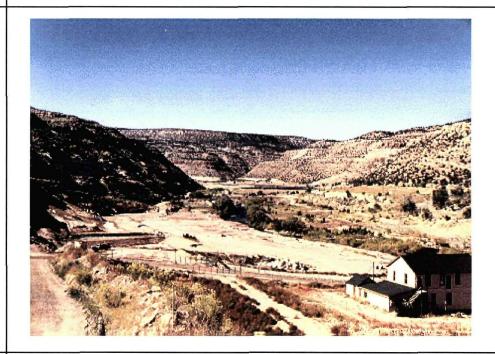


Photo 9.4-4: Boarding House and Remediated A-Plant, October 1999

APPENDIX 3

SUMMARY OF GROUND WATER MONITORING RESULTS
CLUB MESA SALT WASH MEMBER OF THE MORRISON FORMATION
MONITORING WELLS 1994-1998

						seer preu											IVIIIICI A		,	, ,						
Well # and Sample Date	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L.)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (pCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
CRP-15			_							, _																
10/28/98	<0.1	0.04	0.006	182	181	<10	445	0.7	31.2	<0.05	<0.01	<0.2	15	<0.005	124	34	1080	<0.05	<0.025	-5.4	0.3	0.2	0.4	1.4	-0.09	<0.6093
8/96	<0.1	0.1	NA	190	179	<1	449	0.70	31.2	<0.05	NA ¹	<0.2	14.0	<0.005	125	36	1290	NA	<0.025	NA	NA	NA	0.7	NA	-0.1	1.3
8/95	<0.1	0.2	<0.003	200	182	<1	442	0.50	31.7	<0.05	NA	<0.2	13.0	<0.005	127	37	1530	<0.05	<0.025	4	NA	NA	0.5	NA	-0.1	1.3
2/95	<0.1	2.6	<0.003	182	190	<1	459	0.60	30.4	<0.05	NA	<0.2	12.0	<0.005	114	40	1070	<0.05	<0.02	2	NA	NA	1.3	NA	-0.2	1.4
12/94	<0.1	<0.1	<0.003	2313	190	<1	455	0.60	30.9	<0.05	NA	<0.2	13.0	<0.005	125	40	1052	<0.05	<0.025	0	NA	NA	0.5	NA	0.1	1.5

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Weil # and Sample Date	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L.)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (pCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
СМ93-1															_											
11/06/98	<0.1	0.12	0.007	490	147	<5	1410	4.5	23.6	<0.05	<0.01	<0.1	20	<0.005	1210	642	3780	<0.05	8.39	24	0.3	0.3	1	1.6	-0.1	2.8434
9/24/98	<0.1	0.07	NA	484	154	< 5.	1490	NA	23.1	NA	NA	<0.1	17	NA	1100	681	3660	NA	NA	NA	NA	NA	NA	NA	NA	0.9478
6/16/98	<0.1	0.25	0.008	518	146	<5	1390	4.5	22.8	<0.05	<0.01	<0.1	17	<0.005	970	635	3750	<0.05	9.92	14	0.2	0.1	0.8	1.4	0.06	1.7602
3/4/98	<0.1	0.2	0.006	491	155	<5	1350	1.4	24.3	<0.05	<0.02	<0.1	17	<0.05	11 0 0	640	3730	<0.05	10.40	-11	-0.3	0.6	0.6	1.8	0	2.5049
12/97, 9/97, 6/97	NR²	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
2/97	<0.1	0.2	NA	509	155	<5	1400	<0.1	24.3	<0.05	NA	<0.15	20.0	<0.002	1230	599	3750	NA	5.1	NA	NA	NA	0.8	3.6	-0.1	0.10
12/96	<0.1	0.2	NA	487	166	<1	1470	<0.1	24.9	<0.05	NA	<0.15	21.0	0.005	1240	667	3720	NA	5.6	NA	NA	NA	0.6	2.0	-0.2	1.08
9/96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/96	<0.1	0.3	NA	511	155	<1	1430	<0.1	24.0	<0.05	NA	<0.15	18.0	<0.005	1160	638	3510	NA	5.3	NA	NA	NA	1.0	1.5	0.0	1.02
2/96	<0.1	0.2	NA	532	143	<1	1500	<0.1	22.8	<0.05	NA	<15	18.0	<0.005	1130	610	3670	NA	5.4	NA	NA	NA	1.2	2.0	0.1	3.72
12/95	<0.1	1.0	NA	496	150	<1	1410	<0.1	23.0	<0.05	NA	<15	19.0	<0.005	1220	620	3560	1180	5.5	NA	NA	NA	0.5	2.3	0.3	<0.2
8/95	<0.2	1.0	0.007	524	155	<1	1430	<0.2	27.6	<0.1	<0.02	<0.4	20.0	<0.005	1210	627	3570	<0.1	6.4	24	NA	NA	0.6	NA	-0.1	3.25
5/95	<0.2	0.3	NA	504	155	4 5	1450	<0.2	24.2	<0.1	NA	<0.55	19.0	<0.03	1220	611	3580	NA .	5.8	NA	NA	NA	0.4	1.7	0.3	1.69
2/95	<0.2	<0.5	0.008	498	154	<1	1560	<0.2	22.7	<0.1	NA	<0.2	18.0	<0.005	1130	630	3650	<0.1	5.2	-10	NA	NA	0.7	NA	-0.1	0.95
12/94	<0.2	0.1	0.010	510	154	<1	1450	<0.2	23.6	<0.1	NA	<0.4	19.0	0.003	1153	636	3580	<0.1	5.3	-13	NA	NA	0.9	NA	0.3	1.35
9/94	<0.1	0.3	<0.100	496	135	<1	1430	<0.1	24.4	<0.05	NA	<0.4	19.4	0.003	1220	617	3470	<0.05	5.3	13	NA	NA	0.6	NA	0.4	0.47
5/94	<0.05	0.2	0.007	504	151	<1	1520	<0.02	22.1	0.03	<0.01	<0.2	19.3	<0.001	1100	650	3400	<0.01	7.3	7	NA	NA	0.9	0.7-	0.0	0.80
2/94	<0.05	0.3	0.010	504	153	<0.1	1430	<0.02	24.3	0.03	<0.01	<0.2	21.0	<0.002	1200	619	3570	<0.01	5.8	9	NA	NA	0.7	2.3	0.0	1.40

					(E)	cerpted	from Ke	evised 19	196 and	1998 An	nual Er	ivironmer	ital Mo	nitoring	Reports	, Umetco	Minera .	ls Corp.	, Uravar	1, CO)	····					
Weli # and Sample Date	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (pCi/L)	Radium-226 (pCi/L.)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
СМ93-2				ļ 							<u> </u> 							:								1
11/12/98	<0.1	0.13	0.011	438	382	<5	2730	19.14	37.7	0.09	<0.01	<0.1	21	<0.005	1390	1020	5070	<0.05	7.25	43	0.2	0.3	0.6	2.4	-0.1	<0.6093
9/23/98	<0.1	0.01	NA	437	390	<5	2140	NA	36.9	NA	NA	<0.1	20	NA	1250	736	4880	NA	NA	NA	NA	NA	NA	NA	NA	<0.6093
6/16/98	<0.1	0.17	0.008	424	381	<5	2040	12	37.2	0.08	<0.01	<0.1	20	<0.005	1270	725	4900	<0.05	7.92	5	-0.5	0	0.8	1.2	-0.09	2.3695
3/4/98	<0.1	0.2	0.008	438	387	ব	2020	6.8	37.2	0.07	<0.02	<0.1	18	<0.05	1240	742	4890	<0.05	7.96	10	0.1	0.9	0.5	1.4	0	3.6558
12/97, 9/97, 6/97	NR ·	NR	NR	NR	NR	ŅR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
2/97	<0.1	0.2	NA	464	381	<5	2290	1.20	37.3	<0.05	NA	<0.15	20.0	<0.010	1360	736	4870	NA	8.2	NA	NA	NA	0.6	2.3	0.0	0.0
12/96	<0.1	0.2	NA	460	408	<1	2090	1.30	38.7	<0.05	NA	<0.15	24.0	<0.025	1420	715	4920	NA	10.1	NA	NA	NA	1.2	2.5	-0.2	1.5
9/96	<0.1	0.3	NA	460	380	<1	2040	1.10	39.2	0.05	NA	<0.15	20.0	<0.025	1340	697	4730	NA	9.3	NA	NA	NA	0.3	2.0	NA	NA
6/96	<0.1	0.3	NA	465	387	<1	2070	0.60	37.6	<0.05	NA	<0.15	22.0	<0.005	1400	755	4750	NA	10.4	NA	NA	NA	0.9	2.4	NA	NA
2/96	<0.1	0.3	NA	476	361	<5	2100	0.90	35.9	<0.05	NA	<0.15	18.0	<0.005	1280	700	4770	NA	9.8	NA	NA	NA	1.1	3.1	0.2	4.6
12/95	<0.1	0.3	NA	470	385	<1	2070	0.60	38.1	<0.05	NA	<0.55	NA	<0.005	1380	720	4930	NA	10.2	NA	NA	NA	0.9	2.5	0.1	<0.2
8/95	<0.2	0.3	0.006	480	370	<5	2140	0.40	37.1	<0.1	<0.02	<1.0	21.0	<0.005	1370	695	4700	<0.1	11.6	-3	NA	NA	1.0	NA ·	0.1	0.3
5/95	<0.2	0.3	NA	468	390	<5	2050	<0.2	38.2	<0.1	NA	<0.25	21.0	<0.001	1410	694	4920	NA	13.5	NA	NA	NA	0.6	2.0	0.2	<0.2
2/95	<0.2	<0.5	0.009	460	284	<1	2270	1.30	36.9	<0.05	NA	<0.1	21.0	<0.005	1330	724	4940	<0.1	13.7	16	NA	NA	0.7	NA	0.0	1.0
12/94	<0.2	0.1	<0.001	466	370	<i< td=""><td>2150</td><td><0.2</td><td>36.4</td><td><0.1</td><td>NA</td><td><0.4</td><td>19.0</td><td><0.005</td><td>1313</td><td>714</td><td>4620</td><td><0.1</td><td>12.3</td><td>25</td><td>NA</td><td>NA</td><td>1.3</td><td>NA</td><td>0.2</td><td>0.2</td></i<>	2150	<0.2	36.4	<0.1	NA	<0.4	19.0	<0.005	1313	714	4620	<0.1	12.3	25	NA	NA	1.3	NA	0.2	0.2
9/94	<0.2	0.3	<0.001	468	349	<1	2120	<0.02	37.5	<0.1	NA	0.4	20.0	<0.02	1360	718	4880	<0.1	11.9	19	NA	NA	0.8	NA	-0.4	<0.203
5/94	<0.05	<0.2	0.004	442	392	<1	2080	0.07	33.8	0.02	<0.01	<0.2	19.7	<0.001	1260	725	4670	<0.01	11.3	11	NA	NA	0.7	0.9	0.0	0.9
2/94	<0.05	0.3	<0.001	468	376	<0.1	2010	0.06	37.7	0.03	<0.01	<0.2	21.0	<0.002	1340	701	4530	<0.01	16.3	9	NA	NA	1.0	2.5	0.0	1.4

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Well # and Sample Date	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/Ļ)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (ρCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
СМ93-3									_																	
11/11/98	<0.1	0.15	0.007	214	211	<5	693	1.7	61.1	<0.05	<0.01	<0.1	23	<0.005	199	89	1460	<0.05	3.45	-0.7	0.6	0.5	0.5	1.1	-0.08	<0.6093
9/24/98	<0.1	0.03	NA	203	223	<5	738	NA	61	NA	NA	<0.1	22	NA	207	98	1520	NA	NA	NA	NA	NA	NA	NA	NA	<0.6093
6/9/98	<0.1	0.19	<0.003	210	226	<5	457	0.4	60.4	0.06	<0.01	<0.0009	<0.1	19	<0.005	198	95	1550	<0.05	4	0	0.1	0.5	1.5	0.06	<0.6093
3/5/98	<0.1	0.2	0.005	200	221	<5	1020	2.6	61.7	0.06	<0.01	<0.5	22	<0.05	188	92	1540	<0.05	1.29	2.1	-0.2	0.4	0.3	1.6	-0.1	4.4005
12/97, 9/97, 6/97	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
3/97	<0.1	0.10	NA	224	244	< 5	745	0.70	60	0.06	NA	<0.15	23.0	<0.002	231	80	1470	NA	4.1	NA	NA	NA	-0.2	2.7	-0.2	0.00
12/96	<0.1	0.20	NA	209	244	<1	700	0.60	60	0.06	NA	0.15	21.0	<0.005	225	92	1420	NA	4.4	NA	NA	NA	0.8	1.6	0.0	0.81
9/96	<0.1	0.20	NA	203	230	<5	703	0.20	59	0.07	NA	<0.45	22.0	0.001	213	82	1610	NA	4.5	NA	NA	NA	0.2	1.6	0.0	0.00
6/96	<0.1	0.30	<0.1	209	245	<1	710	<0.1	58	0.06	NA	<0.15	23.0	<0.005	225	83	1630	NA	4.6	NA	NA	NA	0.4	3.8	-0.2	0.00
3/96	<0.1	0.30	NA	225	233	<1	680	<0.1	56	0.06	NA	<0.15	22.0	<0.005	211	80	1450	NA	4.3	NA	NA	NA	1.4	2.9	0.0	1.02
12/95	<0.1	0.20	NA	220	235	<5	690	<0.1	57	0.07	NA	<0.15	22.0	<0.005	220	81	1660	NA	4.7	NA	NA	NA	0.7	2.1	0.0	1.42
8/95	<0.1	0.70	0.005	200	236	<1	710	<0.1	55	0.07	NA	<0.2	21.0	<0.005	217	84	2030	<0.05	4.7	16	NA	NA	0.5	NA	0.0	1.29
5/95	<0.1	0.70	NA	204	224	<5	728	<0.1	65	0.11	NA	<0.25	23.0	<0.005	225	97	1440	NA	5.8	NA	NA	NA	0.2	2.1	-0.2	2.03
3/95	<0.1	0.20	0.006	212	247	<1	748	<0.1	53	0.05	NA	<0.2	21.0	<0.005	239	73	1660	<0.05	4.7	-2	NA	NA	0.7	NA	-0.2	0.74
12/94	<0.1	0.20	0.006	200	263	<1	809	<0.1	52	0.05	NA	0.3	18.7.	<0.005	231	69	1640	<0.05	4.7	10	NA	NA	1.1	NA	0.5	<0.203
9/94	<0.1	0.20	0.006	177	229	<1	718	<0.1	49	0.05	NA	0.2	19.2	0.002	242	58	1760	<0.05	4.6	10	NA	NA	1.0	NA	0.4	<0.203
5/94	<0.05	1.60	0.006	200	273	<1	825	<0.02	48	0.06	<0.01	<0.2	19.5	<0.001	234	70	1860	<0.01	4.7	0	NA	NA	0.5	2.6	0.0	0.70
2/94	<0.05	0.20	0.006	206	266	<0.1	784	<0.02	51	0.07	<0.01	<0.2	20.0	<0.002	241	66	1730	<0.01	5.3	0	NA	NA	0.4	3.1	0.0	0.70

					(E)	ccerpieu	HOIH Ke	viseu 15	90 and	1990 AII	iiuai Ei	ivironmen	itai Mio	mtoring	Keports	, Ometco	Millera	s Corp.	, Uravai	i, CO)				_		
Well # and Sample Date	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (pCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
V766A																										
10/29/98	<0.1	0.7	0.01	318	291	<10	306	<0.1	261	0.79	0.09	20	40	0.074	310	1520	3090	0.44	<0.025	651	0.9	1.1	0.09	1.8	0.2	677
7/96	<0.1	24	NA	544	484	<1	721	<0.01	667	1.7	NA	52	73	0.10	755	3920	7180	NA	<0.025	NA	NA	NA	0.1	0.2	1.7	2031
8/95	<0.1	17	0.006	562	514	<5	650	<0.1	764	1.78	0.05	54	76	0.22	662	4090	7650	0.64	<0.025	2360	NA	NA	0.2	NA	0.7	1713
2/95	<0.1	25	0.005	453	530 *	<1	861	<0.1	659	1.84	NA	56	68	0.11	780	4380	7500	0.82	<0.02	1510	NA	NA	0.1	NA	0.1	1164
12/94	<0.1	26	0.008	471	533	<1	826	<0.1	677	1.91	NA	55	74	0.07	824	4060	7480	0.94	<0.025	964	NA	NA	0.2	NA	0.0	1232

Appendix 3

Summary of Ground Water Monitoring Results

Club Mesa Salt Wash Member of the Morrison Formation Monitoring Wells 1994-1998

(Excerpted from Revised 1996 and 1998 Annual Environmental Monitoring Reports, Umetco Minerals Corp., Uravan, CO) Natural Uranium (pCi/L) Nitrate + Nitrite (mg/L) Polonium-210 (pCi/L) Molybdenum (mg/L) Thorium-230 (pCi/L) Bicarbonate (mg/L) Gross Alpha (pCi/L) Radium-226 (pCi/L) Radium-228 (pCi/L) Magnesium (mg/L) Manganese (mg/L) Aluminum (mg/L) Vanadium (mg/L) Carbonate (mg/L) Potassium (mg/L) Lead-210 (pCi/L) Ammonia (mg/L) Chloride (mg/L) Selenium (mg/L) Calcium (mg/L) Arsenic (mg/L) Iron (mg/L) TDS (mg/L) Zinc (mg/L) Sodium (mg/L) Sulfate (mg/L) Well #
and
Sample
Date V768 <0.1 278 296 <0.1 45.2 13 11/16/98 0.07 < 0.003 87.7 <5 < 0.05 < 0.01 16 0.005 158 51 824 < 0.05 < 0.025 0 0.4 0.1 -0.2 -0.05 16.925 <0.1 0.08 NA 252 114 <5 468 NA 43 NA NA 0.9 17 NA NA NA NA NA NA 14.894 9/22/98 211 73 1120 NA NA NA 271 383 46.1 18 15 13.54 6/16/98 <0.1 0.42 0.003 104 <5 < 0.1 < 0.05 < 0.01 0.8 0.009 199 61 1040 < 0.05 0.059 -0.2 0.2 0.4 0.7 0.03 3/9/98 < 0.1 < 0.003 374 112 13 < 0.1 50.4 < 0.05 < 0.01 0.9 0.008 180 34 344 < 0.05 0.033 8.4 0.1 0 -0.3 14.894 <5 16 0.6 0.6 < 0.01 12/97, 9/97, NR 6/97 546 53 0.75 19.0 1180 NA NA 3/97 < 0.1 NA 274 136 <5 < 0.1 < 0.05 NA 0.011 266 84 < 0.025 NA NA 0.3 0.9 -0.1 16.9 < 0.01 54 0.5^{5} 12/96 < 0.1 NA 279 146 <1 595 < 0.1 < 0.05 NA 19.0 0.008 291 87 1310 NΑ < 0.025 NA NA NA 0.6 0.8 0.0 13.5 0.04 519 47 NA 0.8^{5} 19.0 255 80 1200 NA NA 0.5 14.2 9/96 < 0.1 NA 281 132 <1 <0.1 < 0.05 0.010 0.025 NA NA 0.5 0.0 0.08 0.95 NA 428 <0.1 51 NA 18.0 0.006 225 68 1110 NA 0.054 NA NA NA 0.4 1.2 0.012.9 < 0.1 306 120 <5 < 0.05 0.07 140 45 NΑ < 0.15 0.009 94 40 488 NA NA 0.3 0.2 14.2 3/96 NA 56 <5 < 0.1 < 0.05 16.0 0.034 NA NA 1.4 < 0.1 309 < 0.1 500 49 0.8^{5} NA 0.1 12/95 NA 280 133 <0.1 <0.05 NA 18.0 0.007 258 80 1210 < 0.025 NA NA NA 0.5 1.5 15.6 < 0.1 <0.1 <1 57 NA 8/95 < 0.1 < 0.003 322 164 <1 640 < 0.01 < 0.05 < 0.01 0.7 21.0 0.006 330 99 1770 < 0.05 < 0.02 20 NA NA 0.7 NA 13.9 0.10 58 NA 0.75 85 1290 NA 0.040 NA NA NA 0.4 2.3 0.0 16.1 5/95 < 0.1 NA 304 146 <5 < 0.1 < 0.05 19.0 0.010 289 558 0.10 52 NA < 0.1 87 1310 16 NA 0.4 NA -0.1 134 0.012 < 0.05 < 0.02 NA 13.9 3/95 < 0.1 < 0.003 297 <1 < 0.1 < 0.05 19.0 < 0.1 582 282 NA 0.004 1340 0.040 20 0.5 15.8 < 0.05 0.6 19.9 90 < 0.05 NA NA 1.0 NA 12/94 < 0.1 0.10 < 0.001 298 142 <1 603 < 0.1 63 287 114 < 0.05 NA 0.5 19.4 0.004 83 1180 < 0.05 < 0.025 16 NA NA 0.4 NA 0.5 13.5 < 0.1 < 0.1 < 0.001 290 <1 516 < 0.1 57 255 5/94 < 0.001 278 < 0.02 0.01 0.8 17.7 0.006 70 1060 < 0.01 0.022 20 NA NA 0.6 0.1 0.0 15.0 < 0.05 116 <1 < 0.01 450 49 206 < 0.2 0.006 67 990 < 0.01 15 NΑ 0.5 1.3 0.0 14.0 <0.001 292 114 < 0.02 0.01 0.6 18.6 0.022 NA 2/94 < 0.05 < 0.1 < 0.01 <0.2 421 52 214

Appendix 3 Summary of Ground Water Monitoring Results

Club Mesa Salt Wash Member of the Morrison Formation Monitoring Wells 1994-1998

(Excerpted from Revised 1996 and 1998 Annual Environmental Monitoring Reports, Umetco Minerals Corp., Uravan, CO) Natural Uranium (pCi/L) Polonium-210 (pCi/L) Thorium-230 (pCi/L) Molybdenum (mg/L) Bicarbonate (mg/L) Gross Alpha (pCi/L) Radium-226 (pCi/L) Radium-228 (pCi/L) Magnesium (mg/L) Manganese (mg/L) Aluminum (mg/L) Carbonate (mg/L) Potassium (mg/L) Vanadium (mg/L) Lead-210 (pCi/L) Ammonia (mg/L) Selenium (mg/L) Chloride (mg/L) Calcium (mg/L) Arsenic (mg/L) Iron (mg/L) TDS (mg/L) Sulfate (mg/L) Zinc (mg/L) Well # and Sample Date V769 13 11/11/98 < 0.1 0.28 < 0.003 354 40 <5 < 0.1 53.2 < 0.05 < 0.01 21 0.023 38 35 400 < 0.05 0.233 10 0.7 0.6 -0.09 16.925 1.1 1.7 9/24/98 41.3 <5 13 51.2 NA NA 1.3 19 NA < 0.1 < 0.01 NA 356 NA 39 35 644 NA NA NA NA NA NA NA 18.956 NA 374 13 49.7 < 0.01 1.1 0.2 6/9/98 < 0.1 0.12 < 0.003 41.9 <5 < 0.1 < 0.05 18 0.02 36 36 370 < 0.05 0.284 15 0.7 0.9 -0.007 18.279 1.6 3/9/98 < 0.1 0.04 < 0.003 302 41.8 <5 388 < 0.1 51.6 < 0.05 < 0.01 1.1 20 0.022 38 0.375 23 0.3 0.7 2.3 -0.1 16.248 67 974 < 0.05 1.7 NR NR NR 12/97, 9/97, NR 3/97 <0.1 0.40 0.000 344 41 <1 < 0.1 52 < 0.05 0.00 0.8^{5} 20.0 0.024 41.0 0.00 0.172 NA NA NA -0.1 20 13 33 1.1 396 12/96 342 41 54 < 0.05 0.00 1.15 20.0 0.022 42.0 NA NA <0.1 < 0.02 0.000 <1 < 0.1 0.00 0.168 1.4 NA -0.1 20 13 33 358 0.00 1.15 45 54 < 0.05 0.022 41.0 9/96 0.000 366 < 0.1 20.0 0.00 0.300 NA NA 1.1 NA 0.0 <0.1 < 0.10 <1 16 35 358 21 1.15 0.000 43 51 < 0.05 0.00 21.0 0.022 42.0 0.00 6/96 <0.1 0.05 351 <1 13 < 0.1 0.205 NA NA 1.3 NA 0.0 20 34 382 3/96 < 0.1 < 0.1 0.000 179 41 <1 < 0.1 49 < 0.05 0.00 < 0.15 20.0 0.022 38.0 0.00 0.283 NA NA 1.2 NA 0.1 23 12 33 330 0.00 1.25 12/95 <0.1 <0.1 0.000 362 40 <5 < 0.1 51 < 0.05 0.0 0.017 39.0 0.00 0.209 NA NA 1.2 NA 0.0 18 12 33 374 0.95 22 50 < 0.05 < 0.01 20.0 0.013 39.0 NA NA 0.9 NA 0.1 8/95 < 0.1 0.10 < 0.003 362 41 <1 < 0.1 **<0**.05 0.284 15 12 33 380 NA 0.8 0.024 42.0 19 -0.1 17 3/95 < 0.1 0.20 < 0.003 393 41 <1 13 < 0.1 50 < 0.05 20.0 32 370 <**0**.05 0.270 NA NA 1.2 NA 12/94 <0.1 0.10 < 0.001 350 40 <1 < 0.1 48 < 0.05 NA 1.1 18.6 0.027 40.0 **<0**.05 0.231 19 NA NA 1.0 NA 1.3 17 16 36 370 0.10 < 0.001 364 36 < 0.1 53 < 0.05 NA 1.1 20.2 0.021 42.0 0.221 22 NA NA NA 0.6 17 9/94 <0.1 <1 < 0.05 1.1 16 34 340 <0.01 50 < 0.01 0.022 40.3 0.0 5/94 0.80 < 0.001 354 39 <1 < 0.02 1.2 20.1 <0.01 0.332 18 NA NA 1.7 1.4 16 < 0.05 16 35 350 52 354 39 < 0.1 < 0.02 < 0.01 < 0.01 1.1 20.3 0.021 41.1 < 0.01 0.252 16 NA 1.7 0.0 15 2/94 < 0.05 < 0.2 < 0.001 NA 1.5 33 340

1. NA: Not Analyzed

2. NR: AnalyticalResults for These Dates or Quarters of the Year Not Included in Cited Documents

3. 777: Highest Value of Analyte Reported in Cited Documents

4. 111: Lowest Value of Analyte Reported in Cited Documents

5. Reported Analytical Result for Nitrate Only Rather Than for Nitrate + Nitrite

APPENDIX 4

SUMMARY OF GROUND WATER MONITORING RESULTS CLUB MESA KAYENTA-WINGATE MONITORING WELLS 1994-1998

Appendix 4
Summary of Ground Water Monitoring Results
Club Mesa Kayenta-Wingate Monitoring Wells 1994-1998

					(E :	xcerpted	from Re	evised 19	996 and	1998 An	nual En	vironme	ntal M	onitorin	g Repor	ts, Umetco	Minera	ls Corp.	, Uravar	n, CO)						
Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (ρCi/L)	Polonium-210 (pCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
V763S										- -																
7/21/98	<0.1	95	<0.003	830	503	<5	1630	<0.1	3410	2.34	<0.01	367	238	1.54	1370	11700	24400	0.18	<0.025	1560	0.7	0.4	0.6	1.7	0.9	1760.2
1997	NR²	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
7/96	<0.3	78	NA	820	490	<5 .	1060	<0.3	2450	2.90	NA	2224	176	0.81	996	10200	17600	NA	0.10	NA	NA	NA	0.9	0.1	2.0	1489
8/95	<0.5	77	<0.003	844	437	<5	1200	<0.5	2530	2.46	<0.05	251	214	1.17	1170	11100	19800	<0.25	<0.125	1640	NA	NA	0.5	NA	1.9	1090
3/95	<1	83	NA¹	872	NA	<1	1510	<1	3451	3.30	NA	3184	212	1.40	1360	14100	23300	NA	<0.2	NA	NA	NA	1.0	1.0	3.9	1808
1994	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
V770													,													
7/27/98	6.4	2030	<0.003	635	479	<5	1420	457	5600	112	<0.01	17.3	346	0.58	1560	34300	41800	<0.05	58.2	1910	-0.3	1	84.9 ³	3	0.8	744.7
1997	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
8/96	6.6	1990	NA	750	481	<1	1620	450	5780	114	NA	34.04	344	0.600	1700	31600	44400	NA	60	NA	NA	NA	4.0	3.3	0.8	1150
10/95	6.0	2140	<0.006	708	413	<5	1660	372	4975	98	<0.1	35.6	375	0.707	1680	32800	43800	<0.50	51	2210	NA	NA	2.5	NA	1.0	914
3/95	7.0	2180	NA	748	NA	<1	1670	400	5550	109	NA	34.34	357	0.88	1690	32900	43400	NA	55	NA	NA	NA	0.6	14.0	1.6	1022
1994	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA _	NA	NA

Appendix 4

Summary of Ground Water Monitoring Results
Club Mesa Kayenta-Wingate Monitoring Wells 1994-1998
(Excerpted from Revised 1996 and 1998 Annual Environmental Monitoring Reports, Umetco Minerals Corp., Uravan, CO)

	Ī				ı i	l	<u> </u>										1.77		<u>, </u>	<u> </u>						
Well #	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (pCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
V771		· -																								
1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA .	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1997	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
7/96	<0.1	52	NA	104	509	<5	581	<0.1	938	6.0	NA	2044	61	1.81	686	4890	8410	NA	1.21	NA	NA	NA	0.6	0.8	0.4	677
10/95	<0.1	180	NA	100	477	<5	680	<0.2	1620	13.5	NA	241 ⁴	102	1.68	839	8000	13200	NA	2.38	NA	NA	NA	3.7	0.2	0.7	238
1994	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
V772																										
7/23/98	<0.1	567	<0.003	842	408	<5	2040	<0.1	4780	9.66	<0.01	204	219	1.87	1760	22200	34100	0.42	0.5	1790	0.6	0.8	5.3	1.3	1.2	2437.2
1997	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
7/96	<0.5	550.0	NA	900	380	ঠ	1800	<0.5	4910	7.21	NA	210 ⁴	212	NA	1710	21100	32600	NA	<0.1	NA	NA	NA	5.4	0.9	15.0	2234
9/95	<0.5	506.0	<0.005	840	340	<5	1710	<0.5	4020	5.75	<0.05	185	203	NA	1580	19000	29100	0.34	<0.125	2230	NA	NA	4.5	0.0	2.0	2444
1994	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA: Not Analyzed

AnalyticalResults for These Dates or Quarters of the Year Not Included in Cited Documents

777: Highest Value of Analyte Reported in Cited Documents
Reported Analytical Result for Nitrate Only Rather Than for Nitrate + Nitrite

APPENDIX 5

SUMMARY OF GROUND WATER MONITORING RESULTS
SAN MIGUEL RIVER VALLEY KAYENTA-WINGATE SEQUENCE
MONITORING WELLS
1994-1998

Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (ρCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
CRP-1									_																	
10/19/98	<0.1	0.03	NA ^t	214	58.5	ර	8 -	NA	29.3	NA	NA	0.2	15	NA	22	102	362	NA	NA	NA	NA	NA	NA	NA	NA	<0.6093
8/12/98	<0.1	<0.1	NA	218	55.8	<5	8	NA	29.6	NA	NA	<0.1	15	NA	24	117	380	NA	NA	NA	NA	NA	NA	NA	NA	1.2186
4/23/98	<0.1	0.07	0.004	204	58	ర	9	<0.1	31.7	<0.05	<0.01	<0.1	14	<0.005	21	116	328	<0.05	<0.025	39 ²	0.3	0.6	0.37	0.2	0.135	<0.6093
2/4/98	<0.1	0.02	<0.003	212	62.2	4 5	9	<0.1	34.3	<0.05	<0.01	<0.1	18	<0.005	25	123	410	<0.05	<0.025	7.6	0.1	0.3	0.5	-0.7	-0.1	0.7447
1/97	<0.1	0.04	0.004	198	64	ঠ	9	<0.1	36	<0.05	NA	<0.14	16	<0.005	23	126	400	<0.05	<0.025	4.4	NA	NA	0.7	NA	-0.2	NA
10/96	<0.1	0.06	0.003	213	66	4 5	10	<0.1	36	<0.05	NA	<0.14	17	<0.005	25	132	370	<0.05	<0.025	3.1	NA ·	NA	0.2	NA	-0.1	NA
9/96	<0.1	0.2	<0.003	222	65	ర	10	<0.1	34	<0.05	NA	<0.14	17	<0.005	24	135	394	<0.05	<0.025	6.4	NA	NA	0.5	NA	-0.1	NA
5/96	<0.1	0.1	0.004	214	66	ర	10	<0.1	35 .	<0.05	NA	<0.14	16	<0.005	24	140	406	<0.05	<0.025	4.2	NA	NA	0.6	NA	0	NA
3/96	<0.1	<0.1	<0.003	220	67	ರ	10	<0.1	37	<0.05	NA	<0.14	16	<0.005	25	139	352	<0.05	<0.025	1.9	NA	NA	0.6	NA	<0.1	4.0
12/95	<0.1	<0.1	<0.003	210	70	<1	11	<0.1	37	<0.05	NA	<0.14	16	<0.005	25	147	394	<0.05	<0.02	3.7	NA	NA	0.6	NA	0.2	NA
9/95	<0.1	0.2	<0.003	240	69	ర	10	<0.1	38	<0.05	NA	<0.2	15	<0.005	23	142	466	<0.05	<0.025	4.9	NA	NA	0.5	NA	-0.1	1.8
4/95	<0.2	<0.2	0.001	210	73	<1	11	<0.1	37	<0.05	NA	<0.2	16	<0.001	24	139	400	<0.05	<0.02	1.4	NA	NA	0.3	NA	-0.4	0.5
2/95	<0.1	1.6	0.003	220	70	<1	12	<0.1	39 .	<0.05	NA	<0.2	17	<0.005	25	156	400	<0.05	<0.025	1.1	NA	NA	0.3	NA	-0.1	1.1
12/94	<0.1	<0.1	0.003	229	74	<1	13	<0.1	39	<0.05	NA	<0.2	15	<0.005	23	167	440	<0.05	<0.025	3.6	NA	NA	0.3	NA	0.1	0.6
8/94	<0.05	<0.1	0.003	222	72	<0.1	13	<0.02	38	0.02	<0.01	0.2	16	<0.001	26	160	440	<0.01	<0.005	3.7	NA	NA	0.2	0.6	0.1	<0.2
5/94	<0.05	<1	0.002	213	69	<0.1	13	<0.02	39	<0.01	<0.01	<0.3	16	<0.001	24	170	440	<0.01	0.006	9.6	NA	NA	0.4	1	0	0.3
2/94	<0.05	<0.2	0.005	206	73	<0.1	13	<0.02	41	0.01	<0.01	<0.2	17	<0.001	25	165	420	<0.01	0.006	3.9	NA	NA	0	1.2	0	<0.2

Appendix 5 Summary of Ground Water Monitoring Results

San Miguel River Valley Kayenta-Wingate Sequence Monitoring Wells 1994-1998
(Excerpted from Revised 1996 and 1998 Annual Environmental Monitoring Reports, Umetco Minerals Corp., Uravan, CO)

						(Excer	pted from	n Kevise	a tyyo a	<u>na 1998</u>	Annuai	Environ	mentai N	10nitorii	ig Kepor	ts, Umet	co iviine	rais Cor	p., Urava	n, CO)						
Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (ρCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
CRP-6B																										
10/15/98	<0.1	298	NA	548	370	ರ	354	NA	570	NA	NA	44	44	NA	261	3430	5760	NA	NA	NA	NA	NA	NA	NA	NA	59.576
9/21/98	<0.1	328	NA	506	384	<5	353	NA	584	NA	NA	41	48	NA	281	3570	5310	NA	NA	NA	NA	NA	NA	NA	NA	67.7
5/26/98	<0.1	453	0.005	482	335	<	321	<0.1	563	3.81	<0.01	46	47	0.049	303	3600	4920	<0.05	0.153	102	0	0	0.05	0.7	1.1	63.638
1/19/98	<0.1	180	<0.003	351	252	<5	188	<0.1	316	2.7	<0.01	27	31	0.034	174	2120	3410	<0.05	0.087	49	0.2	0.3	0.1	o	0	36.558
1/97	<0.1	222	<0.003	486	394	্	388	<0.1	670	4.48	<0.01	204	45	0.066	311	4020	5370	<0.05	0.200	60	NA	NA	0.7	1.1	-0.2	68
10/96	<0.1	202	<0.003	463	383	ර	353	<0.1	606	4.31	<0.01	29 ⁴	49	0.069	344	3350	5260	<0.05	0.182	35	NA	NA	0.2	2.4	0.2	66
9/96	<0.1	219	<0.003	482	388	ব	347	<0.1	606	4.18	<0.01	294	48	0.056	325	3580	4980	<0.05	0.192	9	NA	NA	0.1	0.8	0.2	62
4/96	<0.1	208	<0.015	564	375	ර	350	<0.1	566	4.35	<0.01	314	47	0.056	310	3700	5580	<0.05	0.180	48	NA	NA	0.2	0.9	0	66
3/96	<0.1	250	<0.003	525	354	<5	360	<0.1	644	4.58	<0.01	0.44	49	0.048	348	4100	5860	<0.05	0.180	39	NA	NA	0.3	NA	0	74
11/95	<0.1	162	<0.003	418	322	ব	300	<0.1	489	3.71	<0.01	31	38	0.148	281	3150	4970	<0.05	0.145	72	NA	NA	0.2	NA	0.2	45
8/95	<0.1	159	<0.003	430	340	<1	309	<0.1	481	3.52	<0.01	27	37	0.051	280	2930	4270	<0.05	0.149	48	NA	NA	-0.1	NA	0	49
4/95	<0.1	209	<0.003	448	368	<l< th=""><th>346</th><th><0.1</th><th>543</th><th>4.49</th><th>NA</th><th>30</th><th>42</th><th>0.097</th><th>318</th><th>3460</th><th>5300</th><th><0.05</th><th>0.190</th><th>52</th><th>NA</th><th>NA</th><th>0</th><th>NA</th><th>0.</th><th>48</th></l<>	346	<0.1	543	4.49	NA	30	42	0.097	318	3460	5300	<0.05	0.190	52	NA	NA	0	NA	0.	48
2/95	<0.1	280	<0.02	582	473	<i< th=""><th>440</th><th><0.1</th><th>824</th><th>6.05</th><th>NA</th><th>33</th><th>57</th><th>0.08</th><th>361</th><th>4810</th><th>7200</th><th><0.05</th><th>0.287</th><th>75</th><th>NA</th><th>NA</th><th>0.1</th><th>NA</th><th>-0.2</th><th>62</th></i<>	440	<0.1	824	6.05	NA	33	57	0.08	361	4810	7200	<0.05	0.287	75	NA	NA	0.1	NA	-0.2	62
11/94	<0.1	150	<0.003	402	358	<1	311	<0.01	450	3.47	<0.01	25	36	0.045	266	3010	4250	0.05	0.149	65	NA	NA	0.1	NA	0.5	45
8/94	<0.05	2.2	<0.001	494	389	<0.1	383	<0.02	576	4.50	<0.01	36	45	0.06	353	3600	5170	0.03	0.193	64	NA	NA	0	0.8	0.2	49
5/94	<0.05	308	<0.001	792	389	<0.1	422	<0.02	775	6.07	<0.01	46	53	0.081	365	4900	6940	<0.01	0.278	78	NA	NA	0.2	0.6	0	69
2/94	<0.05	278	0.003	518	378	<0.1	396	<0.02	809	6.04	<0.01	41	53	0.073	388	4530	6280	<0.01	0.292	82	NA	NA	0.3	1	0	57

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Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (pCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L.)
CRP-6C																										
10/15/98	<0.1	590	NA	682	391	ব	537	NA	956	NA	NA	61	78	NA	430	5800	9350	NA	NA	NA	NA	NA	NA	NA	NA	62.284
9/21/98	<0.1	660	NA	615	401	<5	558	NA	995	NA	NA	58	77	NA	441	6600	9260	NA	NA	NA	NA	NA	NA	NA	NA	67.7
6/3/98	<0.1	793	0.006	610	425	<5	1180	<0.1	1660	14.6	<0.01	69	69	0.153	684	17700	15600	<0.05	0.26	14	-0.6	0.7	0.1	0.9	0.04	74.47
1/19/98	0.1	340	<0.003	522	320	<5	402	<0.1	683	7.92	<0.01	59	65	0.088	342	4910	5320	<0.05	0.303	98	-0.3	3.3	0.5	-0.2	0.5	67.7
1/97	0.20	521	<0.003	520	437.0	<5	586	<0.1	1280	13	<0.02	474	75	0.161	510	7600.0	8400.0	<0.05	0.56	60.0	NA	NA	0.7	1.1	-0.2	66
10/96	<0.1	514	<0.003	580	442.0	<5	542	<0.1	1270	13	<0.01	484	75	0.157	480	6180.0	8260.0	<0.05	0.52	31.0	NA	NA	-0.3	0.3	0.3	74
9/96	<0.3	566	<0.003	596	416.0	ব	565	<0.3	1140	12	<0.05	45 ⁴	80	0.142	503	7110.0	9560.0	<0.05	0.60	-15.0	NA	NA	0.3	0.0	0.1	74
4/96	0.10	525	<0.015	618	404.0	ರ	610	<0.1	1120	13	<0.02	46 ⁴	84	0.127	478	7200.0	9780.0	<0.05	0.53	87.0	NA	NA	0.2	0.9	0.0	81
3/96	0.20	520	<0.003	591	419	ব	550	<0.2	1240	14	<0.02	14	82	0.197	549	7200	9720	<0.05	0.59	84.0	NA	NA	0.4	NA	0.1	95
11/95	0.20	513	<0.003	[.] 580	383	ব	570	<0.2	1150	13	<0.02	524	76	0.052	521	7600	10700	<0.05	0.59	45	NA	NA	0.3	NA	0.1	55
8/95	<0.2	553	<0.003	558	384	<1	610	<0.2	1190	14	<0.02	46	72	0.185	520	7050	9940	<0.1	0.64	108	NA	NA	0.1	NA	0.1	80
4/95	0.10	470	<0.003	574	406	<1	513	<0.2	999	12	NA	41	67	0.180	472	5600	8930	<0.05	0.53	88	NA	NA	0.1	NA	-0.1	70
3/95	<0.5	630	<0.02	640	407	<1	720	<0.5	1380	18	NA	59	79	0.250	606	8550	12400	<0.25	0.80	39	NA	NA .	0.1	NA	0	74
11/94	0.20	440	<0.003	554	388	<1	558	<0.1	1070	13	<0.01	43	65	0.100	450	6610	8590	<0.05	0.625	105	NA	NA	0.1	NA	0.7	78
8/94	0.20	550	<0.001	590	444	<0.1	657	<0.04	1230	15	<0.02	56	78	0.170	560	7780	10600	<0.02	0.73	65	NA	NA	0.2	0.2	0.1	54
5/94	0.40	655	0.021	856	454	<0.1	656	<0.04	1470	18	<0.02	70	86	0.189	628	7790	12700	<0.02	0.918	140	NA	NA	0.1	0.9	2	67
2/94	0.30	616	0.002	589	424	<0.1	622	<0.02	1430	17	<0.01	57	83	0.192	567	7950	11060	<0.01	0.93	180	NA	NA	0	0.9	0	56

<u> </u>	_ :					(Excer	pted froi	m Revise	<u>d 1996 a</u>	nd 1998	Annual	Environ	mental N	Aonitorii	ig Repor	ts, Umet	co Mine	rals Cor	p., Urava	in, CO)						
Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (ρCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
CRP-7A																										
11/23/98	15.4	2330	NA :	232	466	<5	2930	NA	6620	NA	NA	94	126	NA	2290	36000	47000	NA	NA	NA	NA	NA	NA	NA	NA	169.25
9/28/98	30	2550	NA	198	479	<5	2770	NA	6770	NA	NA	117	104	NA	2220	35700	54100	. NA	NA	NA	NA	NA	NA	NA	NA	311.42
5/18/98	35.6	2800	<0.003	180	463	<5	50	4.5	7400 .	98.5	<0.01	149	117	1.35	2350	42600	58500	<0.05	16.4	612	0.2	0.7	0.6	0.9	0.09	223.41
3/10/98	57.5	2780	<0.015	174	482	ব	2980	6.2	7550	106	<0.05	63	114	1.53	2560	46500	61800	<0.05	19.4	240	1	0.4	1.8	2.2	0	338.5
12/96	122	2900	<0.015	220	508	ব	3360	7.4	8250	122	<0.1	67 ⁴	124	1.4	2870	55200	60300	<0.1	28	400	NA	NA	0.5	NA	6.0	582
9/96	148	3210	<0.003	169	506	< 5	3360	9.0	8450	132	<0.2	70⁴	116	1.3	3020	48800	63800	<0.2	30	289	NA	NA	0.6	NA	1.2	460
6/96	166	2300	<0.003	136	492	<5	3120	10.0	8420	138	<0.1	65 ⁴	119	1.5	2850	46500	65300	<0.1	33	878	NA	NA	0.9	NA	1.8	548
4/96	150	2940	<0.015	122	491	4 5	3400	11.0	8350	136	<0.1	66 ⁴	140	1.6	3080	47000	64900	<0.1	34	1310	NA	NA	2.7	NA	1.9	745
3/96	145	2730	<0.015	120	497	<5	3500	11.0	8670	139	<0.1	644	152	1.6	3090	46000	63800	<0.1	33	562	NA	NA	0.7	NA	0.5	745
2/96	140	2800	<0.015	163	487	<5	3300	12.3	8930	144	0.1	594	149	1.5 .	3090	49000	68000	<0.1	35	506	NA	NA	1.4	NA	0.8	623
1/96	141	2760	<0.015	308	502	ব	3500	14.0	8810	139	<0.1	<0.14	152	1.8	3080	49000	67800	<0.1	32	802	NA	NA	1.4	NA	2.8	467
12/95	152	2890	<0.015	154	480	<5	3530	16.0	8990	142	<0.1	63	154	1.3	3090	51700	67900	<0.1	34	1050	NA	NA	1.1	NA	0.4	330
8/95	141	2900	<0.015	32	473	<1	3410	27.0	8491	139	<0.2	61	156	1.7	2900	48600	67900	<1	33	433	NA	NA	1.5	NA	0.0	655
4/95	86	2480	<0.02	108	526	<1	3170	45.0	8000	130	<0.1	48	164	1.6	2740	43700	57300	<0.5	28	384	NA	NA	0.7	NA	1.2	424
8/94	249	3080	<0.01	38	530	<1,	3690	20.1	8600	143	<0.1	64.6	149	1.5	3120	49900	67300	<0.1	40	1980	NA	NA	0.1	4.9	2.2	597
5/94	255	3270	0.053	109	518	<0.1	3150	19.8	9120	151	<0.2	69.7	134	1.7	3260	51200	63400	<0.2	43	580	NA	NA	0.4	2.3	13.0	1100
2/94	351	3370	<0.005	124	556	<0.1	3610	21.3	9500	155	<0.2	64.4	140	2.0	3370	61900	73600	<0.2	48	710	NA	NA	0.9	5.4	7.3	1050

Appendix 5 Summary of Ground Water Monitoring Results

San Miguel River Valley Kayenta-Wingate Sequence Monitoring Wells 1994-1998
(Excerpted from Revised 1996 and 1998 Annual Environmental Monitoring Reports, Umetco Minerals Corp., Uravan, CO)

						(Excer	ptea troi	n Kevise	a 1330 a	na 1998	Annuai .	Lnviron	mental N	1onitorir	ig Kepor	ts, Umet	co Minei	rais Cor	o., Urava	n, CO)						
Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (ρCi/L)	Polonium-210 (ρCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
CRP-7B																										
11/23/98	<0.1	1270	NA	1460	445	<5	2610	NA	2800	NA	NA	0.4	229	NA	795	13900	19800	NA	NA	NA	NA	NA	NA	NA	NA	19.633
9/28/98	<0.1 ∤	987	NA	1560	475	<5	1190	NA	3010	NA	NA	1	215	NA	764	13800	21800	NA	NA	NA	NA	NA	NA	NA	NA	27.08
6/4/98	<0.1	995	0.006	292	471	<5	1330	0.4	2990	11.6	<0.01	1.9	222	<0.005	758	15700	22000	<0.05	0.3	68	-0.6	0.1	0.3	4.1	-0.05	29.111
3/10/98	<0.1	855	<0.015	1460	465	<5	1150	0.9	2920	11.6	<0.05	<0.5	203	<0.025	708	15800	31400	0.02	0.32	93	0.6	0.2	0.2	5.6	0	17.602
12/96	<0.3	923	<0.015	1550	495	<	1190	1	3060	12.1	<0.05	<0.44	244	<0.005	790	15900	21600	<0.05	0.39	-45	NA	NA	0.3	4.6	0.0	40
9/96	<0.3	1060	<0.003	1580	489	<5	1240	<0.3	3340	12.6	<0.05	<0.14	247	<0.050	881	8080	21900	<0.05	0.5	64	NA	NA	0.2	4.3	-0.1	62
6/96	<0.3	920	<0.015	1600	466	ঠ	1170	<0.5	3180	12.4	<0.05	0.34	215	<0.025	78 7	16400	21800	<0.05	0.6	57	NA	NA	0.3	2.9	0.0	45
3/96	<0.3	1020	<0.003	1700	456	<5	1200	<0.5	3180	12.8	<0.05	0.94	222	0.045	852	17000	22300	<0.05	0.8	137	NA	NA	0.3	3.5	7.0	122
2/96	<0.3 <0.3	1270 1420	<0.015	1930	455 437	<5	1350 1590	<0.5 <0.5	5310 3830	15.6 19.0	<0.05	2.6 ⁴	233	0.132	928 1050	18600	25600	<0.05	1.3	282	NA	NA	0.6	NA NA	0.2	143
1/964	<0.3	1420	<0.003 <0.003	2090 2090	437	ර ර	1590	<0.5	3830	19.0	<0.05 <0.05	4.0 ⁴	244	0.114	1050	20100 20100	29900 29900	<0.05 <0.05	1.7 1.7	272 272	NA NA	NA NA	0.2	NA NA	0.1	265
12/95	<0.3	1400	<0.003	2260	424	5	1740	<0.1	4320	21.2	<0.05	4.74	256	0.114	1060	23400	32500	<0.05	2.3	325	NA NA	NA NA	0.2	NA NA	0.1	265
11/95	<0.5	1660	<0.003	2150	477	<5 ∶		3.0	4120	20.0		3.9	254	0.151	1090	22500	30300	<0.25	2.1	484	NA NA	NA NA	0.4		0.1	330
8/95 4/95	<0.5	1960	<0.02	2050	537	<1	1800	6.0	4580	25.4		9.6	248	0.350	1250	24200	33000	<0.1	3.1	672	NA	NA	0.1	NA	-0.1	303 312
3/95	<0.5	1740	<0.03	2000	-511	<1	1800	4.7	4470	23.7	NA	7.6	254	0.120	1240	22600	32200	<0.25	2.6	265	NA	NA	0.3		0.1	282
8/94	<0.25	1510	<0.01	1925	496	<1	1610	<0.1	4050 .	21.4	<0.05	9.2	238	0.150	1130	21400	28900	0.06	2.1	529	NA	NA	0.1	3.8	0.0	119
5/94	<1	1450	<0.001	1732	501	<0.1	1360	1.9	3760	20.3	<0.2	7.0	221	0.097	1090	21400	25500	<0.2	2.1	390	NA	NA	0.3	3.8	0.0	160
2/94	0.8	2660	<0.005	2190	534	<0.1	2430	7.5	6440	47.8	<0.1	34.9	255	0.360	1830	36400	43600	<0.1	7.5	230	NA	NA	0.4	4.2	0.0	220

Appendix 5 Summary of Ground Water Monitoring Results

San Miguel River Valley Kayenta-Wingate Sequence Monitoring Wells 1994-1998
(Excerpted from Revised 1996 and 1998 Annual Environmental Monitoring Reports, Umetco Minerals Corp., Urayan, CO)

						(Excer	ptea troi	n Kevise	R OKKT D	na 1998	Annuai	FUALLON	mentai N	tonitorii	ig Kepor	ts, Umet	co ivilne	rais Cor	o., Urava	n, CO)						
Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L.)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (ρCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
CRP-7C																-										
11/23/98	0.6	2190	NA	1480	487	ර	1190	NA	5760	NA	NA	64	227	NA	1910	45500	46400	NA	NA	NA	NA	NA	NA	NA	NA	426.51
9/4/98	0.6	2920	NA	1500	500	ব	2650	NA	6500	NA	NA	82	210	NA	2020	36800	50400	NA	NA	NA	NA	NA	NA	NA	NA	433.28
5/20/98	1.2	2190	0.004	1200	507	ರ	2480	<0.1	6550	55.4	0.2	64	217	0.665	1990	37800	51500	<0.05	5.3	474	0.5	0.7	0.3	1.2	0.2	412.97
3/4/98	0.7	2410	<0.015	1850	513	ব	2200	1.1	5470	30	<0.1	43	218	0.69	1710	30100	40300	<0.1	4	375	0.6	0.8	0.2	-0.1	0.1	419.74
12/96	0.8	1570	<0.003	2130	566	ঠ	1870	20.9	5270	29	<0.1	10⁴	229	0.52	1560	30700	34800	<0.1	5.2	396	NA	NA	0.2	NA	0.2	542
9/96	0.9	1580	<0.015	2020	527	ර	1920	27.9	5000	30	<0.1	124	224	0.45	1490	25800	35200	<0.1	5.2	1050	NA	NA	0.2	NA	0.1	535
6/96	0.8	1700	<0.003	2000	516	4 5	1990	20.0	5250	34	<0.1	20 ⁴	222	0.53	1570	27100	36800	<0.1	6.2	1030	NA	NA	0.8	NA	1.0	250
3/96	1.0	2440	<0.015	1750	520	ঠ	2700	2.0	6880	52	<0.1	63 ⁴	265	0.97	2190	35000	48200	<0.1	7.8	574	NA .	NA	0.3	NA	0.8	432
11/95	0.4	1450	<0.030	400	480	<5	1910	22.8	4400	25	<0.05	15 ⁴	218	0.50	1360	25500	35300	<0.05	3.6	410	NA	NA	0.3	NA	0.7	376
8/95	0.5	1340	<0.003	2060	474	ব	1750	22.5	4490	24	<0.05	9	223	0.51	1340	24000	32600	<0.25	3.9	562	NA	NA	0.4	NA	0.0	309
4/95	1.0	1880	<0.02	1800	502	<1	1890	18.0	5060	34	<0.1	17	227	0.35	1520	25600	36700	<0.5	5.9	568	NA	NA	0.1	NA	0.0	185
2/95	7.0	2260	<0.003	1290	496	<1	2460	24.0	5930	71	NA	26	76	0.86	1880	33700	46700	<0.5	16.4	521	NA	NA	0.2	NA	0.6	201
8/94	2.5	2200	<0.01	1380	484	<1	2230	22.7	5400	50	<0.1	19	232	0.39	1690	31100	39400	<0.1	9.0	588	NA	NA .	0.1	1.1	0.0	305
5/94	123.0	3130	0.002	130	484	<0.1	2760	11.3	7320	113	<0.2	78	175	0.91	2770	42100	56200	<0.2	31.3	1100	NA	NA	0.4	2.1	0.7	620
2/94	3.7	2450	<0.005	1380	506	<0.1	2330	12.6	6350	62	<0.1	28	233	1.99	1870	33300	42100	<0.1	14.2	570	NA	NA	0.4	1.2	0.0	300

<u></u>						(Excer	pted from	n Kevise	d 1996 a	nd 1998	Annual	Environ	mental N	<u>Ionitori</u> r	ig Repor	ts, Umet	co Mine	rals Cor	o., Urava	ın, CO)			-			
Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (pCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L.)
CRP-8A		i			 												1									
11/14/98	<0.1	217	NA	392	228	<5	242	NA ·	491	NA	NA	7	40	NA	202	2740	4300	NA	NA	NA	NA	NA	NA	NA	NA	74.47
9/21/98	<0.1	195	NA	380	206	<5	246	NA	479	NA	NA	7.1	33	NA	210	3050	4090	NA	NA	NA	NA	NA	NA	NA	NA	59.576
6/25/98	<0.1	98	<0.003	381	246	<5	282	<0.1	552	4.46	<0.01	17	42	0.063	210	3370	4870	<0.05	0.152	54	-0.4	0.2	0.07	0.5	0.02	74.47
1/14/98	0.1	771	<0.003	293	329	<5	449	<0.1	910	12.2	<0.02	70	68	0.115	405	6190	8670	<0.05	0.468	165	0.4	0.2	0.1	1.7	0	74.47
1/97	0.2	416	<0.003	526	350	ঠ	437	<0.1	1080	8	<0.02	6.04	64	0.118	371	5610	8390	<0.05	0.34	122	NA	NA	0.2	1.8	-0.1	129
10/96	<0.1	372	<0.003	502	364	ঠ	432	<0.1	1040	9	<0.02	3.84	60	0.111	383	5850	8390	<0.05	0.33	146	NA	NA	0.1	-0.7	0.1	115
8/96	<0.1	326	<0.003	492	307	ర	360	<0.1	788	7	<0.01	3.34	52	0.078	290	4690	6380	<0.05	0.25	111	NA	NA	0.0	-1.1	0.1	95
4/96	<0.1	375	<0.003	448	329	්	420	<0.1	935	8	<0.01	5.04	57	0.106	371	5500	7650	<0.05	0.33	84	NA	NA	0.1	1.9	0.1	108
2/96	<0.1	346	<0.003	460	321	<্	380	<0.1	807	7	<0.01	9.24	52	0.077	311	4800	6670	<0.05	0.29	79	NA	NA	0.0	NA	0.0	74
11/95	<0.1	550	<0.003	540	351	ৰ্ব	690	<0.1	1560	13	<0.02	32.04	73	0.170	582	9100	13100	<0.05	0.55	178	NA	NA	0.2	NA	0.2	202
7/95	<0.2	620	<0.003	590	418	<i< th=""><th>693</th><th><0.1</th><th>1640</th><th>15</th><th><0.02</th><th>14.4</th><th>75</th><th>0.222</th><th>676</th><th>9140</th><th>14100</th><th><0.1</th><th>0.78</th><th>164</th><th>NA</th><th>NA</th><th>-0.2</th><th>NA</th><th>0.5</th><th>213</th></i<>	693	<0.1	1640	15	<0.02	14.4	75	0.222	676	9140	14100	<0.1	0.78	164	NA	NA	-0.2	NA	0.5	213
4/95	<1	1280	<0.005	514	457	<1	1360	<1	3910	33	<0.1	17.5	128	0.803	1240	21400	28900	<0.05	1.10	734	NA	NA	0.1	NA	0.0	395
2/95	<0.5	270	<0.003	611	518	<1	949	<0.5	2430	33	NA	10.7	103	0.450	846	13400	17100	<0.25	1.48	244	NA	NA	0.1	NA	0.0	236
8/94	8.0	1540	<0.005	240	486	<0.1	1750	<0.1	4550	65	<0.05	3.8	133	0.525	1600	25700	53200	<0.05	7.41	491	NA	NA	0.2	0.9	0.0	161
5/94	0.5	662	0.008	796	369	<0.1	641	<0.04	1460	15		9.0	72	0.144	586	10500	12200	<0.02	0.92	60	NA	NA	0.0	0.3	0.0	85
2/94	14.5	1470	0.003	399	541	<0.1	1440	<0.02	4240	79	<0.01	24.1	120	0.637	1450	22700	29460	<0.01	13.30	280	NA	NA	0.2	1.5	1.0	420

Appendix 5

Summary of Ground Water Monitoring Results

San Miguel River Valley Kayenta-Wingate Sequence Monitoring Wells 1994-1998

(Excerpted from Revised 1996 and 1998 Annual Environmental Monitoring Reports, Umetco Minerals Corp., Uravan, CO) Nitrate + Nitrite (mg/L) Polonium-210 (pCi/L) Molybdenum (mg/L) Thorium-230 (pCi/L) Bicarbonate (mg/L) Magnesium (mg/L) Manganese (mg/L) Gross Alpha (pCi/L) Radium-228 (pCi/L) Aluminum (mg/L) Ammonia (mg/L) Vanadium (mg/L) Lead-210 (pCi/L) Carbonate (mg/L) Selenium (mg/L) Chloride (mg/L) Calcium (mg/L) Sodium (mg/L) Arsenic (mg/L) Zinc (mg/L) TDS (mg/L) Iron (mg/L) Sulfate (mg/L) CRP-8B 174 <5 97 NA <0.1 31 85 3.1 NA 318 159 NA NA NA 962 1740 NA NA NA 9.478 11/4/98 < 0.1 NA NA NA NA NA <5 35 176 109 NA 156 NA NA <0.1 27 88 1070 7.447 9/21/98 < 0.1 NA 322 NA 1690 NA NA NA NA NA NA NA NA 4.5 <5 <0.1 33 1.2 326 192 116 <0.1 192 0.85 < 0.01 80 1220 17 10.155 6/25/98 < 0.1 < 0.003 < 0.005 1920 < 0.05 0.026 -0.4 -0.1 0.4 0.3 <5 123 <0.1 0.1 45 132 390 250 264 1.42 < 0.01 < 0.005 128 1390 0.026 22 0.2 1/14/98 < 0.1 < 0.003 2900 < 0.05 -0.3 0.1 -0.7 16.248 47 328 201 <5 100 <0.1 202 0.91 <0.01 < 0.14 31 < 0.005 85 1110 9 1/97 <0.1 < 0.003 1860 <0.05 0.03 NΑ NA 0.4 5.6 -0.1 11 <5 50 206 109 <0.1 <0.14 32 87 10/96 <0.1 < 0.003 351 203 <0.01 < 0.005 1150 1930 < 0.05 0.03 17 NA NA 0.2 0.0 1.1 52 <5 121 0.99 34 <0.1 356 210 <0.1 209 < 0.01 <0.14 86 1160 0.04 12 0.2 < 0.003 < 0.005 1910 <0.05 NA NA 0.2 0.4 52 340 218 <5 126 <0.1 221 1.05 <0.01 <0.14 35 99 1300 0.03 17 12 4/96 < 0.1 < 0.003 < 0.005 2040 < 0.05 NA NA 0.3 0.1 2.7 58 <5 123 <0.14 37 360 251 <0.1 232 1.16 < 0.01 < 0.005 102 1370 0.04 10 0.2 2/96 <0.1 < 0.003 2170 < 0.05 NA 13 NA NA 68 384 266 <1 165 <0.1 303 1.42 < 0.01 0.1^{4} 40 125 1820 14 11/95 <0.1 < 0.003 < 0.005 3000 < 0.05 0.05 NA NA 0.2 0.0 19 NA < 0.1 79 < 0.003 414 326 <1 171 <0.1 336 1.67 NA 0.3 42 < 0.005 147 1940 3230 <0.05 0.06 18 0.2 18 7*1*95 NA NA 0.3 NA <1 205 0.6 48 <0.1 123 < 0.001 444 329 <0.1 445 2.81 < 0.01 0.012 160 2700 3640 < 0.05 0.13 20 NA NA 0.3 21 **-0**.1 NA 142 <0.1 <0.1 37 <1 NA 0.06 16 0.1 <0.1 < 0.003 < 0.005 2590 <0.1 NA 2/95 NA 0.0 58 259 1.39 357 103 1590 NA 12 235 187 11/94 <0.1 < 0.001 <1 <0.1 < 0.01 0.8 53 0.004 3550 < 0.05 0.12 0 NA NA 0.3 0.1 100 418 388 2.30 136 2320 325 NA 17 < 0.1 160 < 0.02 < 0.01 0.06 19 8/94 < 0.05 < 0.001 0.002 2810 <0.01 NA 0.2 .NA 0.0 73 414 281 1.54 0.7 39 117 1840 288 1.0 12 113 5/94 < 0.05 <0.001 <0.1 <0.02 <0.01 < 0.001 2230 < 0.01 0.04 16 NA NA 0.1 0.0 < 0.3 61 363 222 1.15 35 94 239 1380 1.0 10 133 0.002 < 0.1 < 0.02 0.005 18 0.1 2/94 < 0.05 <0.01 0.2 2450 <0.01 0.06 NA NA 0.0 389 273 1.48 104 71 258 1560 13

<u> </u>	·					(Excer	pted fro	m Revise	d 1996 a	nd 1998	<u>Annual</u>	Environ	mental N	<u> Aonitorii</u>	ig Repor	rts, Umet	tco Mine	rals Cor	o., Urava	ın, CO)						
Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (ρCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L.)
CRP-8C																										
11/4/98	<0.1	142	NA	424	281	<5	177	NA	319	NA	NA	<0.1	46	NA	125	1960	3390	NA	NA	NA	NA	NA	NA	NA	NA	14.217
9/16/98	<0.1	148	NA	424	288	<5	181	NA	322	NA ·	NA	<0.1	45	NA	124	2240	3400	NA	NA	NA	NA	NA	NA	NA	NA	13.54
6/25/98	<0.1	55	<0.003	412	287	<5	179	0.4	336	1.8	<0.01	<0.1	45	<0.005	110	2240	3360	<0.05	0.056	22	0.1	0.1	0.6	1.2	0.07	15.571
1/14/98	<0.1	228	<0.003	442	316	<5	204	0.2	348	2	<0.01	<0.1	56	<0.005	146	2620	3830	<0.05	0.058	68	0.3	0.3	0.4	3.2	0	15.571
1/97	<0.1	111	0.05	418	321	<5	161	0.40	389	1.9	<0.01	<0.14	52	<0.010	129	2200	3300	<0.05	0.07	30	NA	NA	0.4	1.6	0.0	16
10/96	<0.1	104	0.0	433	323	<5	169	0.30	369	2.0	<0.01	0.24	52	<0.005	130	2050	3120	<0.05	0.06	6	NA	NA	0.1	2.6	0.0	14
8/96	<0.1	110	<0.003	432	322	<5	182	0.30	383	2.1	<0.01	0.24	50	<0.005	123	2090	3330	<0.05	0.07	26	NA	NA	0.3	2.2	0.0	16
4/96	<0.1	101	<0.003	436	312	<5	180	0.20	362	2.0	<0.01	<0.14	51	<0.005	134	2200	3420	<0.05	0.06	12	NA	NA	0.3	2.5	0.1	14
2/96	<0.1	110	<0.003	494	311	<5	184	0.20	357	2.0	<0.01	<0.14	50	<0.005	139	2260	3460	<0.05	0.06	9	NA	NA	0.3	NA	0.0	23
11/95	<0.1	107	<0.003	462	357	⊲ 5	190	<0.2	448	2.4	<0.01	0.14	57	<0.005	152	2570	3920	<0.05	0.08	30	NA	NA	0.2	NA .	0.0	22
7/95	<0.1	103	<0.003	476	388	<1	200	0.10	430	2.2	NA ·	<0.4	55	<0.005	164 ·	2430	4020	<0.05	0.08	10	NA	NA	0.2	NA	0.3	16
4/95	<0.1	120	<0.001	478	337	<1	195	0.30	418	2.6	<0.01	0.2	53	0.003	147	2500	4080	<0.05	0.08	15	NA	NA	0.1	NA	0.1	18
2/95	<0.1	99	<0.003	422	324	</th <th>194</th> <th>0.50</th> <th>386</th> <th>2.5</th> <th>NA</th> <th><0.2</th> <th>49</th> <th><0.005</th> <th>136</th> <th>2460</th> <th>3600</th> <th><0.05</th> <th>0.09</th> <th>14</th> <th>NA</th> <th>NA</th> <th>0.1</th> <th>NA</th> <th>0.2</th> <th>7</th>	194	0.50	386	2.5	NA	<0.2	49	<0.005	136	2460	3600	<0.05	0.09	14	NA	NA	0.1	NA	0.2	7
11/94	<0.1	115	<0.001	458	359	<1	194	0.20	422	2.3	<0.01	0.6	51	<0.002	147	2590	3850	<0.05	0.09	18	NA	NA	0.1	NA	-0.2	17
8/94	<0.05	110	<0.001	480	345	<0.1	192	0.43	377	2.1	<0.01	0.6	54	<0.001	140	2330	3590	<0.01	0.08	25	NA	NA	0.1	2.2	0.0	13
5/94	<0.05	126	0.006	462	344	<0.1	180	0.62	388 .	2.2	<0.01	<1	55	<0.001	136	2470	3560	<0.01	0.09	27	NA	NA	0.2	2.1	0.0	17
2/94	<0.05	116	0.003	440	332	<0.1	180	0.59	392	2.1	<0.01	0.2	53	0.003	136	2320	3420	<0.01	0.10	24	NA	NA	0.3	2.7	0.3	16

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Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (pCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (ρCi/L.)
CRP-9A																										
11/6/98	<0.1	467	NA	582	314	<5	416	NA	1080	NA	NA	154	58	NA	406	5320	8030	NA	NA	NA	NA	NA	NA	NA	NA	352.04
9/16/98	<0.1	330	NA :	530	245	<5	262	NA	601	NA	NA	127	41	NA	274	2920	5420	NA	NA	NA	NA	NA	NA .	NA	NA	264.03
6/4/98	<0.1	589	0.007	540	301	<5	489	<0.1	955	7.45	<0.01	178	58	<0.005	397	7610	7810	<0.05	0.67	234	0.3	0.3	0.2	1.3	-0.1	311.42
1/21/98	<0.1	560	<0.003	606	315	ধ	423	<0.1	890	8.03	<0.01	243	54	0.169	377	5790	8230	<0.05	0.689	318	0.5	0.1	0.1	0.8	0.1	324.96
1/97	<0.1	326	<0.003	571	335	<5	356	<0.1	985	7.1	<0.02	79 ⁴	51	0.13	358	4810	7030	<0.05	0.7	367	NA	NA	0.3	-0.8	-0.1	291
10/96	<0.1	294	<0.003	578	332	ধ	343	<0.1	953	6.9	<0.01	78 ⁴	56	0.15	354	4690	7010	<0.05	0.6	411	NA	NA	0.1	1.6	2.5	264
9/96	<0.1	243	<0.003	540	275	ব	296	<0.1	719	5.4	<0.01	684	45	0.12	309	4010	5920	<0.05	0.5	197	NA	NA	0.1	2.6	0.5	257
6/96	<0.1	240	0.0003	564	254	ঠ	304	<0.1	671	5.0	<0.01	55 ⁴	45	0.13	311	4210	5860	<0.05	0.4	323	NA	NA	0:5	2.2	0.2	264
3/96	<0.3	270	<0.0003	522	295	<5	300	<0.5	818	5.9	<0.05	69 ⁴	55	0.12	334	4500	6640	<0.05	0.5	382	NA	NA	0.7	1.2	<0.1	325
12/95	<0.1	311	0.003	624	302	<5	1710	<0.1	868	6.2	<0.01	76 ⁴	56	<0.025	360	4700	6990	<0.05	0.6	260	NA	NA	0.2	NA	0.2	253
8/95	<0.1	294	<0.003	570	296	<1	318	<0.1	762	5.1	<0.01	57	53	0.12	375	4390	6390	<0.05	0.5	285	NA	NA	0.2	NA	0.1	259
4/95	<0.2	450	<0.003	645	341	<1	498	<0.2	1280	9.5	NA	104	66	0.28	502	6590	9720	<0.1	0.9	423	NA	NA	0.7	NA	0.0	321
2/95	<0.2	490	<0.02	744	382	<1	639	<0.2	1570	11.1	NA	124	79	0.20	574	8160	12000	<0.1	1.1	498	NA	NA	0.2	NA	-0.1	232
11/94	<0.1	435	0.0090	624	388	12	488	<0.01	1420	11.4	<0.025	115	69	0.20	549	7000	9470	<0.05	1.1	415	NA	NA	0.0	NA	0.3	336
8/94	<0.1	374	0.0010	599	307	<0.1	420	<0.04	937	6.5	<0.02	80	61	0.16	419	5570	7950	<0.02	0.6	373	NA	NA	0.3	0.9	0.1	295
5/94	<0.1	538	0.0010	610	371	<1	540	<0.04	1260	8.5	<0.02	63	71	0.21	467	7490	9860	<0.02	0.8	340	NA	NA	0.0	1.1	0.0	260
2/94	<0.05	437	0.0340	590	339	<0.1	470	<0.02	1230	8.0	<0.01	110	72	0.22	479	6500	9260	<0.01	0.8	310	NA	NA	0.3	2.9	1.2	300

Appendix 5 Summary of Ground Water Monitoring Results

San Miguel River Valley Kayenta-Wingate Sequence Monitoring Wells 1994-1998
(Excerpted from Revised 1996 and 1998 Annual Environmental Monitoring Reports, Umetco Minerals Corp., Urayan, CO)

						(Excer	pted froi	m Kevise	d 1996 a	nd 1998	Annual	Environ	mental N	Aonitori r	ig Kepor	ts, Umet	tco Mine	rals Corp	o., Urava	n, CO)					· · · · · · · · · · · · · · · · · · ·	
Weil#	Aluminum (mg/L)	Ammonia (mg/L),	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (ρCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
CRP-9B	:,																									
11/6/98	<0.1	391	NA	458	234	ර	255	NA	581	NA	NA .	0.6	69	NA	184	3200	4420	NA	NA	NA ·	NA	NA	NA	NA	NA	66.346
9/16/98	<0.1	367	NA	479	227	ৰ্ব	237	NA	510	NA	NA	0.6	64	NA	176	2960	4520	NA	NA	NA	NA	NA	NA	NA	NA	65.669
6/18/98	<0.1	636	<0.003	454	219	ర	238	<0.1	525	3.15	<0.01	0.6	67	0.021	186	3160	4820	<0.05	0.256	67	-0.1	0.8	0.06	2.5	-0.08	65.669
1/20/98	<0.1	300	<0.003	448	212	<5	241	0.3	400	2.56	<0.01	1.3	59	<0.005	149	3310	4460	<0.05	0.167	49	0.2	0.2	0.2	1.3	0	37.235
1/97	<0.1	346	<0.003	476	261	ঠ	249	<0.1	627	3.5	<0.01	0.44	62	0.015	183	3220	4810	<0.05	0.31	43	NA	NA	0.6	1.0	0.2	68
10/96	<0.1	254	<0.003	509	302	ঠ	268	<0.1	607	3.4	<0.01	0.24	98	0.011	218	3350	4490	<0.05	0.29	58	NA	NA	0.1	1.2	0.0	46
9/96	<0.1	244	<0.003	498	290	<5	279	<0.1	563	3.3	<0.01	0.24	71	<0.025	183	3580	4600	<0.05	0.28	56	NA	NA	0.2	3.4	0.3	45
5/96	<0.1	240	<0.003	484	274	ঠ	273	<0.1	548	3.3	<0.01	0.24	68	0.012	184	3570	4900	<0.05	0.26	70	NA	NA	0.8	2.9	0.1	55
3/96	<0.3	231	<0.003	480	268	ঠ	220	<0.5	543	3.4	<0.05	0.34	64	<0.005	182	3300	4550	<0.05	0.30	45	NA	NA	0.5	2.3	0.2	56
12/95	<0.1	246	<0.003	470	248	ර	240	<0.1	564	3.4	<0.01	0.34	69	0.021	183	3360	4700	<0.05	0.27	37	NA	NA	0.4	NA	0.1	56
8/95	<0.1	238	<0.003	474	306	<1	232	<0.1	500	3.0	<0.01	<0.4	66	0.008	178	3120	4610	<0.05	0.25	76	NA	NA	0.3	NA	-0.1	36
4/95	<0.1	229	<0.003	445	258	<1	228	0.30	493	3.1	NA	0.2	64	0.005	160	2940	4160	<0.05	0.24	53	NA	NA	-0.7	NA	0.1	34
1/95	<0.1	300	<0.003	512	273	<1	292	<0.1	655	4.5	NA	0.4	75	0.022	222	3971	5360	<0.05	0.37	94	NA	NA .	1.1	NA.	0.1	62
11/94	<0.1	231	0.006	472	312	<1	245	0.70	544	3.4	<0.01	<0.4	8	0.004	172	33,10	4400	<0.05	0.30	80	NA	NA	0.1	NA	0.7	34
8/94	<0.05	234	<0.001	460	293	<1	244	0.04	503	3.2	<0.01	<2	65	0.005	161	3260	4480	<0.01	0.26	57	NA	NA	0.1	2.0	0.1	27
5/94	<0.05	300	0.014	444	256	<1	272	<0.02	596	4.2	<0.01	0.3	67	0.012	179	3725	4840	<0.01	0.45	74	NA	NA	0.0	2.3	0.0	48
2/94	<0.05	251	0.013	438	264	<0.1	230	<0.02	543	3.4	<0.01	<0.2	67	0.005	167	3110	4390	<0.01	0.32	71	NA	NA	0.4	2.7	0.2	34

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Well#	Aluminum (mg/L)	Armnonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (ρCi/L)	Polonium-210 (pCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
CRP-9C																										
11/6/98	<0.1	420	NA	482	241	⊲ 5	298	NA	706	NA	NA	1.3	68	NA	209	3820	5610	NA	NA .	NA	NA	NA	NA	NA	NA	74.47
9/16/98	<0.1	487	NA	508	246	<5	340	NA	712	NA	NA	2.5	78	NA	238	4500	6510	NA	NA	NA	NA	NA	NA	NA	NA	94.78
6/22/98	<0.1	166	<0.003	530	274	ব	411	<0.1	963	7.09	<0.01	4.6	85	0.102	288	5640	8090	<0.05	0.84	100	-0.4	0.7	0.3	1.9	-0.04	135.4
1/20/98	<0.1	500	<0.003	495	262	ರ	311	0.1	643	5.03	<0.01	0.7	76	0.033	215	4340	5850	<0.05	0.455	143	-0.1	0	0.2	2.1	-0.1	64.315
1/97	<0.1	275	<0.003	547	339	ব	407	<0.1	1080	8.1	<0.02	1.94	84	0.073	296	2170	7650	<0.05	0.95	159	NA	NA	0.6	2.0	0.0	108
10/96	<0.1	242	<0.003	503	318	<5	265	0.5	610	4.3	<0.01	0.14	76	0.010	208	3450	4430	<0.05	0.42	51	NA	NA	0.2	0.0	0.1	41
9/96	<0.1	251	<0.003	498	309	<5	269	0.4	574	4.0	<0.01	0.24	73	<0.005	189	3650	4910	<0.05	0.40	10	NA	NA	0.3	3.2	0.1	40
5/96	<0.1	250	<0.003	450	286	< 5	265	<0.1	598	4.5	<0.01	0.24	75	0.015	210	3550	4550	<0.05	0.47	31	NA	NA	1.3	2.4	0.0	47
3/96	<0.3	265	<0.003	500	262	ర	250	<0.5	591	4.3	0.05	0.34	73	<0.010	194	3600	4840	<0.05	0.50	101	NA	NA	0.6	2.0	0.1	60
11/95	<0.1	593	<0.015	724	335	ব	590	<0.2	1450	9.4	<0.02	6.54	109	0.147	456	8500	11700	<0.05	1.30	146	NA	NA	0.7	0.0	0.1	232
8/95	<0.1	266	<0.003	484	322	<1	268	<0.1	552	3.8	<0.01	<1.5	70	0.007	211	3610	5040	<0.05	0.42	91	NA	NA	0.0	0.0	-0.1	42
4/95	<0.2	480	0.003	595	318	<1	442	<0.2	1180	9.5	NA	1.7	105	0.080	357	5900	8080	<0.1	1.20	174	NA	NA	1.3	0.0	0.0	112
1/95	<0.1	800	<0.003	990	364	<1	734	<0.02	1800	15.1	NA	6.3	151	0.198	684	10500	13800	<0.05	2.13	334	NA	NA .	2.4	0.0	0.0	313
11/94	<0.1	366	0.004	553	370	<1	367	<0.1	814	6.6	<0.01	1.3	83	0.032	251	4930	6760	<0.05	0.81	111	NA	NA	0.3	0.0	0.4	62
8/94	<0.05	267	<0.001	510	326	<1	299	<0.02	616	4.8	<0.01	<2	71	0.010	192	3940	5200	0.02	0.53	56	NA	NA	0.1	1.4	0.0	36
5/94	<0.1	711	<0.001	638	350	<1	584	<0.04	1520	11.1	<0.02	6.0	112	0.122	430	8370	11300	<0.02	1.86	260	NA	NA	0.4	3.0	0.0	160
2/94	<0.05	414	0.01	538	310	<0.1	383	<0.02	967	7.4	<0.01	1.5	92	0.040	290	5520	7030	<0.01	1.07	42	NA	NA	0.4	3.1	0.0	86

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Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (ρCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
CRP-16																			_							
9/28/98	<0.1	20	NA	513	182	ర	98	NA	149	NA .	NA	<0.1	29	NA	76	919	1680	NA	NA	NA	NA	NA	NA	NA	NA	0.8124
9/96	<0.1	23.0	<0.003	281	214	ర	108	3.0	182	0.23	<0.01	<0.2	32	<0.005	81	1040	1760	<0.05	<0.025	48	NA	NA	0.1	0.3	0.1	0.7
8/95	<0.1	1.3	<0.003	290	208	<1	88	0.6	88	2.13	0.01	<0.2	18	<0.005	84	562	1320	<0.05	<0.025	9	NA	NA	0.0	1.4	-0.1	4.4
1994	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR ·
CRP-17	i	[].			ŀ	1										}					ļ					
11/3/98	<0.1	0.12	NA	232	116	ర	49	NA	46.5	NA	NA	<0.1	12	NA	38	345	772	NA	NA	NA	NA	NA	NA	NA	NA	2.2341
9/15/98	<0.1	0.05	NA	232	96.5	ර	38	NA	34.4	NA	NA	<0.1	12	NA	34	199	550	NA	NA	NA	NA	NA	NA	NA	NA	<0.6093
6/22/98	<0.1	0.3	0.004	222	128	ర	49	0.8	54.7	0.05	<0.01	0.1	14	<0.005	41	356	794	<0.05	<0.025	8.5	-0.3	0.4	0.1	0.2	-0.2	2.6403
2/10/98	<0.1	1.1	0.004	225	130	حة ⁻	47	0.8	53.9	0.05	<0.01	<0.1	14	<0.005	42	345	744	<0.05	<0.025	2.3	-0.2	0.4	0.3	0.5	0	3.2496
2 <i>1</i> 97	<0.1	0.12	0.004	202	97	<5	32	0.50	36.0	<0.05	<0.01	<0.1⁴	12.0	<0.005	35.0	176	440	<0.05	<0.025	6.0	NA	NA	0.3	0.2	0.0	0.00
11/96	<0.1	0.10	<0.003	208	79	<1	31	0.40	29.5	<0.05	<0.01	<0.1⁴	10.0	<0.005	35.0	129	402	<0.05	<0.025	1.5	NA	NA	0.2	0.5	1.2	1.02
9/96	<0.1	0.10	<0.003	228	80	ব	32	0.40	28.7	<0.05	<0.01	<0.1⁴	10.0	<0.005	35.0	135	434	<0.05	<0.025	9.7	NA	NA	0.3	0.1	0.5	<0.6
6/96	<0.1	0.10	<0.003	210	75	4 5	29	0.40	27.7	<0.05	<0.01	<0.1⁴	10.0	<0.005	33.0	100	376	<0.05	<0.025	2.2	NA	NA	0.3	2.5	0.0	1.76
3/96	<0.1	0.20	<0.003	210	82	ব	31	0.40	31.8	<0.05	<0.01	<0.14	10.0	<0.005	37.0	133	378	<0.05	<0.025	0.8	NA	NA	0.3	NA	<0.1	6.16
9/95	<0.1	0.30	0.004	212	72	ব	28	0.30	26.0	<0.05	<0.01	<0.2	10.0	<0.005	34.0	104	428	<0.05	<0.025	1.0	NA	NA	0.5	NA	0.0	<0.2
4/95	<0.1	2.90	0.003	220	95	<l< th=""><th>39</th><th>0.50</th><th>45.9</th><th>0.06</th><th><0.01</th><th><0.2</th><th>14.0</th><th><0.005</th><th>41.0</th><th>228</th><th>592</th><th><0.05</th><th><0.025</th><th>2.7</th><th>NA</th><th>NA</th><th>0.4</th><th>NA</th><th>0.7</th><th>1.56</th></l<>	39	0.50	45.9	0.06	<0.01	<0.2	14.0	<0.005	41.0	228	592	<0.05	<0.025	2.7	NA	NA	0.4	NA	0.7	1.56
2/95	<0.1	5.00	<0.003	225	112	<1	50	0.60	60.2	0.11	NA	<0.2	15.0	<0.005	43.0	351	728	<0.05	<0.02	1.8	NA	NA	0.0	NA	0.0	4.06
8/94	<0.05	<0.1	<0.001	222	71	<1	29	<0.02	24.4	0.02	<0.01	<0.2	9.4	<0.001	32.6	101	370	<0.01	<0.005	0.6	NA	NA	0.1	-0.1	0.0	<0.2
5/94	<0.05	1.90	0.003	214	103	<1	39	0.52	42.3	0.04	<0.01	۸. ا	11.7	<0.001	34.7	246	590	<0.01	0.004		NA	NA	0.0	0.5	0.0	2.40
2/94	<0.05	4.20	0.003	220	99	<0.1	38	0.53	49.3	0.06	<0.01	<0.2	14.0	<0.001	38.0	265	580	<0.01	ا ا	6.7	NA	NA	0.3	1.1	0.2	1.3

				·		(Excer	pted from	m Kevise	d 1996 a	na 1998	Annual	Environ	mental M	<u>lonitorir</u>	ig Kepor	ts, Umet	co Mine	rais Corp	o., Urava	in, CO)						
Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (ρCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
CRP-18													-										·			
10/22/98	<0.1	0.16	NA	211	127	<5	194	NA	46.9	NA	NA	<0.1	13	NA	102	245	944	NA	NA	NA	NA	NA	NA	NA	NA	14.894
9/14/98	<0.1	0.18	NA	208	138	<5	204	NA	49.1	NA	NA	<0.1	14	NA	114	279	930	NA	NA	NA	NA	NA	NA	NA	NA	12.186
6/23/98	<0.1	0.03	0.003	205	126	<5	190	0.3	47.2	<0.05	<0.01	<0.1	13	<0.005	99	251	880	<0.05	<0.025	13	0.1	0.3	0.3	0.8	-0.2	14.217
3/3/98	<0.1	<0.01	<0.003	195	124	10	175	0.3	46	<0.05	<0.01	<0.1	12	<0.005	91	219	828	<0.05	<0.025	20	0	0.8	0.1	0.1	-0.1	12.186
2/97	<0.1	0.07	0.003	198	135	ర	195	0.30	51	<0.05	<0.01	0.104	13.0	<0.005	108	272	848	<0.05	<0.025	25.0	NA	NA	0.4	1.2	0.0	14.2
11/96	<0.1	0.10	<0.003	211	138	<5	193	0.40	53	<0.05	<0.01	<0.14	13.0	<0.005	116	276	1080	<0.05	<0.025	8.0	NA	NA	0.6	-0.1	-0.1	14.2
9/96	<0.1	0.10	<0.003	212	138	ঠ	203	0.40	50	<0.05	<0.01	<0.14	12.0	<0.005	104	313	858	<0.05	<0.025	5.7	NA	NA	0.3	0.1	-0.1	12.2
6/96	<0.1	0.14	0.004	210	130	ঠ	185	0.40	47	<0.05	<0.01	<0.14	12.0	<0.005	108	254	774	<0.05	<0.025	12.0	NA	NA	0.5	2.4	-0.1	13.5
2/96	<0.1	0.20	0.003	220	122	<5	182	0.40	46	<0.05	<0.01	<0.14	11.0	<0.005	99	220	796	<0.05	<0.025	5.7	NA	NA	0.3	NA	0.0	4.0
12/95	<0.1	0.20	<0.003	216	121	ব	177	0.40	44	<0.05	<0.01	<0.14	12.0	<0.005	99	212	778	<0.05	<0.025	3.2	NA	NA	0.2	NA	0.0	8.1
8/95	<0.1	2.70	0.003	216	129	<1	182	0.40	48	<0.05	<0.01	<0.2	13.0	<0.005	108	253	870	<0.05	<0.025	13.0	NA	NA	0.0	NA	-0.1	11.8
4/95	<0.1	0.10	<0.003	210	108	<1	167	0.50	39	<0.05	NA	<0.2	11.0	<0.005	85	167	1390	<0.05	<0.02	1.4	NA	NA	0.5	NA	-0.1	6.5
2/95	<0.1	<0.5	<0.003	202	108	<1	172	0.50	39	<0.05	NA	<0.2	11.0	<0.005	83	174	700	<0.05	<0.02	5.8	NA	NA	0.2	NA	-0.2	17.8
8/94	<0.05	<0.1	0.003	214	117	<0.1	171	0.50	40	0.01	<0.01	<0.2	11.4	<0.001	96	218	720	<0.01	0.01	14.0	NA	NA	0.1	0.1	0.0	6.4
5/94	<0.05	<0.5	0.003	206	111	<1	192	0.53	44	0.01	<0.01	<0.2	11.3	<0.001	94	233	790	<0.01	<0.005	19.0	NA	NA	0.1	0.5	0.5	6.7
2/94	<0.05	<0.2	0.003	201	106	<0.1	164	0.55	43	0.01	<0.01	<0.2	11.9	<0.001	90	180	700	<0.01	0.01	14.0	NA	NA	0.3	1.0	0.0	5.8

Appendix 5
Summary of Ground Water Monitoring Results
San Miguel River Valley Kayenta-Wingate Sequence Monitoring Wells 1994-1998

						(Excer	pted fro	n Revise	d 1996 a	nd 1998	Annual	Environ	mental M	<u> Ionitorir</u>	ıg Repor	ts, Umet	co Mine	rals Corp	o., Urava	n, CO)		 				
Well #	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (ρCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
CRP- 19A																									_	
12/1/98	0.2	449	NA	554	442	⊲	520	NA	1160	NA	NA	71	54	NA	436	6960	9550	NA	NA	NA	NA	NA	NA	NA	NA	128.63
9/1/98	<0.1	452	NA	568	439	<5	539	NA	1130	NA	NA .	54	67	NA	413	6980	9550	NA	NA	NA	NA	NA	NA	NA	NA	128.63
5/20/98	0.1	415	0.004	580	421	⊲ 5	429	<0.1	1030	14.3	<0.01	18.5	42	0.149	324	6920	9220	0.07	1.11	90	0.0	0.5	0.06	0.7	0.2	121.86
3/25/98	0.2	500	<0.015	578	439	ර	455	0.3	1710	20.7	<0.02	19	69	0.23	603	6780	9490	0.13	1.98	119	-0.3	0	0.7	0.4	0.1	128.63
3/97	0.2	364	<0.003	550	537	ර	366	<0.1	1020	20.0	<0.02	124	30	0.20	391	5510	8020	0.10	1.3	130	NA	NA	0.1	1.1	0.0	58
11/96	0.3	383	<0.003	407	532	ර	406	<0.1	1160	24.7	<0.02	284	16	0.17	466	6580	8960	0.11	1.8	58	NA	NA	0.2	2.4	0.1	58
8/96	0.3	278	<0.003	406	502	ර	277	<0.1	742	18.5	<0.01	204	12	0.20	334	4790	6670	0.09	1.4	50	NA NA	NA	0.3	0.4	0.1	45
5/96	0.2	260	<0.003	440	510	ර	260	<0.1	644	17.4	0.01	194	11	0.15	285	4870	6620	0.09	1.2	26	NA	NA	0.4	1.3	0.0	45
3/96	0.4	289	<0.003	480	512	ර	270	<0.5	731	19.6	<0.05	224	15	0.17	314	5100	7570	0.10	1.4	42	NA	NA	0.2	2.0	0.1	47
9/95	0.3	320	<0.003	460 -	488	ර	356	<0.1	812	20.9	<0.01	37	15	0.21	370	5340	7430	0.09	1.1	63	NA	NA	0.1	NA	-0.1	49
4/95	0.6	513	<0.005	562	484	<1	530	<0.2	1430	28.0	<0.02	31.5	30	0.41	568	8170	11800	0.10	2.7	56	NA	NA	0.2	NA	0.0	95
3/95	0.3	340	<0.003	526	492	<1	373	<0.1	918	24.2	NA	21	15	0.30	426	5870	8010	0.10	1.8	69	NA	NA	0.0	NA	0.1	55
12/94	0.6	600	<0.003	588	488	<1	833	0.50	1860	41.7	NA	29	33	0.33	729	11000	12500	0.18	3.4	83	NA	NA	0.0	NA	-0.1	76
8/94	0.3	254	<0.001	475	485	<1	273	0.09	658	19.9	<0.01	25	11	0.18	315	4910	6720	0.08	1.7	68	NA	NA	0.2	0.4	0.0	34
5/94	0.5	370	<0.001	486	528	<1	286	0.17	826	22.1	<0.01	27	15	0.28	370	5600	7140	0.09	1.9	67	NA	NA	0.0	0.1	0.0	40
2/94	0.4	419	<0.005	750	509	<0.1	296	0.03	870	23.8	<0.01	31	17	0.25	410	5730	7490	0.07	2.0	68	NA	NA	0.3	0.7	0.3	46

Appendix 5 **Summary of Ground Water Monitoring Results**

San Miguel River Valley Kayenta-Wingate Sequence Monitoring Wells 1994-1998

(Excerpted from Revised 1996 and 1998 Annual Environmental Monitoring Reports, Umetco Minerals Corp., Uravan, CO) Natural Uranium (pCi/L) Nitrate + Nitrite (mg/L) Polonium-210 (pCi/L) Thorium-230 (pCi/L) Molybdenum (mg/L) Radium-226 (pCi/L) Bicarbonate (mg/L) Magnesium (mg/L) Gross Alpha (pCi/L) Radium-228 (pCi/L) Manganese (mg/L) Lead-210 (pCi/L) Potassium (mg/L) Ammonia (mg/L) Carbonate (mg/L) Selenium (mg/L) Chloride (mg/L) Calcium (mg/L) Arsenic (mg/L) Iron (mg/L) Sodium (mg/L) Sulfate (mg/L) Zinc (mg/L) TDS (mg/L) Well # CRP-19B 12/1/98 <0.1 575 NA 659 460 <5 678 NA 1420 NA NA 4.4 102 NA 526 8260 11300 NA NA NA NA NA NA NA NA 176.02 477 <5 9/24/98 < 0.1 439 NA <5 724 NA 1460 NA NA 5.2 102 NΑ 559 17400 NA NA NA NA NA NA NA ' NA 203.1 17600 NA NA 1310 4.7 801 NA 434 722 NA NA NA NA NA NA 230.18 6/30/98 <0.1 NA NA NA NA NA NA NA NA 3920 11600 <5 3/26/98 < 0.1 770 < 0.03 641 452 713 <0.1 1430 11.7 < 0.02 6 101 0.076 538 < 0.05 1.19 114 0.2 0.2 0.1 209.87 8190 8370 < 0.003 674 <5 758 1690 13 < 0.02 4.94 0.063 630 321 3/97 < 0.1 536 497 < 0.1 119 < 0.05 1.45 NA NA 0.5 1.9 -0.2 223 8590 12300 0 0.0^{4} 12/96 0.00 0 0 0.00 0.00 0.000 0.00 0.00 NA NA 0.0 0.0 0.0 9980 7.64 0.9 < 0.003 624 <5 622 1350 11 480 <0.1 < 0.02 93 0.099 488 NA < 0.1 < 0.05 1.08 189 NA 0.1 0.4 162 451 6930 10300 9.74 ح 654 1450 11 579 8/96 <0.1 470 < 0.003 800 <0.2 < 0.02 101 0.078 < 0.05 1.22 254 NA NA 0.7 1.5 0.1 190 453 6720 10400 500 < 0.015 690 <5 690 <0.2 1380 11 < 0.02 10.44 95 0.170 511 NA 5/96 <0.1 1.15 418 NA 0.7 1.5 0.2 203 < 0.05 420 10900 7900 <5 3/96 < 0.3 456 < 0.003 670 610 <0.5 1340 10 < 0.05 7.84 93 0.121 466 < 0.05 1.20 214 NA NA 1.4 2.7 0.1 169 432 10700 7900 714 <5 665 1450 12 12.34 10/95 <0.01 500 < 0.003 <0.2 < 0.02 105 0.137 547 < 0.05 1.35 172 NA NA 0.2 NA -0.2 165 401 8440 11300 1510 7/95 <0.2 528 < 0.003 719 <1 752 <0.2 13 < 0.02 11.2 105 0.171 592 <0.1 1.47 320 NA NA 1.3 NA: 0.4 203 430 8810 12300 594 < 0.001 736 <1 781 <1 1630 15 10.1 <0.1 121 0.245 643 357 NA NA NA 4/95 <1 <0.5 1.90 0.3 0.0 182 439 9040 12900 <0.02 <0.2 1690 15 NA 9.3 3/95 <0.2 550 755 <1 779 121 0.130 658 <0.1 1.74 283 NA NΑ 0.4 NA 0.2 219 449 9390 13000 NA 12/94 <0.5 728 < 0.003 854 <1 1070 < 0.5 2210 21 8.6 131 0.094 764 < 0.05 2.65 .331 NA NA NA 0.1 299 479 6.1 12100 16400 8/94 <0.1 671 < 0.01 800 <1 918 0.04 1900 18 < 0.02 15.0 121 0.182 664 2.23 376 NA NA 1.5 0.1 173 < 0.02 436 15000 11100 0.1 818 893 < 0.001 <1 1030 <0.2 2360 20 < 0.1 9.0 130 0.211 779 5/94 <0.5 <0.1 2.99 300 NA NA 2.0 0.0 240 483 18000 0.3 13100

1210

< 0.005

975

477

<0.1

1560

<0.1

3630

37

< 0.05

14.6

168

0.332

1330

19100

26000

280

NA

< 0.05

6.20

NA

2/94

0.32

0.0

480

3.9

0.5

		_				(EACCI	picu II o	III ICVISC	u 1770 a	110 1770	Ailliuai	TOTAL OIL	incircui i	Ionntoi n	ig icepui	is, Unici	CO MINE	rais Cor	J., Clava	iii, CO)						
Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (pCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
CRP- 19C			!																							
12/1/98	<0.1	474	NA	592	421	<5	528	NA	1050	NA	NA	7.5	86	NA	422	6360	8800	NA	NA	NA	NA	NA	NA	NA	NA	162.48
9/24/98	<0.1	435	NA	616	424	<5	610	NA	1020	NA	NA	9	83	NA	408	6580	9360	NA	NA	NA	NA	NA	NA	NA	NA	162.48
6/30/98	<0.1	665	NA	NA	427	NA	577	NA	1040	NA	NA	10	NA	NA	NA	6340	9510	NA	NA	NA	NA	NA	NA	NA	NA	169.25
3/25/98	<0.1	687	<0.015	580	399	ব	525	<0.1	1010	7.62	<0.02	9	84	0.07	387	6140	8650	<0.05	0.67	59	1	0.6	0.2	1.5	0.2	142.17
3/97	<0.1	479	<0.003	636	499	<5	579	<0.1	1290	9.9	<0.02	8.24	108	0.09	498	6410	9380	<0.05	0.81	259	NA	NA	0.3	1.7	-0.2	129
12/96	0	0	0	0	0	0	0	0.00	0	0.0	0	0.0	0	0.00	0	0	7500	0	0.00	0	NA	NA	0.0	0.0	0.0	0
11/96	<0.1	377	<0.003	ঠ	411	<5	458	<0.1	1000	7.0	<0.01	5.14	94	0.06	380	5140	7750	<0.05	0.70	136	NA	NA	0.4	1.7	0.5	108
8/96	<0.1	372	<0.003	600	385	<5	507	<0.1	996	7.6	<0.01	7.14	90	0.08	403	5940	8290	<0.05	0.71	117	NA	NA	0.7	2.1	-0.1	129
5/96	<0.1	400	0.003	630	372	<5	470	<0.1	970	6.6	<0.01	7.04	85	0.11	359	5700	7920	<0.05	0.67	209	NA	NA	0.8	2.3	0.0	129
3/96	<0.3	366	0.003	640	389	<5	470	<0.5	983	6.5	<0.05	6.0⁴	88	0.08	341	5800	7950	<0.05	0.80	91	NA	NA	1.5	3.0	0.0	115
10/95	<0.1	370	<0.015	610	349	<5	511	<0.1	934	6.8	<0.01	8.34	85	0.09	383	5710	7540	<0.05	0.66	189	NA	NA	0.4	NA	-0.2	132
7/95	<0.1	421	<0.003	608	388	<1	528	<0.1	1010	7.7	<0.01	7.3	94	0.09	408	5890	8360	<0.05	0.76	175	NA	NA	1.3	NA	0.1	134
4/95	<0.2	450	<0.001	658	397	<1	509	<0.2	1130	8.4	<0.02	6.9	101	0.12	428	6120	9040	<0.1	0.90	174	NA	NA	0.2	NA:	0.1	112
3/95	<0.2	410	<0.02	661	399	<1	517	<0.2	1170	8.5	NA	6.6	108	0.09	440	6420	9050	<0.1	0.95	158	NA	NA	0.5	NA	0.1	139
12/94	<0.2	477	<0.003	728	420	<1	646	<0.2	1260	10.0	NA	1.6	104	0.06	449	7700	10400	<0.05	1.08	224	NA	NA	0.8	NA	-0.4	134
8/94	<0.1	459	<0.01	650	391	<1	585	<0.04	1150	9.1	<0.02	10.0	101	0.07	418	7070	9460	0.04	1.06	208	NA	NA	0.2	1.5	0.1	103
5/94	<0.1	648	<0.001	702	428	<l< th=""><th>614</th><th><0.04</th><th>1400</th><th>9.3</th><th><0.02</th><th>11.0</th><th>112</th><th>0.11</th><th>448</th><th>7090</th><th>11000</th><th><0.02</th><th>1.27</th><th>220</th><th>NA</th><th>NA</th><th>0.1</th><th>2.4</th><th>0.0</th><th>160</th></l<>	614	<0.04	1400	9.3	<0.02	11.0	112	0.11	448	7090	11000	<0.02	1.27	220	NA	NA	0.1	2.4	0.0	160
2/94	<0.25	1310	<0.005	1130	505	<0.1	1490	<0.1	3500	26.6	<0.05	14.4	208	0.33	1220	19200	24800	<0.05	3.80	410	NA	NA	0.4	4.2	3.7	500

		·				(Excer	pted from	m Revise	d 1996 a	nd 1998	Annual	Environ	mental N	<u> Ionitorii</u>	ig Repor	ts, Umet	co Mine	rals Cor	p., Urava	ın, CO)						
Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (ρCi/L)	Polonium-210 (ρCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L.)	Natural Uranium (pCi/L)
CRP-20																										
12/21/98	<0.1	1290	NA	1075	498	<5	1140	NA	2660	NA	NA	0.2	282	NA	636	16400	21000	NA	NA	NA	NA	NA	NA	NA	NA	189.56
9/23/98	<0.1	774	NA	863	496	<5	981	NA	1740	NA	NA	0.2	188	NA	508	10600	14800	NA	NA	NA	NA	NA	NA	NA	NA	121.86
6/2/98	<0.1	1060	0.008	936	496	<5	1170	0.9	2390	10.6	<0.01	<0.1	295	<0.005	592	14900	19700	<0.05	0.8	281	0.3	1	2	7.2	-0.2	203.1
3/10/98	<0.1	1060	<0.015	1010	493	ধ	1110	0.8	2440	10.5	<0.05	<0.5	243	<0.025	593	14600	19700	<0.05	0.85	263	0.3	0.3	0.7	8.9	0	209.87
2/97	<0.3	1050	<0.003	957	508	<5	1020	1.30	2590	12.0	<0.05	0.24	280.0	<0.025	690	13300	18400	<0.05	1.0	258	NA	NA	5.4	6.4	0.0	183
12/96	<0.5	900	<0.015	840	529	<5	905	1.80	2130	9.9	<0.1	0.44	213.0	<0.025	552	10200	14000	<0.1	0.8	102	NA	NA	1.9	6.5	0.5	162
9/96	<0.5	822	<0.003	832	507	<5	885	0.60	1860	7.8	<0.1	0.14	223.0	<0.025	526	10200	14300	<0.1	0.6	2	NA	NA	0.5	8.1	0.0	142
5/96	<0.5	1200	<0.003	1100	491	<5	1150	<1	2530	11.4	<0.1	<0.1⁴	278.0	0.027	653	15300	19600	<0.1	0.9	273	NA	NA	9.6	7.8	0.0	183
3/96	<0.3	1300	<0.003	1020	472	<5	1200	0.90	2630	12.4	<0.05	<0.14	300.0	0.058	694	16000	21200	<0.05	1.0	208	NA	NA	7.1	NA	0.0	223
11/95	<0.5	990	<0.003	944	475	<5	1000	<0.5	2150	8.3	<0.05	0.14	244.0	<0.025	583	13000	17000	<0.05	0.5	171	NA	NA	6.3	NA	0.1	140
7/95	<0.2	588	<0.003	800	585	<1	741	<0.2	1370	4.2	<0.02	<0.4	172.0	0.011	511	8880	12500	<0.1 ·	0.2	40	NA	NA	0.6	NA	0.5	107
4/95	<1	1780	<0.02	1400	507	<l< th=""><th>1840</th><th>6.00</th><th>4630</th><th>30.4</th><th><0.1</th><th><2</th><th>435.0</th><th>0.160</th><th>1050</th><th>2890</th><th>33300</th><th><0.5</th><th>3.1</th><th>359</th><th>NA</th><th>NA</th><th>0.5</th><th>NA</th><th>0.1</th><th>252</th></l<>	1840	6.00	4630	30.4	<0.1	<2	435.0	0.160	1050	2890	33300	<0.5	3.1	359	NA	NA	0.5	NA	0.1	252
2/95	<0.5	1240	<0.003	1110	521	<1	1410	3.00	3200	16.2	NA	<2	341.0	0.040	784	17500	22300	<0.025	1.4	360	NA	NA	1.9	NA	-0.1	. 139
8/94	<0.1	827	<0.01	840	508	<1	983	1.51	1470	5.1	<0.02	3.0	182.0	0.004	472	11200	14200	0.02	0.2	134	NA	NA	0.5	3.4	0.1	NA
5/94	<1	878	0.021	890	482	<0.1	880	<0.4	1830	6.7	<0.2	<0.3	212.0	0.009	560	9990	14500	<0.2	0.4	97	NA	NA	0.2	4.9	0.0	120
2/94	<0.05	1090	0.005	933	500	<0.1	1040	0.50	2160	8.3	<0.01	0.20	254.0	0.014	626	12500	16050	<0.01	0.5	110	NA	NA	0.5	6.8	2.1	160

<u></u>						(Excer	pted from	m Kevise	d 1996 a	nd 1998	Annual	Environ	mental N	<u> Monitorir</u>	ig Kepor	ts, Umet	tco Mine	rals Cor	p., Urava	ın, CO)						
Жеп#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (ρCi/L)	Polonium-210 (pCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
CRP-21	;																									
12/3/98	1.9	2110	NA	900	445	ব	1100	NA	2770	NA	NA	10	175	NA	877	17000	22800	NA	NA	NA	NA	NA	NA	NA	NA	223.41
9/1/98	1.4	1200	NA	952	477	<5	1370	NA	2900	NA	NA	9.8	204	NA	874	17200	22900	NA	NA	NA	NA	NA	NA	NA	NA	230.18
5/20/98	0.4	1250	<0.003	1310	477	<5	1350	<0.1	3480	22.6	0.05	10.9	224	0.337	790	20100	26100	<0.05	2.6	260	-0.9	0.3	0.3	3.4	0.2	264.03
3/26/98	<0.3	2340	<0.015	1300	470	<5	1490	<0.2	3320	22.7	<0.05	1.2	206	0.248	972	19200	25400	<0.05	2.7	317	-0.9	0.3	0.4	2.8	0.2	311.42
3/97	<0.3	1440	<0.003	1410	482	<	1610	<0.3	3820	25	<0.05	10.04	249	0.33	1130	19000	27600	<0.05	2.9	464	NA	NA	0.5	5.1	0.0	359
12/96	<0.5	1430	<0.003	1440	520	ব	1570	<0.5	3720	25	<0.1	10.14	250	0.07	1080	19600	26700	<0.1	3.2	299	NA	NA	0.6	4.3	0.8	339
8/96	<1	1390	<0.003	1320	489	<5	1520	<1	3590	23	<0.1	9.34	246	0.32	1060	18800	25000	<0.1	3.3	238	NA	NA	0.5	4.2	0.5	311
5/96	<0.5	1300	0.015	1350	473	ব	1570	<1	3550	25	<0.1	11.04	226	0.34	1040	18800	25100	<0.1	3.5	167	NA	NA .	0.7	6.0	0.2	298
3/96	<0.3	1360	<0.015	1520	475	<5	1400	<0.5	3670	28	<0.05	11.84	242	0.32	1080	20000	26000	<0.05	3.6	247	NA	NA	1.1	3.8	0.0	278
10/95	1.0	960	<0.015	824	430	<5	1190	12.5	2540	23	<0.05	9.74	177	0.23	820	14500	19200	<0.05	5.1	157	NA	NA	0.3	NA	-0.2	171
9/95	1.0	960	<0.015	824	430	<5	1190	12.5	2540	23	<0.05	9.74	177	0.23	820	14500	19200	<0.05	5.1	157	NA	NA	0.3	NA	-0.2	171
7/95	1.2	1050	<0.030	855	454	<1	1230	13.7	2640	26	<0.05	8.0	182	0.23	863	15100	23500	<0.25	5.0	380	NA	NA	4.3	NA	0.1	242
3/95	1.2	1310	<0.02	964	489	<1	1180	15.4	3410	34	0.00	8.0	234	0.40	1060	16000	24500	<0.25	6.9	249	NA	NA .	0.3	NA	0.0	309
12/94	<0.5	1453	<0.003	1400	504	<1	1610	<0.5	3770	29	0.00	9.2	248	0.20	1030	20200	25800	<0.05	3.8	317	NA	NA	0.7	NA	-0.1	299
8/94	2.2	1420	<0.01	1080	486	<1	1600	23.7	3430	32	<0.05	10.0	243	0.25	1040	19900	27600	<0.06	6.8	627	NA	NA	0.4	3.3	0.1	276
5/94	3.3	2140	<0.001	1462	528	<1	1740	24.1	4800	38	<0.1	9.0	316	0.26	1190	25800	33600	<0.1	8.7	640	NA	NA	0.2	5.8	0.0	390
2/94	<0.05	2160	0.004	935	501	<0.1	1920	<0.02	4660	21	<0.01	3.7	378	0.07	1140	24900	33190	<0.01	2.6	170	NA	NA	1.0	10.0	0.0	330

						(Excer	pted froi	n Revise	d 1996 a	<u>nd 1998</u>	Annual	<u>Environ</u>	mental N	<u>Ionitorii</u>	ig Repor	ts, Umet	co Mine	rals Corp	p., Urava	n, CO)						
Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (pCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (ρCi/L.)	Natural Uranium (pCi/L)
CRP-22																										
10/21/98	<0.1	1.7	NA	284	81.2	<5	66	NA	149	NA	NA	7.9	21	NA	79	689	1260	NA	NA	NA	NA	NA	NA	NA	NA	48.067
8/12/98	<0.1	70	NA	340	108	<5	121	NA	245	NA	NA	23	26	NA .	136	1340	1980	NA	NA	NA	NA	NA	NA	NA	NA	115.09
4/21/98	<0.1	74	<0.003	332	112	<5	111	<0.1	252	0.8	<0.01	26	23	<0.005	120	1340	2110	<0.05	0.025	64	0.7	0.7	0.195	1.4	-0.222	94.78
2/23/98	<0.1	50	<0.003	311	102	ব	86	<0.1	197	0.61	<0.01	12.9	25	0.031	106	995	1670	<0.05	0.029	60	-0.1	0.4	0.1	0.5	0	74.47
3/97	<0.1	32	<0.003	305	85	<5	68	<0.1	160	0.51	<0.01	64	22.0	0.02	89	770	1260	<0.05	<0.025	70	NA	NA	0.2	0.3	-0.1	56
12/96	<0.1	47	0.015	345	106	<5	96	<0.1	237	0.01	0.01	134	24.0	0.04	126	1080	1840	<0.05	<0.025	636	NA	NA	0.3	0.2	0.4	88
9/96	<0.1	65	<0.003	381	127	ব	141	<0.1	345	1.28	<0.01	224	32.0	0.05	166	1650	2520	<0.05	0.04	111	NA	NA	0.2	0.2	0.1	135
5/96	<0.1	80	<0.003	404	156	<	183	<0.1	410	1.52	<0.01	294	32.0	0.07	200	2200	3370	<0.05	0.04	129	NA	NA	0.3	0.2	0.0	156
2/96	<0.1	48	<0.003	312	86	<5	80	<0.1	173	0.60	<0.01	73 ⁴	25.0	0.03	104	890	1530	<0.05	<0.025	57	NA	NA	0.4	0.2	0.0	56
11/95	<0.1	46	<0.003	342	94	<5	100	<0.1	200	0.68	<0.01	14	26.0	0.02	118	1040	1830	<0.05	<0.025	42	NA	NA	0.3	0.4	0.2	66
9/95	<0.1	83	<0.003	440	166	5.0	172	<0.1	404	1.56	<0.01	28	34.0	0.07	206	1990	3380	<0.05	0.05	162	NA	NA	0.3	0.7	0.2	169
4/95	<0.1	75	<0.003	414	168	<1	160	<0.1	390	1.41	NA	31	33.0	0.10	190	1940	3280	<0.05	0.05	145	NA	NA	0.1	0.3	-0.1	134
2/95	<0.1	41	<0.003	310	93	<1	80	<0.1	167	0.57	NA	9	23.0	0.02	92	879	1470	<0.05	0.05	41	NA	NA	0.3	0.2	0.2	50
12/94	<0.1	35	<0.003	306	89	<1	74	<0.1	150	0.53	NA	8	22.0	0.01	87	761	1290	<0.01	<0.025	31	NA	NA	0.0	0.0	-0.2	43
8/94	<0.05	92	<0.001	444	184	<0.1	195	<0.02	470	1.71	<0.01	35	37.6	0.06	233	2410	3660	<0.01	0.06	217	NA	NA	0.1	1.4	0.0	156
5/94	<0.05	69	<0.001	327	105	<0.1	109	<0.02	264	0.98	<0.01	21	29.9	0.04	134	1280	2180	<0.01	0.03	79	NA	NA	0.0	0.8	0.0	78
2/94	<0.05	60	0.002	316	116	<0.1	103	<0.02	252	0.81	<0.01	17	29.3	0.03	125	1220	1930	<0.01	0.03	77	NA	NA	0.1	1.4	0.2	63

		·			-	(Excer	pted fro	m Revise	d 1996 a	nd 1998	Annual	Environ	mental N	<u> Aonitorii</u>	ig Repor	rts, Umet	tco Mine	rals Cor	p., Urava	ın, CO)						
Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (pCi/L.)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
CRP-23		ļ]	<u> </u>	ļ		! !		<u> </u>						ļ .										
10/21/98	<0.1	420	ŅΑ	546	290	<5	353	NA	747	NA	NA	9.7	77	NA	244	4150	6300	NA	NA	NA	NA	NA	NA	NA	NA	142.17
8/12/98	<0.1	300	NA	562	280	<5	382	NA	675	NA ·	NA	9	77	NA	271	4830	5840	NA	NA	NA	NA	NA	NA	NA	NA	128.63
4/21/98	<0.1	887	<0.003	528	289	<5	358	<0.1	695	4.23	<0.01	10	65	0.05	236	4500	6180	<0.05	0.402	121	0.3	0.4	0.043	0.8	0.025	128.63
2/23/98	<0.1	350	<0.003	508	298	<5	318	<0.1	707	4.22	<0.01	7.3	74	0.027	259	4200	5930	<0.05	0.398	86	-0.3	0.4	0.1	1.5	0.2	115.09
3/97	<0.1	38	<0.003	554	311	ব	376	<0.1	751	4.5	<0.01	4.84	79	0.061	270	4180	5940	<0.05	0.43	227	NA	NA	0.1	0.8	-0.1	102
12/96	<0.1	308	<0.003	510	258	<5	322	<0.1	583	3.4	0.020	4.6 ⁴	70	0.037	241	2830	4990	<0.05	0.31	95	NA	NA	0.1	0.9	0.3	95
9/96	<0.1	278	<0.003	521	260	<5	315	<0.1	577	3.4	<0.01	4.94	66	0.041	241	3660	4930	<0.05	0.33	110	NA	NA	0.0	-0.2	0.5	88
5/96	<0.1	320	<0.003	530	264	<5	348	<0.1	611	3.6	<0.01	5.04	70	0.033	238	4060	5370	<0.05	0.33	119	NA	NA	0.4	5.0	0.1	102
2/96	<0.1	350	<0.003	585	306	ব	360	<0.1	771	4.6	<0.01	52.0 ⁴	87	0.048	286	4540	6950	<0.05	0.48	120	NA	NA	0.1	NA	0.0	122
12/95	<0.1	323	<0.003	532	303	ర	360	<0.1	691	4.2	<0.01	6.04	81	0.052	268	4500	6260	<0.05	0.39	113	NA	NA	0.4	NA	0.2	121
9/95	<0.1	290	<0.003	570	272	<5	333	<0.1	638	3.7	<0.01	4.9	78	0.057	255 -	3740	5460	<0.05	0.36	125	NA	NA	0.0	NA	-0.1	116
4/95 、	<0.1	350	<0.003	570	302	<1	375	<0.1	737	4.3	NA	4.9	82	0.064	274	4360	6180	<0.05	0.42	160	NA	NA	0.0	NA	0.1	112
2/95	<0.1	330	<0.003	602	341	<1	404	<0.1	768	4.6	NA	5.8	78	0.071	266	5060	7270	<0.05	0.46	204	NA	NA	-0.2	NA	-0.1	108
12/94	<0.1	346	<0.003	595	339	<1	403	<0.1	717	4.9	NA	5.7	83	0.032	285	4840	6480	<0.05	0.48	105	NA	NA	0.0	NA	0.0	NA
8/94	<0.05	364	<0.001	567	295	<0.1	402	<0.02	705	4.1	<0.01	7.0	81	0.039	267	4600	6040	<0.01	0.41	180	NA	NA	0.8	0.9	0.1	NA
5/94	<0.05 ·	441	<0.001	624	347	<0.1	394	<0.02	895	5.6	<0.01	8.0	98	0.056	321	5080	7740	<0.01	0.61	64	NA	NA	0.0	0.5	6.9	120
2/94	<0.05	464	0.003	615	354	<0.1	439	<0.02	985	5.6	0.010	8.1	98	0.047	333	5680	7660	<0.01	0.63	210	NA	NA	0.0	1.6	0.0	120
CRP-24			· · · · · · · · · · · · · · · · · · ·					,					·													
12/15/98	<0.1	789	0.006	734	307	<5	438	<0.1	970	7.33	<0.01	4.9	89	0.114	367	6750	8800	<0.05	0.546	74	0.7	0.6	0.0003	1.2	-0.04	128.63
CRP-25	,																			ii						
12/28/98	<0.1	1060	<0.003	1180	457	<5	1190	<0.1	2900	15.7	<0.01	9.2	184	0.252	795	18200	22600	0.14	1.3	292	0.2	1.5	5	4.6	-0.1	169.25

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Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L _.)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (pCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
CRP-26					ļ			,										•			<u> </u>					
12/15/98	<0.1	14.8	0.01	413	389	ঠ	142	1.7	250	0.53	<0.01	<0.1	43	<0.005	114	1720	2820	<0.05	0.411	-13	0.1	0.4	0.5	2.3	-0.02	3.7912
Н-33]							1		i											
10/23/98	<0.1	0.6	NA	221	73.9	<5	117	NA	29.3	NA	NA	<0.1	12	NA	48	79	494	NA	NA	NA	NA	NA	NA	NA	NA	60.93
8/19/98	<0.1	2.9	NA	212	85.6	<5	141	NA	35.2	NA	NA	<0.1	15	NA	57	111	538	NA	NA	NA	NA	NA	NA	NA	NA	12.863
4/22/98	<0.1	0.4	<0.003	200	82.2	<5	129	<0.1	33.9	0.06	<0.01	<0.1	13	<0.005	53	106	496	<0.05	<0.025	217	0.2	1	0.267	0.1	0.02	18.956
2/4/98	<0.1	2.4	<0.003	209	80.9	ঠ	126	<0.1	33	0.07	<0.01	<0.1	17	<0.005	58	87	440	<0.05		8.6	0.2	0.8	0.2	0.2	0.1	148.94
1/97	<0.1	1.3	<0.003	276	80	ঠ	122	<0.1	33.6	0.07	<0.01	<0.14	14.0	<0.005	50.0	75	464	<0.05	0.030	56.0	NA	NA	0.3	0.5	-0.2	20
10/96	<0.1	2.6	<0.003	214	82	<5	120	<0.1	33.5	0.06	<0.01	<0.14	15.0	<0.005	54.0	74	466	<0.05	0.023	18.0	NA	NA	0.2	-0.5	0.0	16
9/96	<0.1	2.7	<0.003	231	86	ঠ	121	<0.1	33.0	0.08	<0.01	<0.14	13.0	<0.005	49.0	80	472	<0.05	0.021	16.0	NA	NA	0.0	0.5	0.1	14
6/96	<0.1	3.8	<0.003	224	86	ర	120	<0.1	33.1	0.09	<0.01	0.14	14.0	<0.005	55.0	85	508	<0.05	0.025	14.0	NA	NA	0.3	1.8	0.6	17
2/96	<0.1	3.5	<0.003	252	78	<5	118	<0.1	30.8	0.08	<0.01	<0.14	14.0	<0.005	51.0	75	502	<0.05	0.003	20.0	NA	NA	0.2	NA	0.0	2
12/95	<0.1	3.6	<0.003	206	82	ঠ	121	<0.1	32.6	0.08	<0.01	<0.14	15.0	<0.005	55.0	79	518	<0.05	0.025	15.0	NA	NA	0.3	NA	0.2	17
9/95		2.7	<0.003	220	83	ঠ	115	<0.1	32.4	0.08	<0.01	<0.2	14.0	<0.005	54.0	85	550	<0.05	0.030	15.0	NA	NA	0.3	NA	-0.1	20
4/95]	2.8	<0.003	250	85	<l< td=""><td>111</td><td><0.1</td><td>39.9</td><td><0.05</td><td><0.01</td><td><0.2</td><td>17.0</td><td><0.005</td><td>63.0</td><td>141</td><td>584</td><td><0.05</td><td>0.025</td><td>11.0</td><td>NA</td><td>NA</td><td>0.1</td><td>NA</td><td>0.0</td><td>17</td></l<>	111	<0.1	39.9	<0.05	<0.01	<0.2	17.0	<0.005	63.0	141	584	<0.05	0.025	11.0	NA	NA	0.1	NA	0.0	17
2/95	<0.1	1.5	<0.003	235	92	<l< td=""><td>115</td><td><0.1</td><td>34.1</td><td><0.05</td><td>NA</td><td><0.4</td><td>14.0</td><td><0.005</td><td>52.0</td><td>112</td><td>540</td><td><0.05</td><td>0.028</td><td>24.0</td><td>NA</td><td>NA</td><td>0.3</td><td>NA</td><td>0.1</td><td>19</td></l<>	115	<0.1	34.1	<0.05	NA	<0.4	14.0	<0.005	52.0	112	540	<0.05	0.028	24.0	NA	NA	0.3	NA	0.1	19
12/94	<0.1	0.9	<0.003	235	85	<l< th=""><th>110</th><th><0.1</th><th>29.6</th><th><0.05</th><th><0.01</th><th>0.3</th><th>NA</th><th><0.005</th><th>48.0</th><th>69</th><th>460</th><th><0.05</th><th>0.027</th><th>18.0</th><th>NA</th><th>NA</th><th>0.1</th><th>NA</th><th>0.1</th><th>18</th></l<>	110	<0.1	29.6	<0.05	<0.01	0.3	NA	<0.005	48.0	69	460	<0.05	0.027	18.0	NA	NA	0.1	NA	0.1	18
8/94		0.8		238	86	<l< th=""><th>109</th><th></th><th></th><th></th><th><0.01</th><th></th><th>13.7</th><th>0.001</th><th>33.0</th><th>101</th><th></th><th></th><th></th><th>20.0</th><th>NA</th><th>1</th><th>1</th><th>0.8</th><th>-0.2</th><th>16</th></l<>	109				<0.01		13.7	0.001	33.0	101				20.0	NA	1	1	0.8	-0.2	16
5/94			0.00	236	90	<l< td=""><td>112</td><td>•</td><td></td><td></td><td><0.01</td><td><0.2</td><td>14.2</td><td><0.001</td><td>52.9</td><td>107</td><td>530</td><td><0.01</td><td>0.030</td><td>19.0</td><td>NA</td><td>NA</td><td>0.1</td><td>0.8</td><td>0.0</td><td>20</td></l<>	112	•			<0.01	<0.2	14.2	<0.001	52.9	107	530	<0.01	0.030	19.0	NA	NA	0.1	0.8	0.0	20
2/94	<0.05	0.9	0.00	232	80	<1	104	0.07	34.9	0.01	<0.01	<0.2	14.8	<0.001	53.8	80	460	<0.01	0.028	21.0	NA	NA	0.7	1.8	0.0	19
TD98-1		!																								<u> </u>
12/23/98	<0.1	348	0.004	434	281	<5	619	<0.1	472	1.3	<0.01	20	61	0.037	325	3170	4260	<0.05	0.172	64	0.3	1.1	-0.2	0.5	-0.1	94.78

Appendix 5

Summary of Ground Water Monitoring Results

San Miguel River Valley Kayenta-Wingate Sequence Monitoring Wells 1994-1998

(Excerpted from Revised 1996 and 1998 Annual Environmental Monitoring Reports, Umetco Minerals Corp., Uravan, CO) Natural Uranium (pCi/L) Nitrate + Nitrite (mg/L) Polonium-210 (pCi/L) Molybdenum (mg/L) Thorium-230 (pCi/L) Radium-226 (pCi/L) Bicarbonate (mg/L) Magnesium (mg/L) Gross Alpha (pCi/L) Radium-228 (pCi/L) Aluminum (mg/L) Potassium (mg/L) Vanadium (mg/L) Ammonia (mg/L) Lead-210 (pCi/L) Carbonate (mg/L) Chloride (mg/L) Selenium (mg/L) Calcium (mg/L) Sodium (mg/L) Arsenic (mg/L) TDS (mg/L) Iron (mg/L) Sulfate (mg/L) Zinc (mg/L) Mangan (mg/L) Well TD98-3 140 12 <0.1 0.3 0.004 215 78 0.5 31.6 <0.05 <0.01 <0.1 < 0.005 78 560 < 0.05 0.076 4.5 3.5 0.3 2.8434 12/18/98 0.4 0.7 -0.04 TD98-4 313 126 1.2 669 12/22/98 <0.1 1.4 < 0.003 126 <5 101 < 0.1 <0.05 < 0.01 26 < 0.005 80 1260 <0.05 0.06 10 0.2 0.2 0.6 -0.1 13.54 326 119 107 555 0.004 <5 < 0.1 114 < 0.05 <0.01 26 80 10/7/98 0.007 1120 <0.05 0.082 10 0.6 1.4 0.1 1.1 0.008 10.155 WD-1 285 482 1260 NA 28 7750 12/2/98 <0.1 232 NA 654 <5 NA NA 86 NA 402 10500 NA NA NA NA NA NA NA NA 209.87 301 7290 473 NA 654 608 NA 1310 NA NA 41 85 NA 431 9/24/98 <0.1 <5 10200 NA NA NA NA NA NA NA NA 318.34 280 < 0.1 735 NA NA NA 566 NA 1240 NA NA 31 NA NA NA 7320 10700 NA NA NA NA NA NA NA 284.34 6/30/98 NA 816 665 298 <5 1420 <0.1 1370 94 0.153 445 7790 3/26/98 <0.1 < 0.015 8.55 < 0.02 9440 1.18 246 -0.8 0.3 1.3 257.26 <0.05 0.4 0.2 26 <0.1 203 < 0.003 670 332 <5 608 <0.1 1530 9.2 < 0.02 111 495 8080 10800 276 NA NA 0.6 2.3 3/97 0.16 <0.05 1.31 0.0 278 16.0⁴ 0.00 0.000 0 0 0.00 0.0 0 12/96 0.00 8270 0.00 0.00 NA NA 0.0 0.0 0.0 0.0^{4} 0.00 11/96 <0.1 473 < 0.003 594 339 <5 493 <0.1 1190 8.0 < 0.02 97 362 6000 8730 <0.05 1.25 130 NA NA 0.0 2.5 0.3 129 4.84 0.08 323 <5 8/96 <0.2 412 < 0.003 610 483 <0.2 1150 7.5 < 0.02 94 391 6060 8530 114 1.2 <0.05 1.12 NA NA 0.3 156 7.0^{4} 0.6 0.08 5/96 <0.1 400 < 0.003 620 320 <5 507 <0.2 1180 8.1 < 0.02 94 378 6500 8730 <0.05 1.22 307 NA NA 0.4 3.0 6.5 162 8.8^{4} 0.14 307 3/96 < 0.3 460 < 0.003 460 <5 480 < 0.5 1170 7.8 < 0.05 93 363 6600 8980 <0.05 1.20 207 2.1 0.3 156 NA NA 8.54 1.0 0.12 330 < 0.015 556 280 <5 383 < 0.1 777 5.3 76 260 4770 6380 10/95 < 0.1 < 0.01 < 0.05 0.68 122 NA NA NA 0.0 108 8.3* 0.06 -0.1 533 274 <1 389 787 5.8 384 0.003 <0.1 78 276 4230 139 0.3 7/95 <0.1 <0.01 6930 <0.05 0.72 NA NA 123 8.5 NA 0.07 0.4 383 < 0.001 570 286 <1 382 <0.1 895 6.2 <0.01 308 5040 7030 170 4/95 <0.1 87 < 0.05 0.91 NA NA NA -0.2 107 8.6 0.09 -0.1 7.1 400 577 287 <1 419 < 0.2 1020 7900 3/95 <0.2 < 0.02 NA 95 344 5310 <0.1 1.00 157 -0.1 123 NA NA NA 9.6 0.09 0.1 627 < 0.003 776 <1 <0.2 NA 9380 83 12/94 <0.2 345 1440 11.0 110 501 11400 <0.05 1.65 NA NA NA -0.1 193 1610 17.0 0.09 0.0 8/94 <0.1 415 < 0.001 580 <0.1 < 0.04 < 0.02 87 317 5730 7360 <0.02 0.94 158 NA NA 2.1 0.1 801 305 448 938 6.5 7.9 0.06 0.1 589 650 9710 5/94 <0.1 < 0.001 <! < 0.04 < 0.02 95 382 6820 <0.02 1.34 NA 0.0 170 380 NA 1.9 317 513 1260 8.4 16.0 0.11 0.0

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Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium _. (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (ρCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
WD-2																										
12/2/98	<0.1	38	NA	325	186	<5	93	NA	202	NA	NA	1	27	NA	81	1250	1960	NA	NA	NA	NA	NA	NA	NA	NA	12.186
9/24/98	<0.1	64	NA	321	188	<5	108	NA	182	NA	NA	0.3	29	NA	78	1110	1850	NA	NA	NA	NA	NA	NA	NA	NA	10.155
6/30/98	<0.1	3.7	NA	NA	182	NA	113	NA	186 .	NA	NA	0.8	NA	NA	NA	1200	1970	NA	NA	NA	NA	NA	NA	NA	NA	10.832
3/26/98	<0.1	2.7	<0.003	330	215	<5	99	<0.1	217	0.875	<0.01	<0.1	30	<0.005	90	1310	2120	<0.05	0.028	16	0.8	0.7	0.176	0.7	o	10.832
3/97	<0.1	51	<0.003	327	207	330	112	<0.1	217	0.8	0.01	0.44	33	<0.005	95	1380	1820	<0.05	<0.025	11	NA	NA	0.2	0.4	-0.1	10
12/96	<0.1	51	<0.003	327	207	<5	112	<0.1	217	0.8	0.01	0.44	33	<0.005	95	1380	1940	<0.05	<0.025	17	NA	NA	0.1	1.1	0.0	12
8/96	<0.1	50	<0.003	650	192	ব	112	<0.1	201	0.8	<0.01	0.74	31	<0.005	90	1210	1960	<0.05	0.05	21	NA	NA	0.2	1.0	0.3	13
5/96	<0.1	50	<0.003	358	208	<5	121	<0.1	220	0.9	<0.01	<0.14	31	<0.005	94	1260	2090	<0.05	0.06	18	NA	NA	0.4	1.8	0.1	18
3/96	<0.3	53	<0.003	363	213	ধ	110	<0.5	225	1.0	<0.05	0.84	31	<0.005	93	1200	2220	<0.05	0.10	2	NA	NA	0.3	1.2	0.1	12
10/95	<0.1	210	<0.015	512	293	<5	329	<0.1	718	5.5	<0.01	2.34	54	0.046	252	4030	5860	<0.05	0.67	30	NA	NA	0.1	NA	-0.3	47
7/95	<0.1	224	<0.003	491	299	<1	306	<0.1	650	5.2	<0.01	1.9	52	0.052	232	3980	5460	<0.05	0.57	48	NA	NA	0.3	NA	-0.2	45
4/95	<0.1	212	<0.001	528	307	<1	289	<0.1	708	5.6	<0.01	1.7	59	0.066	263	3770	5460	<0.05	0.66	35	NA	NA	-0.1	NA	-0.1	44
3/95	<0.1	140	<0.02	424	286	<1	216	<0.1	514	3.8	NA	7.6	51	0.038	190	2790	4100	<0.05	0.26	42	NA	NA	-0.1	NA	-0.2	28
12/94	<0.1	64	<0.003	400	247	<1	148	<0.1	277	1.5	NA	2.5	36	0.007	113	1720	2700	<0.05	0.05	14	NA	NA	-0.1	NA	-0.4	15
8/94	<0.05	2	<0.001	444	268	<1	234	<0.02	483	3.0	<0.01	2.1	47	0.031	185	2920	4220	<0.01	0.22	57	NA	NA	0.0	1.3	0.0	32
5/94	<0.05	168	<0.001	428	268	<1	210	<0.02	516	3.3	<0.01	3.8	43	0.036	170	2850	4320	<0.01	0.22	54	NA	NA	0.1	1.0	0.0	38
2/94	<0.05	191	0.001	457	261	<0.1	243	<0.02	595	3.8	<0.01	2.3	52	0.038	205	3230	4190	0.01	0.27	60	NA	NA	0.1	2.2	0.9	39

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Well #	Aluminum (mg/L.)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (pCi/L)	Polonium-210 (pCi/L.)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
WD-3																										
12/1/98	<0.1	230	NA	488	373	ర	295	NA	611	NA	NA	<0.	71	NA	249	3660	5130	NA	NA	NA	NA .	NA	NA	NA	NA	45.359
9/28/98	0.1	185	NA	270	373	ধ	299	NA	594	NA	NA	<0.1	57	NA	227	3330	5500	NA	NA	NA	NA	NA	NA	NA	NA	51.452
6/30/98	<0.1	239	NA	NA	349	NA	298	NA	534	NA NA	NA	<0.1	NA	NA	NA	1570	4940	NA	NA	NA	NA	NA	NA	NA	NA	52.129
3/26/98	<0.1	182	<0.003	488	376	ব	293	0.3	585	3.65	<0.01	<1	62	<0.005	256	3530	5320	<0.05	0.146	53	0.4	0.1	0.2	1	-0.1	58.222
3/97	<0.1	228	<0.003	524	423	<্	362	<0.1	685	4.27	<0.01	<0.14	74	<0.005	290	3940	5840	<0.05	0.15	2	NA	NA	0.30	NA	-0,10	66
12/96	0	0	0.000	0	0	0	0	0.00	0	0.00	0.00	0.00	0	0	0	0	5960	0	0.00	0	NA	NA	0.00	NA	0.00	0
11/21/96	0	0	0.000	0	0	0	0	0.00	0	0.00	0.00	0.00	0	0	0	0	5440	0	0.00	0	NA	NA	0.00	NA	0.00	0
11/11/96	<0.1	198	0.003	474	420	ধ	403	<0.1	650	3.63	<0.01	2.60	68	<0.025	328	3430	5750	<0.05	0.11	2	NA	NA	0.60	NA	0.20	74
WD-4	ļ																									
12/3/98	0.4	1170	NA	1220	444	ঠ	973	NA	2580	NA .	NA	12	150	NA	802	15400	20800	NA	NA	NA	NA	NA	NA	NA	NA	216.64
9/1/98	<0.1	1140	NA	1190	468	ර	1250	NA	2550	NA	NA .	14	187	NA	775 ·	15700	20100	NA	NA	NA	NA	NA	NA	NA	NA	223.41
5/20/98	0.7	1050	<0.003	1240	476	ර	1140	<0.1	2830	16.4	0.1	10.4	167	0.198	858	16000	21800	<0.05	1.8	288	-0.7	1.1	0.3	2.7	0.09	257.26
3/26/98	0.2	742	<0.003	1110	478	ර	1170	<0.1	2710	17.1	<0.01	0.8	147	0.214	849	14800	20800	<0.05	1.9	177	-0.6	0.8	0.572	2.1	1.0-	264.03
3/97	2.30	1320	<0.003	1200	528	4 5	1840	1.1	4510	46.7	<0.05	1.14	218	0.645	1420	24500	32600	<0.05	7.6	3	NA	NA	1.2	NA	0	291.11
12/96	0.00	0	0	0	0	0	0	0	0 .	0	0	0	0	0	0	0	3190	0	0	0	NA	NA	0	NA	0	0
11/21/96	0.00	0	0	0	0	0	0	0	0 .	0	0	0	0	0	0	0 -	35800	0	0	0	NA	NA	0	NA	0	0
11/11/96	1.00	2630	<0.015	2300	539	ර	2220	4	5810	27.8	<0.1	114	340	0.567	1500	30200	40600	<0.5	4.36	6	NA	NA	1.4	NA	1.3	629.61
WD-5]																								
12/28/98	<0.1	960	<0.003	1000	432	ර	897	<0.1	2180	9.98	<0.01	6.7	182	0.257	611	14400	17200	<0.05	1.2	580	1.3	0.9	0.3	2.2	-0.0005	338.5
10/22/98	<0.1	1100	<0.003	978	405	<5	1000	<0.1	2350	10.5	<0.01	11	211	<0.005	704	11900	17600	<0.05	1.3	333	-0.2	1	1.4	3.1	1.5	243.72

Appendix 5

Summary of Ground Water Monitoring Results

San Miguel River Valley Kayenta-Wingate Sequence Monitoring Wells 1994-1998

(Excerpted from Revised 1996 and 1998 Annual Environmental Monitoring Reports, Umetco Minerals Corp., Uravan, CO)

Well#	Aluminum (mg/L)	Ammonia (mg/L)	Arsenic (mg/L)	Bicarbonate (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nitrate + Nitrite (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Gross Alpha (pCi/L)	Lead-210 (ρCi/L)	Polonium-210 (ρCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Thorium-230 (pCi/L)	Natural Uranium (pCi/L)
WD-6																										
12/29/98	2	1310	<0.003	1110	478	ර	1280	0.4	3190	30.5	<0.01	39	139	0.343	941	21000	24900	0.08	3.5	355	0.9	1.3	0.3	1.7	-0.05	169.25
10/8/98	1.1	1830	<0.003	1240	496	ර	1580	1.2	3720	35.8	0.11	40	146	0.44	1070	19500	29700	0.07	4.3	354	0.2	0.7	1.4	5	-0.03	223.41
WD-7												}														
12/28/98	11.4	1780	<0.003	330	458	ర	1790	5.2	4520	61.4	0.08	139	83	0.82	1480	30400	35500	0.22	8.7	461	1.7	1	0.7	0.9	0.3	155.71
10/9/98	12.6	1980	<0.003	218	417	ර	1740	2.5	3940	55.1	0.12	90	66	0.75	1280	22300	33900	0.22	7.9	-43	1.2	0.3	0.8	0.4	0.1	128.63
WD-8])]												
12/29/98	0.9	3670	<0.003	1450	537	ර	3240	2.3	7860	54.8	0.2	119	303	1.32	1960	52400	61200	<0.05	7.2	1240	1.2	0.8	1.3	4.8	-0.02	812.4

1. NA:

Not Analyzed

2. **777**:

Highest Value of Analyte Reported in Cited Documents

2 11/15/05

Analytical Results for This Sampling Event Are Exactly/Almost Exactly the Same as the Analytical Results of the Next Samling Date

Reported Analytical Result for Nitrate Only Rather Than for Nitrate + Nitrite

5. **0.0**:

Results Should be Recorded As Less Than the Limit of Detection

6. *11/15/95*:

Results Listed as 0 or 0.00 But Sample Was Not Analyzed For These Materials Reported Analytical Result for Nitrite Only Rather Than for Nitrate + Nitrite

TARGET SHEET

EPA REGION VIII SUPERFUND DOCUMENT MANAGEMENT SYSTEM

DOCUMENT NUMBER: 1079630 **URAVAN URANIUM PROJECT (UNION CARBIDE CORP.)** SITE NAME: DOCUMENT DATE: 09/29/2008 **DOCUMENT NOT SCANNED** Due to one of the following reasons: ☐ PHOTOGRAPHS ☐ 3-DIMENSIONAL ☐ OVERSIZED ☑ AUDIO/VISUAL ☐ PERMANENTLY BOUND DOCUMENTS ☐ POOR LEGIBILITY ☐ OTHER □ NOT AVAILABLE ☐ TYPES OF DOCUMENTS NOT TO BE SCANNED. (Data Packages, Data Validation, Sampling Data, CBI, Chain of Custody) **DOCUMENT DESCRIPTION:** 1 3-1/2" Floppy - Final Five-Year Review (3/13/2000) (Included in this PDF as an attachment), and Appendices 3, 4, and 5 (also included, in

sections)