Public Participation Summary

March 2020 Permit Modification
Utah Groundwater Discharge Permit No. UGW370004
Energy Fuels Resources (USA) Inc.
White Mesa Uranium Mill
San Juan County, Utah

TABLE OF CONTENTS

Public Comments:

Attachments:

Introduction:

The purpose of this document is to respond to public comments received by the Utah Division of Waste Management and Radiation Control ("Division") regarding proposed modification of the Energy Fuels Resources (USA) Inc. (EFR) Groundwater Discharge Permit No. UGW370004 ("Permit") for the White Mesa Uranium Mill, Blanding, Utah. An associated Statement of Basis, dated March of 2020, was also prepared and published with information regarding the basis for the proposed Permit modifications. The March 2020 Permit Modification proposed to delete references to certain completed requirements from Part I.H. (Completed Compliance Schedules) of the Permit and to add certain new required compliance schedules to the same section. The March 2020 Permit Modification also proposed to make other regulatory amendments and adjustments, including modification of select groundwater compliance limits (GWCLs), for certain monitoring constituents, in certain and rigorously evaluated monitoring wells, as required by the Permit. After considering public comments on the Permit modification, the Director has concluded that issuance of a final Permit modification with no changes from the proposal dated March of 2020 is warranted based on evaluation of the complete administrative record.

Two public comment submissions were received by the Division regarding the Permit modification during the comment period which began on April 20, 2020 and ended on July 10, 2020. A Hearing was held on Wednesday May 20, 2020 in Salt Lake City Utah. The purpose of this Hearing was to meet the requirements of the Atomic Energy Act for Agreement States to allow the opportunity for cross examination found in 42 U.S.C. § 2021(o)(3)(A)(i)(ii). Pursuant to the March 18, 2020 Executive Order issued by Utah Governor Gary R. Herbert regarding public meetings during the COVID-19 pandemic, the public hearing was held via video conferencing. Comments discussed during the Hearing were primarily concerning the White Mesa Mill Radioactive Materials License (License No. UT1900479 Amendment 10). Note that comments received regarding the Groundwater Permit modification were received after the Hearing and are being responded to in this Public Participation Summary (PPS). All responses related to public comments regarding the License amendment will be issued under a separate PPS at a later date.

Regarding the Permit modification, comments were received from the Ute Mountain Ute Tribe ("UMUT") and from Bikepacking Roots. The submissions and Division responses to these comments are included below. It was noted that both submissions were concerning GWCL modifications in the Permit. In addition to specific responses to comments, the Division offers a general response regarding the stringent compliance requirements for GWCL modifications below:

Division General Comment/Response Regarding Permit GWCL Modification Requirements and the use of Intrawell Statistical Evaluation:

The administrative record regarding geological site conditions, groundwater beneficial use, and groundwater quality and conditions at the Mill and surrounding properties is extensive and growing. This is due to compliance oversight of the Permit and agreed upon groundwater studies and actions with EFR and consideration of public concerns and comments. The focus of the March 2020 Permit GWCL Modifications relate to the use of

intrawell statistical evaluation. Since this is the primary topic of the received public comments, following are general comments on this topic.

The method used by the Division to evaluate and calculate GWCL's (Intrawell Basis and Statistical Methods) follows EPA Statistical Guidance. GWCL's listed in the Permit are in conformance with State Groundwater Rules (Utah Administrative Code "UAC" R317-6). This general comment/response summarizes the purpose and guidance used to develop and update background concentrations and GWCL's in the Permit and is applicable to the comments received, and responded to below, regarding the Permit modification.

Permit GWCL's included in the Permit are based on intrawell statistics and are performed per a process outlined in the approved flow chart for the White Mesa Uranium Mill (Mill). The flow chart was originally based on the EPA Interim RCRA Statistical Guidance which was finalized in March 2009 and titled *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance*. EPA 530/R-09-007 (Unified Guidance). A copy of the approved flowchart is included with this public participation summary as Attachment 1.

Chapter 5 of the Unified Guidance discusses the importance of background data, use of data to develop compliance limits (Maximum Contaminant Levels) in Permits, ongoing evaluation of monitoring data and appropriate revisions to the background data set, and revised statistical analysis of compliance limits.

The groundwater monitoring required by the Permit for the Mill is extensive. The Permit is highly protective of groundwater and requires compliance monitoring for 38 compliance constituents at a comprehensive groundwater monitoring network (designed for 95% + monitoring efficiency) designed for early detection of potential discharges from the Mill processing and tailings impoundments. Compliance monitoring wells are sampled monthly or quarterly per groundwater velocity measurements, to ensure that data is not affected by auto correlation. Additionally, extensive study of the aquifer hydraulic and geological characteristics has been conducted and is ongoing (e.g., aquifer spatial permeability differences). The studies are included in the EFR White Mesa Mill Hydrogeological Report which is required to be updated as part of the Permit renewal application (every 5 years).

The Unified Guidance Chapter 5.2.4 discusses spatial variability in groundwater data and states, "Evidence of spatial variation should drive the selection of an *intrawell* statistical approach if observed among wells known to be uncontaminated (*e.g.*, among a group of upgradient background locations)."

In the case of the Mill, spatial variability is observed in the groundwater data sitewide, including at upgradient background wells and far downgradient wells from the Mill (1,000 years plus groundwater travel time from the Mill). Based on these findings and review of the Mill background reports, intrawell statistics are appropriate and recommended by the Unified Guidance.

The Unified Guidance Chapter 5 also discusses the identification of concentration trends and evaluation of groundwater data. As well as the need to continue monitoring and re-evaluate compliance limits based on expanded data sets. This guidance is reflected in the approved statistical flow chart used for the Mill and is the basis for Permit requirements related to accelerated monitoring, plan and time schedules for studying out-of-compliance (OOC) parameters, source assessment reports and statistical evaluation of OOC data sets.

The Division regularly reviews the monitoring well data (submitted in quarterly reports) and compares those measured concentrations against their corresponding GWCLs. The GWCLs have been established with consideration of background monitoring concentrations on an intrawell basis. Again, this is in recognition of the anisotropic and heterogeneity of the perched aquifer. The Division additionally recognizes that several of the parameters, in monitoring wells, were identified as having natural pre-existing upward or downward data trends, not caused by the Mill, in background reviews and formally documented in EFR background reports. It is expected that these parameters will exceed their Permit GWCL but that does not necessarily mean Mill activities are now the cause of the increasing trends. The GWCL's are based on statistical analysis using an evaluation of historical groundwater monitoring data for each well and EPA statistical guidance and methods as discussed above.

If any of the monitoring concentrations exceeds the GWCL then the Permit requires EFR to report the exceedance and commence accelerated monitoring for that well and parameter. If the concentration of a parameter exceeds the GWCL in two consecutive samples then EFR is required to notify the Director of the "out of compliance" status, continue accelerated monitoring, and submit a plan and time schedule for assessment of the source of GWCL exceedances.

EFR submits the plan and time schedules and source assessment reports to the Director according to the requirements of the Permit for review and approval. Source assessments generally include the following types of evaluation which serve as lines of evidence when determining whether the GWCL exceedance was or was not due to Mill activities:

- Evaluation of Tailings Solution Discharge Indicator Parameters (Cl, Fl, SO4, U) concentration and trends. These indicators are used in comparison to other compliance parameters since, based on distribution coefficients, retardation factors and high concentrations in the tailings solution they would be expected to arrive at the groundwater earlier than other parameters.

- Mass Analysis – Volumes of tailings wastewater which would be required to cause the concentration increase.

- Contaminant transport time of arrival to the point of exposure with consideration of unsaturated transport through the vadose zone and measured groundwater velocity.

- Pre-identified background concentrations and pre-identified concentration trends per the groundwater background reports.

- Groundwater age dating and evaluation of isotopic fingerprint analysis per the University of Utah Groundwater Study[1] at the Mill.

Numerous studies and field measurements have been conducted by EFR for the Mill, including slug testing and/or pump testing to provide location specific permeability and groundwater velocities in the perched aquifer. An overview of these studies can be found in the EFR Hydrogeologic Report which is available on the Division website.

1 Hurst, T.G. and Solomon, D.K., 2008, *Summary of Work Completed, Data Results, Interpretations and Recommendations for the July 2007 Sampling Event at the Denison Mines, USA, White Mesa Uranium Mill Located Near Blanding Utah*, Prepared by University of Utah Department of Geology and Geophysics.

Based on the Permit requirements and stringent methods to calculate and evaluate GWCL's in the Permit, and perched aquifer heterogeneity, it is expected that parameters in monitoring wells will exceed GWCL's and need to be re-evaluated and adjusted. Particularly in situations where a pre-identified rising trend was noted in background reports. The Division enforces these stringent Permit requirements in order to provide a high level of protection in the perched aquifer.

Comments from Scott T. Clow, Environmental Programs Director, UMUT, on July 10, 2020:

The Division notes that the UMUT comments are related to Permit changes regarding compliance issues and the addition of dissolved oxygen. A copy of the complete comments letter is attached to this public participation summary (Attachment 2). The comments portions of the letter have been extracted and copied below, according to the comment numbering in the UMUT document, followed by the Division response to each comment:

UMUT Comment 5 – The original Environmental Report for the Mill, written in 1978, made scant mention of the public health, safety and environmental quality concerns of either the Ute Mountain Ute Tribe's White Mesa Community or their neighbors to the south, the Navajo Nation. Both federally recognized Tribes are downwind and downgradient from the White Mesa Mill and depend upon the Navajo Aquifer as the sole source for their drinking water and domestic use, and also utilize the shallow Burro Canyon aquifer that is being contaminated by the Mill.

Division Response: While the Division understands the importance of these groundwater resources to the White Mesa Community, the Division disagrees with some assertions made in this comment. The Administrative Record demonstrates the following facts. Contamination of the perched Dakota/Burro Canyon Aquifer by the Mill is limited to the Nitrate/Chloride and Chloroform Plumes, located many miles away from—and cross-gradient from the White Mesa community. Also, as studied and documented in the November 7, 2012 EFR "Southwest Investigation,"[(1)], the contamination is not affecting any seeps or springs along the margins of the mesa and would not be expected to impact any of the seeps or springs based on extremely low hydraulic permeability of the perched aquifer and potential groundwater contaminant travel time on the order of thousands of years. Additionally, this contamination is rigorously defined and monitored to ensure that the area of contamination is well defined, and that progress is made to remove the contamination from the perched aquifer. Therefore, these plumes are contained and under appropriate corrective action. Based on the Administrative Record, these sources of contaminants do not affect use of the perched groundwater by any parties, including the Ute Mountain Ute Community. In response to the comment that the Ute Mountain Ute Community is "downgradient" from the Chloride and Chloroform plumes, the Division disagrees with this comment. It is not supported by technical evidence. The gradient of the perched Dakota/Burro Canyon aquifer was addressed in detail during the 2017 renewal process. *See* 2017 Permit Renewal PPS. Additional data received since the 2017 renewal, including groundwater gradient information from three new monitoring wells (MW-38, 39, and 40), corroborates the Division's longstanding findings that the gradient in the perched Dakota/Burro Canyon aquifer is cross-gradient from the Ute Mountain Ute White Mesa Community. There is no "preferential" groundwater gradient or pathway from the Mill operational area to the Ute Mountain Ute Community, as the UMUT contends. *See, e.g.* the figure attached to UMUT Comment 28.e. In addition to the gradient, these contaminants are

hydraulically isolated according to the corrective action plans (groundwater pumping) and are contained within the boundary of land owned and/or operated by the Mill. The perched Dakota/Burro Canyon aquifer is hydraulically isolated from the deeper Navajo Aquifer. Any potential discharges from the Mill to groundwater would be isolated in a perched aquifer system defined as the Burro Canyon Aquifer. The perched Dakota/Burro Canyon aquifer is classified as "perched" due to the presence of significant, naturally low-permeability formation materials underneath it. The perched Burro Canyon Aquifer is separated from the deep Navajo Aquifer (which is locally used as a primary drinking water source), by approximately 1,100 feet of Morrison and Summerville Formation materials. These formations have unusually low average vertical permeability. For example, the underlying formation includes more than 200 feet of Brushy Basin Member bentonitic clay, a material with extremely low vertical permeability. Located directly below the Burro Canyon Aquifer, the Brushy Basin Member bentonitic clay perches the Burrow Canyon groundwater so well that it forces lateral flow from the perched aquifer to the margins of the mesa. This stratigraphy effectively isolates the perched Burro Canyon Aquifer from the Navajo Aquifer, prohibiting the discharge of potential contaminants from the perched aquifer to the deep aquifer. These natural conditions were a significant consideration in the siting of the White Mesa Mill in the 1970s. This topic is addressed in more detail in the 2017 Permit Renewal PPS.

UMUT Comment 9 f. – There is no "assessment impact on waterways and groundwater resulting from the activities conducted pursuant to the license or amendment" over an indefinite operational life of the Mill as required by R313-24-3(b).

Division Response: The administrative record associated with the Mill has extensive information regarding impacts to groundwater resulting from Mill operations. The requirements of R313-24-3(b) have been satisfied when considering the significant amount of information contained in the administrative record relating to this topic. While it is unclear what "waterways" the commenter is referring to, it is clear to the Division that Mill surface drainage is kept within the confines of the facility and that no surface waters have been or are expected to be impacted by Mill operations. This conclusion is supported by the administrative record as a whole, including new information as it becomes available over time. Specifically, the seeps and springs located around the Mill site are sampled on an annual basis and the results are submitted to the Division for its review. The annual analytical results of surface water show that surface water has not been impacted by Mill operations.

UMUT Comment 23. – Preservation and protection of the groundwater and seeps in and around White Mesa is a matter of extreme concern to the Tribe and its members.

The Mill overlies the deep Navajo aquifer which is the source of drinking water for Tribe's White Mesa Community. The shallow Burro Canyon aquifer underlies White Mesa and is connected to surface water springs relied on for cultural use which may include drinking water and for the support of native ecology and wildlife.

Under Utah's Groundwater Protection Program, the deep Navajo aquifer beneath the White Mesa is classified as a Class Ia and Ib groundwater as both a pristine and irreplaceable active source of community drinking water, while the shallow Burro Canyon aquifer is classified varyingly as -Class Ie, II and Class III groundwater.

Class la pristine groundwater is to be protected for use as drinking water or other similar beneficial use. UAC R317-6-3.2

Class lb irreplaceable groundwater is a source of water for a community public drinking water system and is to be protected for use as drinking water or other similar beneficial use. UAC R317 6-3.3.

Class le groundwater is ecologically important groundwater to be protected for the continued existence of wildlife habitat. UAC R317 6-3.4.

Class II ground water is to be protected for use as drinking water or other similar beneficial use with conventional treatment prior to use. UAC R317-6-4.5.A.

Class Ill ground water is to be protected as a potential source of drinking water, after substantial treatment, and as a source of water for industry and agriculture. UAC R317-6-4.6.A.

Division Response: The Division concurs with these comments as to the importance of all water resources, including groundwater and seeps in the area of the Mill. The protection of water resources was and remains a primary policy reason the State of Utah agreed to become an agreement state with the NRC to regulate the Mill and similar facilities. The Division has been and remains committed to protect the water resources identified in these comments. Groundwater classification was determined for each of the Mill groundwater compliance monitoring wells prior to issuance of the Permit. None of the monitoring well classifications have changed since issuance of the Permit. Additionally, the deep Navajo formation aquifer is not impacted by the Mill, as discussed in the Division Response to UMUT Comment 5 above and throughout the administrative record associated with the Mill.

UMUT Comment 24. – Quarterly groundwater monitoring reports submitted by EFRI, including the most recent in 2020, show progressive and alarming degradation of the quality of the shallow groundwater, with exceedances of groundwater contaminant levels (GWCLs), lowering pH to more acidic conditions, and increasing trends in many monitored metals and other parameters.

Division Response: The Division disagrees with this comment. The administrative record does not support the UMUT's claims that groundwater contamination is being caused by Mill processes or tailings wastewater other than the Chloroform and Nitrate releases which have been detected and are under current corrective action. The administrative record on this topic is extensive. By way of example and overview, pre-existing background concentrations were confirmed by the University of Utah Study. This clearly determined that EFR had not caused increasing constituent concentration trends or relatively higher concentration of heavy metals in monitoring wells prior to the time of the 2007/2008 Study. Background reports also identified pre-existing data trends, in cases where these trends are continuing or where the groundwater compliance limit is exceeded two consecutive times, the Permittee is required to conduct a source assessment to determine whether the source of the exceedance is the Mill. This adds an additional layer of contaminant studies to ensure that trends and/or exceedances are not caused by Mill operations. To date, none of the exceedances have been shown to be caused by new Mill sources or tailings wastewater as shown by extensive studies and documented in Permit required source assessment reports and Division review memorandums.

UMUT Comment 24.a – Ongoing corrective actions to address the chloroform contaminant plume and the nitrate/chloride contaminant plume have not achieved any significant reductions in the areal extent, concentrations, or contaminant masses of these plumes after several years of corrective action. Corrective Action Plan Comprehensive Monitoring Reports submitted by EFRI conclude that the current corrective actions will not remove the plumes or reduce them to acceptable levels for decades or hundreds of years, if ever.

Division Response: Although this comment is not relevant to the March 2020 Permit Modification matter, the assertions made are not supported by the evidence in the administrative record. The chloroform and nitrate/chloride corrective action plans were not altered as part of the Permit modification. However, in order to provide more information on the matter and for the UMUT convenience, general comments are included regarding the corrective action plans for the chloroform and nitrate/chloride plumes:

In May 1999, the Permittee and the Division commenced an annual split sampling program for groundwater monitoring wells at the Mill. This program was comprehensive in that it included all monitoring wells at the facility completed in the shallow aquifer, and a large number of groundwater contaminants, including heavy metals, nutrients, general chemistry, radiologic, and volatile organic compounds (VOCs).

During the May 1999 split sampling event, excess chloroform concentrations were discovered in Monitoring Well MW-4, located on the eastern margin of the site. Because these concentrations were above the Utah Ground Water Quality Standard (GWQS) (70 µg/L), the Division initiated enforcement action against the Permittee on August 23, 1999 via issuance of a Ground Water Corrective Action Order, which required completion of 1) a contaminant investigation report to define and bound the contaminant plume, and 2) a groundwater corrective action plan to address remediation of the plume to re-establish the GWQS's.

Repeated groundwater sampling events since that time, conducted by both the Permittee and the Division confirmed the presence of chloroform in concentrations that exceed the GWQS along the eastern margin of the site in wells that appear to be upgradient or cross-gradient from the tailings cells. Other VOC contaminants associated with chloroform have also been detected in these samples. After installation of 20 new monitoring wells at the site, and associated groundwater studies geared towards defining the nature and extent of the contamination, the eastern and southern boundaries of the Chloroform Plume were adequately characterized and defined.

Based on the Division's evaluation of available data and information, it was determined that the source of the chloroform was most likely from long-discontinued Mill laboratory wastewater disposal activities. In the early years of the Mill, laboratory waste was disposed in unlined sewage leach fields which likely created the chloroform contamination. This practice had been discontinued many years prior to the discovery of the Chloroform Plume. There is no evidence of an ongoing release or disposal or housekeeping practice that is contributing to the Chloroform Plume.

The Division's determination that the legacy laboratory wastewater was the most likely source of the Chloroform Plume was based on the following factors, together with additional information as described in the relevant reports:

- The location of the highest levels of chloroform contamination is at or near the location of the former sewage leach fields.

- The Chloroform Plume is upgradient or cross-gradient from the tailings cells.

- Monitoring wells that are downgradient from the tailings cells do not show chloroform contamination; and,

- The remediation program has been effective in reducing chloroform concentrations, indicating that there is no continuous source for the chloroform, as would be the case if the tailings cells were leaking.

There are currently 38 monitoring wells associated with the Chloroform Plume. The Division believes that this monitoring system is adequate to address the risks posed by the Chloroform Plume and to monitor the Permittee's progress in remediating the contamination. The Permittee submitted, and the Division approved, a detailed Corrective Action Plan (GCAP) for the Chloroform Plume. Prior to accepting the GCAP, the Division solicited public comment on the plan from January 12, 2015 through February 13, 2015. The Division also conducted a formal public hearing on the GCAP in Blanding, Utah on February 11, 2015. After considering all public comments submitted on the document, the Division approved the final GCAP on September 14, 2015. The approved remediation strategy for the Chloroform Plume employs a hydraulic control system (pump and treat) to isolate and capture the chloroform. This hydraulic control system was initiated in April of 2003. Groundwater monitoring results show this initial remediation effort has been effective to remove significant amounts of chloroform as reported in quarterly chloroform monitoring results and to hydraulically capture the contamination. The Division continues to monitor the effectiveness of the remediation program. The projected future costs of the remediation program have also been included in the financial assurance, which is updated and reviewed annually. The footprint of the Chloroform Plume continues to diminish over time and the plume is located within the confines of the Mill property. Based on all available information, the Division has concluded that it is unlikely the Chloroform Plume will extend outside of the boundaries of the Mill property in the future.

During a review of the Permittee April 30, 2008 New Wells Background Report and other Permittee reports, Nitrate + Nitrite (as N) ("Nitrate") concentrations were observed above the Utah GWQS (10 mg/L) in five monitoring wells in the Mill area, including wells: MW-30, MW-31, TW4-22, TW4-24, and TW4-25.

After the Nitrate Plume was identified and the information was shared with the Permittee, the Director and the Permittee entered into a Stipulation and Consent Agreement dated January 28, 2009, which required, among other things, that the Permittee complete a Contaminant Investigation Report (CIR) to determine the potential sources of the nitrate contamination. An immediate action to install 19 additional nitrate monitoring wells was then initiated to define the nature and extent of the contamination.

The Permittee submitted a CIR to the Director on January 4, 2010, which identified a number of potential sources. After review of the CIR, the Director determined that additional investigation was required. This conclusion was shared with the Permittee in an October 5, 2010 letter. The Permittee responded in a November 15, 2010 letter in which they proposed additional studies to be conducted to further define the nature, extent, and source of the Nitrate Plume. The additional studies were discussed in detail during a November 30, 2010

meeting with the Permittee and Divisions staff.

The Director agreed with the Permittee that conducting the proposed, additional studies would be appropriate. Therefore, the Director and the Permittee entered into a Tolling Agreement on December 20, 2010 to allow the Permittee time to conduct additional studies. The additional characterization work was completed, and the results evaluated. The new data ruled out tailings cell leakage as a source of the Nitrate Plume. Rather, the new study generated more than enough data to support a conclusion that the Ammonium Sulfate Crystal tanks at the Facility site is a primary or source of the Nitrate Plume. The factual and technical basis for this determination includes the following factors, as described in more detail in the relevant reports:

- The location of the highest nitrate concentrations of the Nitrate Plume are at or directly downgradient from the Ammonium Sulfate tanks.

- The Nitrate plume is upgradient or cross-gradient from the tailings cells, demonstrating that the tailings cells are not contributing to the contamination; and

- While some of the monitoring wells that are downgradient from the tailings cells do show nitrate, these concentrations are not above standards and do not indicate increasing trends. Moreover, the nitrate in these wells appears to be unrelated to the Nitrate Plume. Nitrate occurs naturally in groundwater, so its presence in concentrations below standards is not considered an indication of a problem or a connection with the Nitrate Plume or a release from the tailings cells. There is no data to support a conclusion that the tailings cells are leaking.

After completion of the studies, the Director and the Permittee subsequently agreed to pursue the development and implementation of a corrective action plan (CAP) to address the Nitrate Plume in the groundwater. The Permittee completed and submitted a draft Nitrate Plume CAP to the Director. The Permittee's chosen remediation plan requires the Permittee to pump the groundwater and treat it by evaporation and/or use it as process water for milling.

In response to the draft Nitrate Plume CAP, the Division prepared a proposed, draft Stipulated Consent Order, Docket No. UGW12-04 ("SCO") and solicited public comments. The public comment period began on July 18, 2012. The Division conducted a public hearing to receive comments on the SCO and CAP August 20, 2012. Based on the comments, the Director prepared and published a detailed public participation summary and response to the comments on December 12, 2012, the effective date of the SCO. The Director's approval of the Nitrate Plume CAP is subject to conditions, stipulated penalties and timelines outlined more fully in the SCO.

The Permittee implemented the CAP and initiated groundwater pumping in January 2013. The footprint of the Nitrate Plume continues to diminish over time and the plume is located within the confines of the Mill property. Based on all available information, the Division has concluded that it is unlikely that the Nitrate Plume will extend outside of the boundaries of the Mill property in the future.

UMUT Comment 24.b – The Tribe urges the Division to require EFRI take additional effective investigative and corrective actions to identify and address the root causes of the contamination, rather than artificially relaxing GWCLs to excuse noncompliant data and allow further degradation of groundwater quality.

Division Response: The Division disagrees with this comment. All appropriate investigation and corrective action measures have already been undertaken by the Division per the requirements of the Permit. All relevant source assessment studies are clearly noted in the Permit modification statement of basis which was included with the public notice regarding the modification.

UMUT Comment 24.c – The Division should not approve additional waste streams and feed materials at the Mill until the root causes of the contamination have been identified and controlled.

Division Response: The Division disagrees with this comment. All sources of contamination have been identified and controlled. Per Division review of EFRI source assessment reports for the modification, all increases of GWCL's are attributed to natural variation in the Dakota/Burro Canyon aquifer.

UMUT Comment 25. – EFR is being allowed to circumvent the Utah Groundwater Protection Regulations by constantly adjusting background levels to justify successive resetting of GWCLs to more lenient compliance levels to bring the facility into compliance, rather than being required to take effective corrective action to identify and control the sources of contamination and to achieve compliance with the Groundwater Contamination Limits specified in its permit.

Division Response: The Division disagrees that EFR is circumventing regulations. GWCL modifications are allowed under the compliance requirements of the Permit. See the Division General Response above regarding the stringent Permit requirements and Division review procedures to ensure protection of the perched aquifer. Again, the need to review GWCL's and modifications in the Permit are due to the stringent requirements of the Permit enforced by the Division, resulting in high levels of protection for the perched aquifer.

UMUT Comment 26. – The Division's regulatory approach of resetting background to allow increased GWCLs and avoid noncompliance and corrective action, is clearly inconsistent with the letter and intent of the Utah Groundwater Protection Program, because it fails to ensure, or even take into consideration whether, groundwater protection levels are being protected and residual contaminant levels are protective of human health and the environment.

Division Response: The Division disagrees with this comment. GWCL modifications are allowed under the compliance requirements of the Permit. See the Division General Response above and Response to UMUT Comment 25.

UMUT Comment 27. – Under the Corrective Action regulations in UAC R317-6.15, the Division may approve Alternate Corrective Action Concentration Limits ("ACACLs"}, provided that numerous requirements are satisfied, including, among others, that the facility take steps to correct the source of the contamination and that any proposed Alternate Corrective Action Concentration Limit ***"shall be protective of human health, and the environment .... "*** *UCA R317-6.15 G.1. [sic] Protection of human health and the environment is the over-arching standard for corrective action, and therefore, it must necessarily be the standard for assessing ongoing compliance.*

27.a. The Division has not adequately evaluated or explained:

(i) how its regulatory approach of repeatedly resetting background and loosening GWCLs will preserve the shallow groundwater within the established classifications for use as drinking water;

(ii) how that approach is or will be protective of human health and the environment over the projected operational life of the Mill - which according to EFRI is now indefinite or for 1,000 years; or

(iii) how the Division and the Mill have complied with the environmental analysis requirements of UAC R313-24-3, including "consideration of the long-term impacts" that will result to groundwater (both shallow and deep) and to human health and the environment over the indefinite life of the Mill if the shallow groundwater compliance limits are continually relaxed.

Division Response: The Division disagrees with this comment. The Administrative Record is adequate to support this Permit modification. GWCL modifications are allowed under the stringent compliance requirements of the Permit. See the Division General Response above.

26.b. [sic] The Division has a challenging and complicated regulatory responsibility to protect and preserve groundwater quality. It cannot choose expediency over its responsibility in its regulation of the Mill. The Division must require the Mill operator to identify and control the sources of the extensive and increasing contamination in the shallow groundwater and restore water quality through effective corrective action.

Division Response: The Division appreciates that its regulatory responsibility to protect and preserve groundwater quality at the Mill. Groundwater Quality is protected per Federal and State regulations and guidance and per the Permit and License. Protection levels are stringently enforced by the Division as discussed in the General Response and responses to previous UMUT comments. The Division has required EFRI to identify and control sources of contamination associated with its, and legacy Mill operations as demonstrated in the Administrative Record.

UMUT Comment 28. – The groundwater monitoring data show that rare toxic metals, including cadmium, beryllium, thallium, cobalt, nickel, selenium, and uranium, are accumulating in increasing concentrations in the Burro Canyon aquifer. These very same metals are found in abundance in the tailings cells, mill facility, and process solutions. There is no validated empirical evidence confirming that these toxic metals come from any other source. The state and EFRI claim these metals occur naturally in the Burro Canyon formation and aquifer, yet the state has never required EFRI to do any specific testing of the geochemistry of the Burro Canyon formation to support their assumption that the metals derive from the formation in the levels being detected in the contaminated groundwater. This is a critical data gap that must be addressed if shallow groundwater is to be preserved in accordance with the Utah Groundwater Protection Program. In the absence of such test data on the geochemistry of the Burro Canyon formation, there is no scientific basis to conclude that the alarming accumulation of toxic metals comes from any source other than the Mill's tailings cells, facility, and process solutions.

Division Response: The Division disagrees with the conclusions proposed in this comment. The comment contradicts the significant body of technical evidence that has been created over the course of many years, as reflected in the Administrative Record as a whole. By way of summary, heavy metals in the groundwater are consistent with the metals detected in common formations of the Colorado Plateau and not indicative of releases from the tailing's cells. Since the tailings are composed primarily of ore from the Colorado Plateau, it is expected that these concentrations are similar. If tailings solution were released to the groundwater it would be expected that certain metals and other ions which are less reactive with the vadose zone chemistry (which display conservative contaminant transport) would arrive at the monitoring wells first. The use of groundwater data to try and compare the tailings wastewater and the groundwater as being consistent is not representative of conditions which would exist in the case of tailings wastewater discharge to the groundwater. Additional details regarding this issue are presented in the Division General Response above.

The state must require EFRI to test the geochemistry of the Burro Canyon formation and provide empirical evidence to confirm whether or not the rare metals accumulating the shallow groundwater are present naturally at the levels at which they are being detected in the shallow groundwater.

The state must also require an updated comprehensive isotopic study of the shallow groundwater to provide empirical evidence of whether or not the Mill's process solutions in the tailings cells are present in the shallow groundwater.

Division Response: The Division disagrees with the proposed requirements. The Division has adequate information regarding the conditions of the Burro Canyon formation to reach well-justified conclusions. Moreover, there is no technical basis to require that the University of Utah isotopic study be updated. The fact that the data from the University of Utah report was collected in 2007, the passage of time since then does not call into question the validity of the isotopic analysis and other conclusions in the report. The Division coordinated with the University of Utah, Department of Geology and Geophysics to conduct a study at the Mill during the summer of 2007. A final report was prepared and submitted to the Division in 2008. The purpose of the study was to characterize groundwater flow, chemical composition, noble gas composition and age of groundwater in the perched aquifer, in a large set of Mill groundwater monitoring wells to evaluate whether the increasing and elevated trace metal concentrations in monitoring wells, which as discussed above were identified in the background reports, indicated that the Mill was a potential source of high concentrations.

The conclusions of the 2008 University of Utah report were that none of the groundwater had been impacted by Mill activities or seepage of tailings wastewater. The report page iii states, "Stable isotopic fingerprints do not suggest contamination of groundwater by tailings cell leakage, evidence that is corroborated by trace metal concentrations similar to historically observed observations." This study confirmed accuracy of groundwater background monitoring reports submitted by EFR for the Mill.

UMUT Comment 28.a. – Cadmium is an indicator parameter of facility impact to the groundwater. Raising the GWCL for cadmium in MW-25 will conceal continuing facility releases and impact to the Burro Canyon aquifer. MW-25 is now the fifth well which shows rising trends of Cadmium at concentrations greater than 1.5 ug/L (Map 1) and is on the way to joining MW-22, MW-24/MW-24A, MW-28 exceeding health-based water quality standards (UT R-317-6). [Figure not included]

UMUT Comment 28.b. – The water chemistry at MW-25 places it in a group with five wells which are exhibiting rising trends in cadmium with a corresponding decline in pH. This group is distinguished by an ion s~gnature [sic]elevated in sulfate and depleted in sodium and alkalinity compared to monitoring wells completed in the nitrate and chloride plume like MW-30 and MW-31. TW4-24 has been revealed to have extremely elevated and dangerous concentrations of uranium (663 ppb, 05/17/2018) after we requested the well be screened for the full analyte table in the GWDP during a previous re-licensing action also has a distinct ion signature and should be required to be investigated with isotopic testing to calculate the activity ratio for uranium isotopes to determine conclusively if it is associated directly with the mill facility.

Division Response: The Division disagrees with this comment because it is not supported by the technical evidence in the Administrative Record. The current Permit modification includes a GWCL modification for cadmium only at MW-25. Per findings, the MW-25 cadmium data is normally distributed and no increasing trend is evident. [Figure not included]

UMUT Comment 28.c. – In addition to the ion and cadmium signature, the presence of rising concentrations of Cobalt and nickel in MW-24/MW-24A, MW-28, MW-39 and MW-22 distinguish this group of wells as impacted by the mill facility and are two constituents that can be expected to show up at MW-25 in the near future as impacts from the facility continue to increase to dangerous levels in the aquifer if this GWCL proposal is authorized and the facility is allowed to continue to discharge to the groundwater.

Division Response: The Division disagrees with this comment because it is not supported by the technical evidence in the Administrative Record. Per the previous comment, current Permit modification includes a GWCL modification for cadmium only at MW-25. Per findings the MW-25 cadmium data is normally distributed and no increasing trend is evident.

UMUT Comment 28.d. – Thallium is now exceeding the Utah criteria of 2 ug/L in both MW-24 and MW-39 and beryllium is exceeding the state criteria of 4 ug/L at MW-39 and MW-22. A rising trend in Beryllium with levels rapidly approaching the criteria for this metal is apparent at MW-24/MW-24A as well.

Division Response: The Division disagrees with this comment because it is not supported by the technical evidence in the Administrative Record. Per the previous comment, the current Permit modification includes a GWCL modification for cadmium only at MW-25. Per findings the MW-25 cadmium data is normally distributed and no increasing trend is evident.

UMUT Comment 28.e. – Presence of manganese and ammonia for this group of wells also distinguishes them as impacted and indicates reducing conditions which are present in the aquifer at the margins of the oxidized conditions present in the nitrate plume. It is important that the Director and regulatory staff recognize that geochemical conditions at the site are strongly influencing contaminant fate and migration. [Figure not included]

UMUT Comment 29. – Since the state has not compelled EFR to do any specific leach testing of Burro Canyon aquifer materials to prove they may be the real source of the rare list of toxic metals accumulating in the groundwater beneath the site or an updated comprehensive isotopic study of groundwater for over a decade which has seen a radical deteriorating change in groundwater condition, the most likely source of the contaminants are the tailing cells and the mill facility. The process solutions and cells are absolutely loaded with extreme

concentrations of cadmium, beryllium, thallium, cobalt, nickel, selenium, uranium and remain the most likely explanation and source of pollution. In the past the Director has stated that contamination in the Burro Canyon aquifer is of little concern because it is a long way from potential receptors and unrelated to the mill and the Director also implies the aquifer is not used for domestic supplies and that it doesn't deserve protection for that future use. In fact, the Burro Canyon aquifer does serve nearby residents as a home domestic supply and also supplies irrigation and stock water to hundreds of users (Kirby, 2008) and the Burro Canyon aquifer extends continuously beneath White Mesa from north of the Mill through the Mill area to the White Mesa community south of the Mill. See Stefan Kirby, Utah Geological Survey Special Study 123, "Geologic and Hydrologic Characterization of the Dakota-Burro Canyon Aquifer near Blanding, San Juan County, Utah" (2008), Plate 3 - Structure Contour Map of the Base of the Burro Canyon Formation, and Plate 4 - Potentiometric Surface for the Dakota-Burro Canyon Aquifer. (Available online at: https://ugspub.nr.utah.gov/publications/special studies/ss-123/ss- 123.pdf); see also Charles Avery, State of Utah Department of Natural Resources Technical Publication No. 68, "Bedrock Aquifers of Eastern San Juan County, Utah (1986), Figure 19. - "Areal extent, water levels, and water quality in the D aquifer, 1982-83." (Available online at: https://waterrights.utah.gov/docSys/v920/w920/w92000ab.pdf.)

The State's role in protecting drinking water quality should be much more active. For example, with the State's agreement that the pollution in the Burro Canyon aquifer on the mill site is due to naturally occurring conditions from pumping wells, what is the implication for nearby residents with a well pumping water from the same formation every day into their drinking, cooking and bathing water? Are they at risk of exposure from cadmium, beryllium, thallium, cobalt, nickel, selenium or uranium that may naturally be rising in the formation to toxic conditions? The state has a responsibility to future generations to protect our shared water resources at the highest possible level.

Division Response: The Division shares the UMUT's concerns regarding the importance of all water resources in and around the Mill. While the Division appreciates the importance of groundwater resources to the UMUT, the Division supports its longstanding findings as to both the source for groundwater quality issues as well as the groundwater gradient. With all due respect to the UMUT's concerns, the Division disagrees with these comments, which were addressed and included with the 2017 Permit Renewal PPS (incorporated by reference). There is no technical or other factual basis to support the claim that groundwater chemistry is deteriorated due to discharges from the tailings cells. The Division requires and is continually reviewing data to determine if impacts are occurring to the groundwater due to Mill activities, including data gathered since the 2017 Permit renewal. Measured concentrations of compliance parameters in groundwater have been addressed to date and are attributed to natural background concentrations. Natural groundwater conditions fall outside of the Division's permitting and enforcement jurisdiction. Despite these natural concentrations, groundwater chemistry is maintaining beneficial use classification and groundwater standards for classification, per review of all historical groundwater data for the tailings cell monitoring wells. The Permittee source assessment reports are definitive without the use of additional isotopic water analysis. The University of Utah Study characterized the Mill surface water sources and confirmed that elevated metals in groundwater were background and not caused by Mill activities.

With respect to the UMUT's comments on the groundwater gradient for the perched Dakota/Burro Canyon aquifer, the Division likewise disagrees with the UMUT's comments. Based on groundwater elevation data collected at all the monitoring wells installed for the

White Mesa Mill, including all of the Point of Compliance Wells, Piezometers, Background Monitoring Wells, General Monitoring Wells and Corrective Action Monitoring Wells (Chloroform and Nitrate CAP Wells), the groundwater is flowing in a predominant south-southwesterly regional direction. This conclusion is supported by the administrative record relating to the 2017 Permit renewal matter as well as all additional data that has been collected since that time. The gradient data is consistent. There is no evidence of localized anomalies in terms of groundwater flow direction. Groundwater contour maps showing groundwater flow directions are prepared which show contours reflecting predominant groundwater flow and is not flowing towards the White Mesa Community. Gradient issues are addressed in more detail above as well as in the 2017 Permit Renewal PPS.

Issues related to the deeper Navajo aquifer and findings of no impact are included in the Division Response to UMUT Comment 5 above.

UMUT Comment 30. – The proposed GWCL increase for selenium and uranium at well MW30 would not be protective of human health and the environment. Rising trends in both of those parameters along with a strongly increasing trend in chloride are a signature of facility impact to the groundwater and the source of the continuing contamination must be conclusively determined with an updated comprehensive isotopic test of groundwater condition at each POC well along with a selection of wells from the general monitoring wells and the TW4 and TWN series.

Division Response: The Division disagrees with this comment. It is not supported by the technical evidence in the Administrative Record. The January 15, 2019 EFR Source Assessment Report (SAR) discussed several lines of evidence to support that Mill activities are not the source of the selenium and uranium GWCL exceedances in monitoring well MW-30, including; 1. Decreasing pH effects on monitoring well geochemistry; 2. Evaluation of tailings solution indicator parameters (chloride, sulfate, fluoride and uranium); 3. Previous findings in the EFR Existing Wells Background Report that the SAR parameters showed long standing upward trends; 4. Potential effects of pyrite oxidation releasing selenium and other trace metals into solution; 5. Location of MW-31 within the nitrate/chloride plume, and, 6. Findings of the 2007/2008 University of Utah Groundwater Study. The Division finds that these lines of evidence support the conclusion that Mill activities are not the source of the selenium and uranium GWCL exceedances in monitoring well MW-30.

Per the SAR, the use of chloride as an indicator parameter in the case of monitoring well MW-30 is complicated by the fact that MW-30 is screened within the margins of the nitrate/chloride plume, and chloride is therefore above background and is not a reliable primary indicator of cell leakage for MW-30. Chloride at monitoring well MW-30 is showing a significant increasing trend. The chloride plume has been delineated based on concentrations and plots clearly show that the plume originates hydraulically upgradient from the mill tailings cells and is not attributed to tailings cell leakage based on groundwater flow data and mass balance calculations.

Based on the Division's review, these findings are consistent with previous EFR SAR's and the evidence suggests that the GWCL exceedances are not being caused by mill activities. Based on the increasing trends and the conservative intrawell statistical methodology being used, adjustment of the GWCL's for selenium and uranium in the Permit is appropriate. Evaluation of the comprehensive list of monitoring parameters and evaluation of data by EFR and the Division at monitoring well MW-30 is ongoing.

UMUT Comment 31. – New Well MW-24a is chemically identical to existing Well MW-24 and there is no need to spend two more years collecting data to develop new GWCL for new well MW-24a. The existing GWCL for MW-24 should be used to recognize the exceedances at this location as a POC well for old outdated cells 1 and 2. MW-24 is associated chemically with a signature of facility impact as discussed in our Comment #1. The Director is proposing to allow EFR more than two years to collect data from a new well, MW24a, as they explore if a well construction issue is to blame for the rise in specific ions and metals in MW-24 (See Comment #1, MW-24 fits in a group with MW-25, MW-28, MW-39 and MW-22). pata from the first quarter 2020 first sampling event show water chemistry in MW-24a is obviously similar to that in MW24 (Stiff diagrams, piper diagram and comparison table below from the pt Quarter 2020 Groundwater Monitoring Report). There is no need to wait for additional quarterly samples, and it makes no sense to delay for two years. Water chemistry trends in MW24 are confirmed. The trends at this location fit into a distinct pattern with other site wells including MW-25, which indicates an anthropogenic continuing source from the Mill site. A source ID requirement for cadmium sitewide needs to be conducted and must include updated comprehensive geochemistry and isotopic tests for all POC wells and general monitoring wells along with TW4 and TWN series wells to conclusively determine the sources of the recognized nitrate chloride plume which is associated with uranium concentrations far above health based standards (TW4-24, 663 ppb 05/17/2018), the chloroform plume which continues to increase in size and concentration (l5t quarter 2020 chloroform report) and the cadmium plume associated with cobalt, nickel, molybdenum, thallium, beryllium and manganese. [Figures not included]

Division Response: No changes are proposed for monitoring well MW-24, MW-24A, or TW4-24. MW-25 is located at the margin of the chloride/nitrate plume as discussed in the MW-25 Source Assessment Report and the Division Review Memo.

UMUT Comment 32. – The elevated iron concentrations in groundwater downgradient of the tailings cells indicate impact to groundwater from tailings solutions. The Division should evaluate this line of inquiry. As recognized in the technical evaluation of the Moffat tunnel waste suggests that iron concentrations in groundwater can serve as a surrogate for monitoring potential impact to groundwater from this waste stream stating, "Analogous geochemical behavior of iron in the tailings wastewater with iron as a more conservative tracer of potential tailings wastewater in the groundwater than aluminum (UDWMRC, 2020.)" We presented a report in 2015 and again in 2017 with updated data (Geologic, 2017) which also used an analysis of iron concentrations in groundwater along with concentrations of other metals present in the tailings wastewater to identify tailings impact to the groundwater downgradient of the facility. These findings were presented in the report in both a written narrative and illustrated with figures like the one below and show iron and other metals spiking in concentration in the groundwater downgradient of the tailings cells: [Figure not included]

State of Utah Department of Environmental Quality. Division of Waste Management and Radiation Control. Technical Evaluation and Environmental Analysis Moffat Tunnel Alternate Feed Request Energy Fuels Resources (USA) Inc. White Mesa Uranium Mill Utah Division of Waste. Management and Radiation Control April 2020.

Division Response: The Division has reviewed and evaluated the UMUT-contracted Geo-Logic Associates Reports and disagrees with its conclusions and methodology. The Division's comments on these reports have been discussed and addressed in detail per previous UMUT comments and requests for meetings. As the UMUT is aware, the Division

conducted a review of the August 2015 Geo-Logic Associates Report and provided the UMUT Tribe with a copy of the Division Review Memorandum dated September 23, 2015. Per review of the 2017 Geo-Logic Report, it was noted that none of the Division's comments had been recognized and that the 2017 version was the same as the 2015 version but included more recent data. In their current form, the Geo-Logic Reports, the Division disagrees with the conclusions Geo-Logic has reached because these conclusions are not supported by valid technical analysis or data. To assist the UMUT regarding Division findings the Division response to the UMUT comments regarding the Geo-Logic Associates findings during the 2017 Permit renewal is included below by way of summary. The following summary does not include all the Division's comments on the Geo-Logic Report:

"The Revised Geo-Logic Report is discussed in response to several Tribe comments in this section. The Geologic report does not confirm evidence of a signature of tailings solution in the groundwater at the Mill.

The Geo-Logic Report, Section 3.4, explains the method used to calculate the average concentrations and provides a spreadsheet of the values used on Table 10 of the report. In some cases, and as explained in the Geo-Logic Report, sets of wells have been used to display data. The selection of data is biased and not representative of well-by-well analysis which considers background concentrations determined for individual wells. Using this culled data and estimated solubility limits for individual metals (using a specified pH's of 5 and 7), Geo-logic has combined average metals concentrations for selected sets of wells and plotted these average concentrations in comparison with average tailings solution concentrations (Figure 30 of the Geologic Report) on different logarithmic scales. According to Geo-Logic the diagram (Figure 30) depicts that "the patterns observed show a general similarity in the relative concentrations of the various heavy metals, particularly for Tailing Cell 1, suggesting that the tailings solution is a likely source for the observed heavy metals concentrations in groundwater below the tailings cells."

Per the Division's review, this data analysis is not representative of concentrations which would be expected in the event of a tailings solution release. The Geo-Logic report does not consider relative mobility of contaminants, background concentrations of metals, comparisons with GWCL's, or rising trends. It is expected that in the case of metals, the same metals will be found in the shallow aquifer Burro Canyon Rock as are found in the ore used to produce the tailings, and therefore the same metals will be found in natural background concentrations as are found in the tailings solution. Geo-Logic has simply compared a biased assessment of background concentrations in the Burro Canyon Aquifer with average tailings solution concentrations.

The Geo-Logic Report plots concentrations on a site map of gross metals concentrations (Figure 33 of the Geo-Logic Report) in site wells and includes contour maps which claim to be indicative of tailings solution releases to groundwater based on the same reasoning as discussed for the Report Figure 30 discussed above. This is not representative of tailings solution discharge but again, is simply a representation of gross total background metals concentrations in the shallow aquifer.

For example, in the case of the Mill monitoring wells MW-32 and MW-29 which have the highest average concentrations of gross metals of all of the wells plotted on figure 24 of the Report, none of the metals exceeded GWCLs (based on statistical analysis of background concentrations) during quarterly 2016 monitoring, and very few GWCL exceedances have occurred since the initiation of sampling at these wells in 2005. The 2004 Statement of Basis

for the Permit recognized that background concentrations of heavy metals had not been established and that background reports were required prior to the establishment of GWCL's in the Permit.

UMUT Comment 33. – As suggested in the Division's June 27, 2000 review memorandum and as recommended in the 2017 Geo-Logic Report as a standard industry practice, EFRI should be required to calculate an annual water balance for water received, consumed, and lost at the Mill, and report the balance with annual DMT reports to assist with evaluation and performance of the discharge minimization technology required under the Groundwater Permit. Currently, there is no accounting of water use and loss at the Mill.

Division Response: The Division disagrees with this comment. The Division incorporates its previous responses to comments on these points. There is no technical basis or need to calculate an annual water balance. This type of calculation at the Mill would include large assumptions and be of little practical use (e.g. losses to evaporation, inputs from precipitation, process discharges and extractions). The volume of water potentially lost through cell bottom liners would likely be unreliable due to these assumptions. Current actions to monitor cell losses using leak detection systems and/or discharge minimization measures are dependable and adequate.

Document from Kurt Refsnider Ph.D., Bikepacking Roots, on July 9, 2020:

To whom it may concern:

I write on behalf of the Bikepacking Roots not-for-profit organization and our 5,000+ members

in expressing dismay at the interpretations of monitoring well data from down hydraulic gradient of the White Mesa Mill site. These analyses and interpretations would never stand up in peer reviewed scientific journals, and that is absolutely unacceptable when there exists the potential long-term poisoning of local communities and the broader landscape. DEQ completely neglects equally viable interpretations of data specifically from monitoring well MW-30 that could legitimately show groundwater contamination from at least one of the tailings impoundments beginning around 2010. Thus, without further scrutiny of these and other data, no discharge permit amendments or byproduct license amendments should be made for the White Mesa Mill – no increases in groundwater compliance limits (GWCLs), no increase in materials to be added to tailings impoundments, and no acceptance of materials from other countries for processing.

Our mission at Bikepacking Roots is to advocate for the bikepacking experience and for the landscapes through which we ride on behalf of the bikepacking community and our members. The Bears Ears and Grand Canyon regions are both popular among bikepackers, and the potential for future uranium mining in these region's futures, as well as any related contamination of the landscape, are especially concerning. We also have worked extensively with colleagues and organizations on Navajo Nation, and the long-term toxic impacts of uranium mining are all too real there. Given that Energy Fuels Resources owns the uranium mines in the

Grand Canyon region (currently flooded with contaminated groundwater) and lobbied heavily for areas underlain by uranium-bearing bedrock to be removed from the original boundaries of

Bears Ears National Monument, we find it important to engage in this current process related to the White Mesa Mill.

In writing this comment, I am representing the Bikepacking Roots organization and our members. As a geologist with a background in geochemistry, I personally have the expertise to delve into the data from the White Mesa Mill.

What is particularly dismaying is that in DRC-2019-006502, the DEQ memo reviewing the 2019

Source Assessment Report for MW-30, the DEQ

1. *Accepts the linear regression fits through the 2005-2018 groundwater chemistry data despite the fact that the data show a clear change in behavior around 2010. Forcing a linear regression through this full dataset is nothing more than sloppy and deceptive statistical analysis.*

2. *Accepts the argument that a minor decrease in pH (less than 0.5 pH units) could alter uranium concentrations. This would only be the case if the groundwater was nearly saturated with respect to uranium, and that is very much not the case. Minor changes in pH in the historic range of groundwater pH values will not change uranium concentrations.*

3. *Accepts that tailings solution indictor parameters conclusively do not suggest contamination. Below I share an equally plausible interpretation of the same data and plots that point to contamination being able to just as easily explain the geochemistry trends at MW-30*

4. *Points to "long-standing upward trends" in SAR parameters. Again, uranium, sulfate, chloride, and pH all show a marked change in any trends around 2010. Forcing a linear regression through a longer period does not prove the existence of a long-standing trend.*

5. *Points to a 2008 University of Utah study that dated the groundwater in MW-30 to being older than the mill construction date of 1980. That may in fact be completely correct. But it is still possible to contaminate "old" water.*

Each of these points on their own raises flags about the veracity of the interpretations of groundwater chemistry data coming from any of the monitoring wells at the White Mesa Mill site. But the fact that the validity of five of the six primary conclusions of the 2019 SAR summarized in the DRC-2019-006592 DEQ memo can be called into question is hugely problematic. The statistical analyses and interpretations of the 2019 SAR data from MW-30 (and likely other wells) would not stand up to any sort of scientific peer review, and DEQ's seemingly unquestioning acceptance of those analyses and interpretations does nothing to inspire faith in DEQ oversight.

Let's explore a bit of the geochemistry data from MW-30 over the years in a bit more depth, including some past interpretations of those data.

An analysis of historic chloride concentrations in a variety of wells at the White Mesa Mill site using data from 1983 to 2006 demonstrates that "chloride values are similar from 1983 to 2005-

2006, indicating that, in spite of the variable magnitude of concentrations across the site, these comparative snap shots demonstrate that there has been little change in concentrations in samples from each well" (BGQR12292006). It was not until 2010 that chloride concentrations in MW-30 began to rise steadily (see MW-30 data plots at the end of comment with pre- and post-2010 periods highlighted for clarity; plots are taken directly from DRC-2019-000747). This increase in chloride concentrations around 2010 occurred at roughly the same time as uranium concentrations in MW-30 began to rise. It was also around 2010 that a steady decrease in sulfate concentrations at MW-30 leveled out. And no notable change in pH at MW-30 occurred at this time. Since 2010 at MW-30, the data show a steady rise in uranium and chloride concentrations and generally steady sulfate concentrations and pH; fluoride trend interpretation is hampered by high scatter pre-2010.

What might all this mean, and how should each of these indicators be interpreted? In the discussion of the merits of various "indicators of potential impact" in BGQR1229-2006 (a 2006

Background Groundwater Quality Report for the White Mesa Mill), chloride is identified as a "primary indicator of potential tailings impact." Fluoride, which has similar chemical properties as chloride, can have solubility controlled along ground water flow paths by the trace mineral apatite, resulting in fluoride being considered secondary to chloride in terms of reliability as an indicator of impact. Similarly, solubility differences between calcium chloride and calcium sulfate mineral species complicates the interpretation of sulfate data.

Returning to the MW-30 data, the steady decrease in sulfate concentrations at MW-30 between

2005 and 2010 levels off. 2010 is approximately the year that uranium and chloride concentrations at MW-30 began to increase steadily. If the steady decrease in sulfate concentrations between 2005 and 2010 was due to influences external to the mill site (as argued in the 2019 MW-30 SAR), groundwater contamination from mill operations could responsible for the relatively steady sulfate concentrations since 2010 as sulfate from tailings could have offset that prior decrease in sulfate concentrations (or in other words, the longer-term decrease in sulfate concentration due to environmental factors external to the mill site is masking contamination since 2010).

To summarize this simply, all the trends observed in uranium, chloride, and sulfate concentrations at MW-30 could potentially be explained by groundwater contamination from the mill site. The conclusions from the 2019 MW-30 SAR accepted by DEQ are not the only viable explanation for these trends, and I would argue that what I have presented is arguably a more viable explanation.

As explained in detail in BGQR12292006, the interpretation of indicators of potential impact is

complicated by environmental variability in groundwater geochemistry. Thus, if interpretation of

monitoring well data shows any potential sign of contamination, the onus is on the DEQ to

require a far more thorough analysis and investigation than has been done. Decisions regarding

potential uranium contamination must not be based on difficult to interpret data, shoddy and

deceptive statistical analyses or conclusions that ignore other viable explanations. Far too much

is at stake.

Based on all this, we request that

1. *No changes be made in the uranium GWCLs be made. It has not been demonstrated convincingly that the increasing trends in uranium are not due to contamination.*

2. *No license amendment be issued for an increase in the annual limit of material added to the tailings impoundments be granted.*

3. *No license amendment be issued for the acceptance of alternate feed material from Estonia be granted.*

The toxic legacy of uranium contamination is all too visible today across the Colorado Plateau, and particularly on Navajo Nation where so many families face the realities of cancer, birth defects, poisoned wells, and so much more as a result of past uranium mining. And just down hydraulic gradient a few miles from the White Mesa Mill sits the White Mesa Community, poised to intercept any groundwater contamination from the mill. One undetected leak is all it would take. And it has not been convincingly demonstrated that the changes in groundwater geochemistry at MW-30 are not evidence of a contamination that began around 2010.

Respectfully,

Kurt Refsnider, Ph.D.

Executive Director

Division Response: The Division appreciates the comments from Bikepacking Roots and has taken these comments into account in reaching a final decision on the present Permit modification. The Division notes that the letter primarily discusses the Division review of the source assessment report (SAR) for monitoring well MW-30 and the modification of the uranium GWCL in the Groundwater Permit. Monitoring well MW-30 is located within the defined zone of the perched aquifer nitrate/chloride plume, this fact was not acknowledged in the Bikepacking Roots letter. The Division memorandum summarizing the SAR review states "Per the SAR, the use of chloride as an indicator parameter in the case of monitoring well MW-30 is complicated by the fact that MW-30 is screened within the margins of the nitrate/chloride plume, and chloride is therefore above background and is not a reliable primary indicator of cell leakage for MW-30. Chloride at monitoring well MW-30 is showing a significant increasing trend. The chloride plume has been delineated based on concentrations and plots clearly show that the plume originates hydraulically upgradient from the mill tailings cells and is not attributed to tailings cell leakage based on groundwater flow data and mass balance calculations." The Division memorandum therefore discusses that chloride is not a reliable constituent for evaluation of potential releases of tailings wastewater. Note that the nitrate chloride plume at the Mill is being regulated by a separate Division stipulation and consent order for corrective action.

The Division Memorandum also discusses that the concentrations of sulfate and uranium in MW-30 are very low compared to sitewide background averages, including wells upgradient and far downgradient from the White Mesa Mill. These low concentrations are not representative of the mass of contaminants that would be expected if the groundwater were impacted by tailings wastewater. Additionally, as discussed in the Division review, the increasing uranium trend is not indicative of a tailings source according to mass balance and plots of other indicator parameters (sulfate and fluoride).

Fluoride, which is a primary indicator parameter of tailings wastewater being discharged to the groundwater is showing no increase in concentrations. Fluoride is a conservative tracer as based on high tailings wastewater concentrations and high mobility in the vadose zone and groundwater (Site Infiltration and Contaminant Transport and associated PHREEQC Geochemical Modeling). Fluoride adsorption to mineral species (e.g. apatite) is not likely to occur, quantitative mineralogical analysis of the Dakota Sandstone and Burro Canyon Formation (HydroGeoChem 2012) did not detect apatite in any samples.

Sulfate is also a conservative tracer and is showing a decreasing trend in concentrations. The relative flattening of the trend since 2010 is likely due to the use of improved analytical methods at that time and is not an "offset reaction" indicating contamination of the groundwater as suggested in the Bikepacker comments. If the flattening of the trend were masking a rise in sulfate concentrations, then there would still be rising increasing trend evident if a continuing source of sulfate from the tailings were being discharged. Per the data plot this is not the case, there is a higher variability of data which is consistent with the changing of laboratories in 2010 and the implementation of more sensitive methods at that time, but when plotting a trend since that change, no increases are evident and per review, the trend is still decreasing. According to mass balance calculations conducted for wells at the Mill site, fluoride would show a significant rise in concentrations if the groundwater were impacted by tailings wastewater. Decreasing sulfate and fluoride concentrations do not support a tailings source.

In the case of decreasing pH at monitoring well MW-30 and potential effects on the uranium concentrations, the EFR Source Assessment Report does include and discusses the potential mechanisms (pH limiting U sorption and potential dissolution of uranium bearing minerals due to pyrite oxidation), and includes a figure of uranium and selenium species in MW-30 (Figure 4) which indicates potential significant increases in uranium concentrations with a decrease of 0.5 pH S.U. However, the Division has not accepted pH as the cause of rising uranium concentrations. Per the Division review, the inclusion of this discussion was recognized, however, determinations eliminating tailings solution as the source of uranium were based on other lines of evidence in the source assessment as discussed in the Division memorandum and in the responses above.

Findings of the EFR Source Assessment Report for MW-30 and Division Review findings conclusively find that increasing uranium concentrations are not caused by the Mill and that sitewide the concentrations of uranium in MW-30 are very low. Adjustment of the uranium GWCL is warranted and is consistent with Federal and State Rules and Regulations and the Permit. Statistical analysis for the modified uranium GWCL was done in conformance with the approved statistical flow chart. A copy of the approved flowchart is included with this public participation summary as Attachment 1.

References - Public Comments:

July 10, 2020: Scott T. Clow, Environmental Programs Director, Ute Mountain Ute Tribe.

July 9, 2020: Kurt Refsnider Ph.D., Bikepacking Roots.

References:

[1]Energy Fuels Resources (USA) Inc., November 7, 2012*, Second Revision Hydrogeology of the Perched Groundwater Zone in the Area Southwest of the Tailings Cells White Mesa Uranium Mill Site*. Prepared by HYDRO GEO CHEM, INC.

[2]Energy Fuels Resources (USA) Inc., August 20, 2017, *Source Assessment Report for MW-31, White Mesa Uranium Mill*, Prepared by Intera

[3]Energy Fuels Resources (USA) Inc., July 25, 2018, *Source Assessment Report for MW-14*, Prepared by Intera

[4] Energy Fuels Resources (USA) Inc., October 29, 2018, *Letter to Scott Anderson, Director DIVISION, Re: White Mesa Uranium Mill, State of Utah Ground Water Discharge Permit No. UGW370004, Request for Change to Part I.F.7*.

[5] Hurst, T.G. and Solomon, D.K., 2008, *Summary of Work Completed, Data Results, Interpretations and Recommendations for the July 2007 Sampling Event at the Denison Mines, USA, White Mesa Uranium Mill Located Near Blanding Utah*, Prepared by University of Utah Department of Geology and Geophysics

[6]Utah Division of Waste Management and Radiation Control, September 11, 2012, *Public Participation Summary for the Nitrate Corrective Action Plan*

[7]Utah Division of Waste Management and Radiation Control, December 12, 2012, *Final Stipulation and Consent Order Docket No. UGW12-04 Regarding the White Mesa Uranium Mill Nitrate Corrective Action Plan*

[8]Utah Division of Waste Management and Radiation Control, September 16, 2015, *Stipulation and Consent Order Docket No. UGW20-01 Chloroform Plume Remediation*

[9] Utah Division of Waste Management and Radiation Control, 2018, *Public Participation Summary, Radioactive Materials License UT1900779 and Groundwater Discharge Permit UGW370004 Renewal for the Energy Fuels Resources (USA) Inc., White Mesa Uranium Mill, San Juan County, Utah*

[10]Utah Division of Waste Management and Radiation Control, March 14, 2018, *DIVISION Staff Review of the Energy Fuels Resources (USA) Inc. August 21, 2017 Source Assessment Report for Monitoring Well MW-31*

[11]Utah Division of Waste Management and Radiation Control, July 17, 2018, *DIVISION Staff Review of the Energy Fuels Resources June 25, 2018 Source Assessment Report for Fluoride in Monitoring Well MW-14*

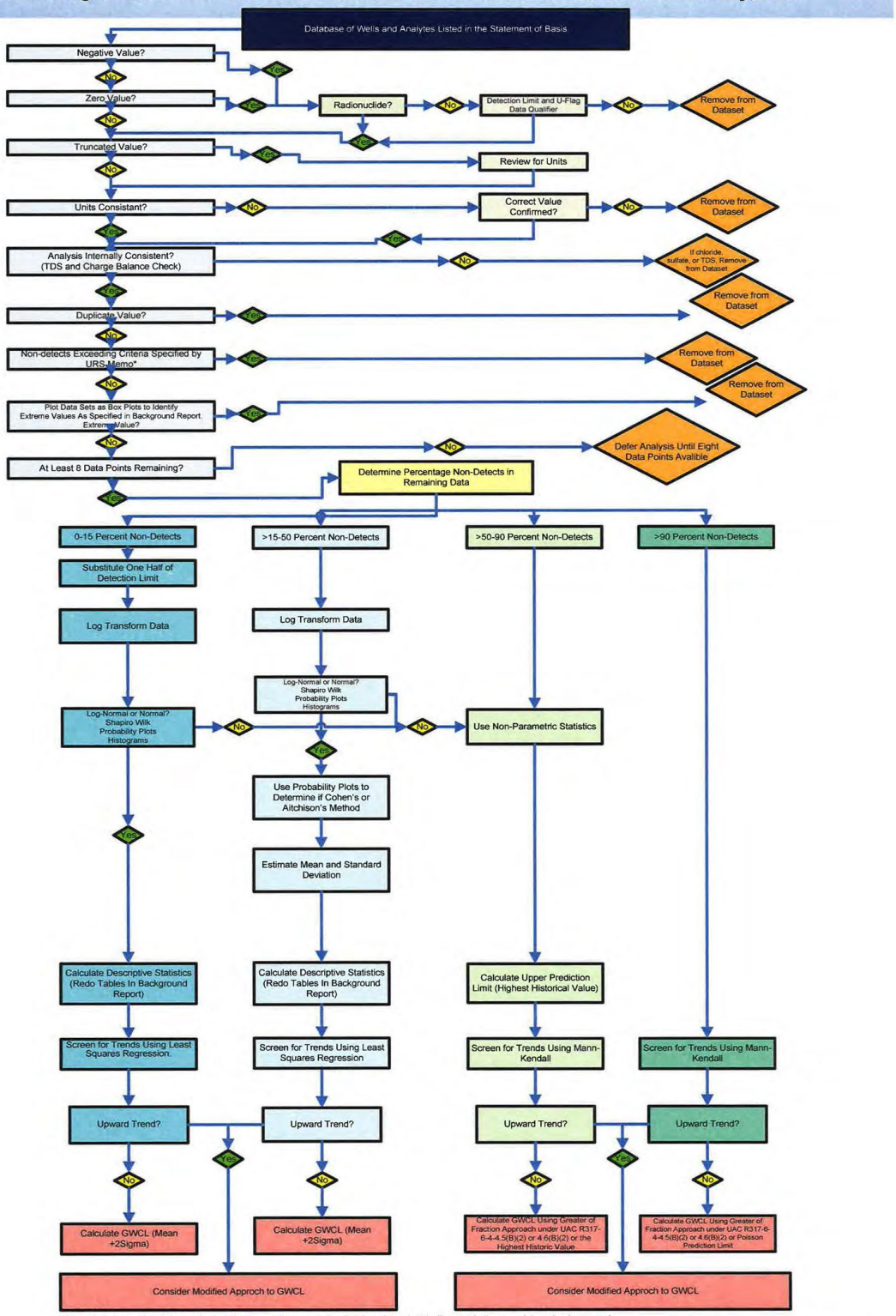
[12]Utah Division of Waste Management and Radiation Control, March 20, 2018, *DIVISION Directors Letter Regarding Review of the EFR August 21, 2017 Source Assessment Report for Monitoring Well MW-31*

[13] Utah Division of Waste Management and Radiation Control, July 25, 2018, *DIVISION Directors Letter Regarding Review of the EFR June 25, 2018 Source Assessment Report for Monitoring Well MW-14*

[14] Utah Division of Waste Management and Radiation Control, November 2018, Statement and Basis for Permit Modification, Utah Ground Water Quality Discharge Permit No. UGW370004.

Attachment 1 – Approved Statistical Flow Chart (Groundwater Data Preparation and Statistical Flow for Calculating Groundwater Protection Standards, White Mesa Mill Site [INTERA, 2007])

Appendix E. Flowsheet
Groundwater Data Preparation and Statistical Process Flow for Calculating Groundwater Protection Standards, White Mesa Mill Site, San Juan County, Utah



*A non-detect considered "insensitive" will be the maximum reporting limit in a dataset and will exceed other non-detects by, for example, an order of magnitude (e.g., <10 versus <1.0 µg/L). In some cases, insensitive non-detects may also exceed detectable values in a dataset (e.g., <10 versus 3.5 µg/L).

INTERA
GEOSCIENCE & ENGINEERING SOLUTIONS

Attachment 2 -- Copy of the Ute Mountain Ute Tribe July 10, 2020 Written Comments

UTE MOUNTAIN UTE TRIBE

P.O. Box 248
Towaoc, Colorado 81334-0248
(970) 565-3751

July 10, 2020

Via email: dwmrcpublic@utah.gov

Division of Waste Management and Radiation Control
195 North 1950 West
Salt Lake City, UT 84116

The Ute Mountain Ute Tribe hereby submits the following comments regarding Radioactive Materials License UT1900479, Amendment 10, and proposed modifications to Groundwater Quality Discharge Permit No. UGW37004:

TRIBAL BACKGROUND

The Ute Mountain Tribe is a federally-recognized Indian tribe with lands located in southwestern Colorado, northwestern New Mexico, and southeast Utah. There are two Tribal communities on the Ute Mountain Ute Reservation: Towaoc, in southwestern Colorado, and White Mesa, in southeastern Utah. Ute Mountain Ute Tribal Members ("UMU Tribal Members") have lived on and around White Mesa since time immemorial and intend to remain there forever. The community of White Mesa depends on groundwater resources buried deep in the Navajo aquifer for its municipal (domestic) needs. UMU Tribal Members continue traditional practices, which include hunting and gathering and using the land, plants, wildlife and water in ways that are integral to their culture.

The White Mesa tribal community is located approximately three miles south of the White Mesa Mill (WMM) facility. The WMM is located on Ute ancestral lands, a much broader landscape containing resources and sacred sites throughout. The WMM's upgradient location from the Tribal community means that contamination from WMM facility operations generally flows through ground and surface water towards the Tribal community. As a result the White Mesa tribal community is bearing the disproportionate burden of environmental contamination brought on by the WMM and the decisions of the Division of Waste Management and Radiation Control. The Tribe is concerned that ongoing contamination of air, surface resources, surface water resources, and groundwater could make Tribal lands and the ancestrpl cultural landscape uninhabitable for future generations of Tribal members.

UTE MOUNTAIN UTE TRIBE'S POSITION REGARDING PROPOSED ACTIONS

The Division should not approve Amendment #10 and the modification of the Groundwater Permit for the reasons set forth below and set forth and agreed on in the public comments submitted by the Grand Canyon Trust. The Tribe also makes specific requests in the following comments for Division action regarding its authority over the mill operations and related consequences that should be considered..

1. The Director of the Division has the authority and responsibility to "ensure the maximum protection of the public health and safety to all persons at, or in the vicinity of, the place of use, storage, or disposal" of radioactive materials. R313-12-2.

2. Before approving an amendment to a radioactive materials license for a uranium mill, the Director must determine, among other things, that the applicant has satisfied all applicable requirements, including, among others, the environmental analysis required under R313-24-3 and determined that "the issuance of the license will not be inimical to the health and safety of the public." R313-22-33, -39.

3. The Director's authority is not limited to including in a license only those elements expressly enumerated in the Division's rules. The Director has broad authority to incorporate into licenses "additional requirements and conditions with respect to the licensee's receipt, possession, use and transfer of radioactive material subject to R313-22 as the Director deems appropriate or necessary in order to ... minimize danger to public health and safety or the environment." R31322-34(2) (a).

> [We can preface more specific "action" demands (like our demand for emergency notification) with the foregoing, e.g., "The Director has the authority and responsibility and should require EFRI to…."]

4. The Mill was originally designed, evaluated for environmental impacts, and licensed in 1979 — over 40 years ago - on the limited basis that it would process conventional uranium ores mined locally from the Colorado Plateau over an operational life of only 15-20 years and then be reclaimed.

5. The original Environmental Report for the Mill, written in 1978, made scant mention of the public health, safety and environmental quality concerns of either the Ute Mountain Ute Tribe's White Mesa Community or their neighbors to the south, the Navajo Nation. Both federally recognized Tribes are downwind and downgradient from the White Mesa Mill and depend upon the Navajo Aquifer as the sole source for their drinking water and domestic use, and also utilize the shallow Burro Canyon aquifer that is being contaminated by the Mill.

6. Despite the limited purpose and design life of the Mill and its legacy tailings cells and the limited scope of the environmental analysis, EFRI now takes the position that the "mill has no predetermined operation life," and "Since there's no set schedule for filling any one of the ponds, there's no set schedule for actual final closure of the mill." See response of Harold Roberts of EFRI to question from Scott Clow of the UMUT

regarding the expected remaining operational and pre-reclamation life of the Mill as recorded in the Transcript of June 8, 2017 Public Hearing, Corrected Version, during the 2018 License Renewal. More recently, in a May 1, 2020, interview with Crux Investor posted on Youtube, Energy Fuels Resources (USA) (EFRI) CEO Mark Chalmers described the Mill as "state of the art, designed for a thousand years."

7. The state of Utah must recognize and acknowledge the reality that the Mill is far past its design life and no longer a conventional uranium mill, but, instead, a radioactive waste dump seeking to operate for decades, if not a millennium. By incrementally approving new and expanded radioactive waste streams from around the world, Utah is implicitly fostering that reality without fully explaining the reality of the facility and the state's regulatory actions to the public and without undertaking robust and comprehensive review of the Mill's impacts and potential impacts on surrounding communities, public health and the environment. Utah does not take this type of lax regulatory approach in evaluating radioactive waste streams sought by licensed low-level radioactive disposal facilities utilizing dry disposal in RCRA-compliant disposal cells located far from residential communities. Utah must face the reality, inform the public, and allow a full and fair opportunity for public input on whether a 40-year-old conventional uranium mill with a design life of only 15-20 years that utilizes wet disposal in tailings cells and has already extensively contaminated the groundwater should be transformed into a radioactive waste disposal facility with an indefinite operational life receiving radioactive waste shipped to Utah from around the World.

8. <u>R313-24-3 governs "Environmental Analysis" of major amendments for uranium mills.</u>

> (1) Each new license application, renewal, or major amendment shall contain an environmental report describing the proposed action, a statement of its purposes, and the environment affected. The environmental report shall present a discussion of the following:
>
> (a) An assessment of the radiological and nonradiological impacts to the public health from the activities to be conducted pursuant to the license or amendment;
>
> (b) An assessment of any impact on waterways and groundwater resulting from the . activities conducted pursuant to the license or amendment;
>
> (c) Consideration of alternates, including alternate sites and engineering methods, to the activities to be conducted pursuant to the license or amendment; and
>
> (d) Consideration of the long-term impacts including decommissioning, decontamination, and reclamatioh impacts, associated with activities to be conducted pursuant to the license or amendment.
>
> (2) Commencement of construction prior to issuance of the license or amendment shall be grounds for denial of the license or amendment.

(3) The Director shall provide a written analysis of the environmental report which shall be available for public notice and comment pursuant to R313-17-2

9. Proposed Amendment #10 is a major amendment and should not be approved because EFR and the Division and have not undertaken the requisite environmental report and environmental analysis required by R313-24-3, evaluating impacts of the Mill from inception over its projected operational life through reclamation and in light of the existing and increasing degradation of the shallow groundwater.

9 a. There is no environmental analysis of theimpacts of the Mill as a facility with an indefinite operational life, either as a purely conventional uranium mill receiving locally . mined ores or as a perpetual radioactive waste dump receiving radioactive materials and waste shipped from all over the Nation and the world.

9 b. There is no environmental analysis of the impacts of indefinitely operating legacy tailings cells constructed 40 years ago with single, thin PVC liners and without adequate leak detection systems.

9 c. There is no environmental analysis of the impacts of transporting wastes from foreign locations to White Mesa. The report supporting EFRI's application to receive the radioactive Silmet waste from Estonia lacks any description of the means and pathways by which the waste will be shipped from Estonia to the United States and then across the United States to White Mesa. The report briefly mentions transportation of the waste within Utah, but provides no assessment of environmental impacts of transporting the radioactive waste from Estonia.

9 d. There is no environmental analysis of the impacts of extending the Mill's license to include an additional 3,000 acres. Specifically the Division proposes to add Sections 4, 5, 6, 8, 9 in Township 38 South, Range 22 East to the License, without any accompanying environmental analysis. Most of those lands are rich in cultural resources and subject to a BLM Cultural Resources Easement.

9 e. There is no "assessment of the radiological and nonradiological impacts to the public health from the activities to be conducted pursuant to the license or amendment" over an indefinite operational life of the Mill as required by R313-24-3(a).

9 f. There is no "assessment impact on waterways and groundwater resulting from the activities conducted pursuant to the license or amendment" over an indefinite operational life of the Mill as required by R313-24-3(b).

9 g. There is no "Consideration of the long-term impacts including decommissioning, decontamination, and reclamation impacts, associated with activities to be conducted pursuant to the license or amendment" over an indefinite operational life of the Mill.

9 h. As set forth in greater detail in the Tribe's comments regarding water quality concerns, the lack of an assessment of long-term impacts on groundwater is of particular concern in light of the Division's questionable regulatory approach of allowing EFRI to resolve noncompliance with its groundwater compliance limits by continually adjusting background concentrations and statistically relaxing the compliance limits without any regard or consideration of how the quality of the shallow Burro Canyon aquifer can be preserved and protected over the long-term. The regulatory approach gives a green light to continued degradation of classified groundwater without an endpoint - contrary to the goals of the Utah Groundwater Protection Program of preserving Utah's groundwater within their quality and use classifications and without any assessment of the long-term impacts on the quality, uses and potential uses of the Burro Canyon aquifer from the existing and increasing contamination, the indefinite operation of the Mill, and the continued relaxation of compliance limits.

9 i. There is no "Consideration of alternates, including alternate sites and engineering . methods, to the activities to be conducted pursuant to the license or amendment" as required by R313-24-3(c).

9j. There is no environmental analysis taking into account the fact that the Moffat Tunnel waste, which is derived from treatment of contaminated groundwater, will be generated in perpetuity. By proposing to approve that waste stream, the Division is again acknowledging that the Mill will be a perpetual repository for radioactive waste material from outside sources forever. There needs to be a comprehensive Environmental Analysis of perpetual radioactive waste disposal from perpetual sources.

10. The BLM has specific roles and requirements regarding the surveying and protection of cultural resources on these additional lands in T. 38 S., R.22 E, SLBM, Sections 4, 5, 6, 8 and 9, .as well as T. 37 S., R.22 E. , SLBM, Sections 29 and 33 that have previously been included the radioactive material license. It is not addressed adequately in License Condition 9.7, and is not addressed in this RML amendment. (White Mesa Mill Cultural Resources Monitoring Plan 2016, Simonis 2016; Energy Fuels — BLM Land Exchange, Cultural Resource Easement Agreement, 1985 Amendment to Memorandum of Agreement, ACHP, 1983)

11. Cell 3 is inadequate to safely continue to receive in-situ leachate wastes in perpetuity. It has no leak detection system until groundwater becomes polluted, and the DWMRC continues to use unsubstantiated and outdated hypotheses and lines of evidence provided by Energy Fuels Resources (USA) (hereafter EFRI) that the groundwater is not being polluted. While proposing an increase in the disposal of ISL waste and no limitation on how long into the future this can occur, DWMRC is simultaneously relaxing groundwater standards around the perimeter of Cell 3. In an inspection in 2017, U.S. EPA officials expressed their preference that alternate feeds and by-products thereof from EPA clean-up activities be disposed of in Cells 4A and 4B, “since these are double-lined cells with leak detection systems.” (EPA report on CERCLA

Offsite Rule Inspection May, 2017. Linda Jacobson, EPA Inspector, to David Frydenlund, EFRI, February 15, 2018)

12. Allowing twice as much ISL waste from external entity facilities and as much as they want from their own ISL facilities further demonstrates that the profitable use of the White Mesa facility is not as a mill but as a disposal facility or "dump."

13. Allowing twice as much ISL waste from external entity facilities and as much as they want from their own ISL facilities increases the risk of transportation accidents. EFRI continues to disregard the Tribe's request for neighborly notification of unusual events like roadside spills or facility malfunctions. The Tribe has provided the information EFRI requested in this regard, but EFRI has not followed through to make it happen. The State of Utah should impose this upon EFRI to notify the Tribe when undesirable events occur to alleviate fear and reduce risk to public health and environment.

14. In 1993, the State of Utah requested that a limit of 5,000 cubic yards of material from a single facility (the first such facility authorized to bring ISL waste to the mill). While staff have changed and documentation of the request's purpose seem to have been lost or misunderstood currently by DWMRC (as it is documented in the Statement of Basis for this action that no technical basis was available in 2020 for that prior request), it is clear to the public and the Ute Mountain Ute Tribe that the State of Utah was concerned then about the . broadening of the use of the mill for such purposes as disposal of ISL wastes and alternate feed materials, and its potential impact to the long term health of the public and environment. The proposal to allow the unlimited quantity of ISL waste from EFRI facilities and up to 10,000 cubic yards from other individual facilities into Cell 3, is irresponsible and disregards prior concerns by Utah DEQ.

15. No description of transportation routes to White Mesa from Estonia have been provided by the State. An Environmental Impact Analysis for the transportation must be conducted by someone. If not the State of Utah, then the Nuclear Regulatory Commission. While the DWMRC has repeatedly indicated that it is not their responsibility to conduct transportation related analyses, DWMRC is proposing to permit the activity, and as an Agreement State, they have inherited the obligation to consider the impact beyond the borders of the State of Utah if authorizing it to happen.

16. In the Technical Evaluation and Environmental Analysis (TEEA) for the Silmet (Estonia) Alternate Feed White Mesa Uranium Mill renewal application (Silmet Application) on page 21, and repeated in the TEEA for the Moffat Tunnel Alternate Feed on page 41-41, the Division wrote:

"In previous licensing actions, there have been several comments and concerns from the public about radon emanating from the White Mesa Uranium Mill, In a recent NRC guidance document, DIVISION PF DECOMMISSIONING, URANIUM RECOVERY,AND WASTE PROGRAMS

INTERIM STAFF GUIDANCE DIJWP-ISGOI EVALUATIONS OF URANIUM RECOVERY FACILITY SURVEYS OF RADON AND RADON PROGENY IN AIR AND DEMONSTRATIONS OF COMPLIANCE WITH 10 CFR 20.130.1 published in June of 2019 the NRC references a study that indicates that radon emissions from a uranium recovery facility would be statistically no different, or indistinguishable, from natural background radon levels at a distance of one mile from the source of the radon, This is due to air dispersion. The closest residences to the

〃 White Mesa Uranium Mill in any direction are more than one mile away. This means radon emission from the White Mesa Uranium Mill is not a significant contributor to Public dose outside the mil/ fence line,"

The Silmet and Moffat Tunnel TEEA completely neglected the very important discussion also stated in that section referenced above, (from the NRC guidance document) which discusses radon concentrations from mill tailings from a variety of mill locations:

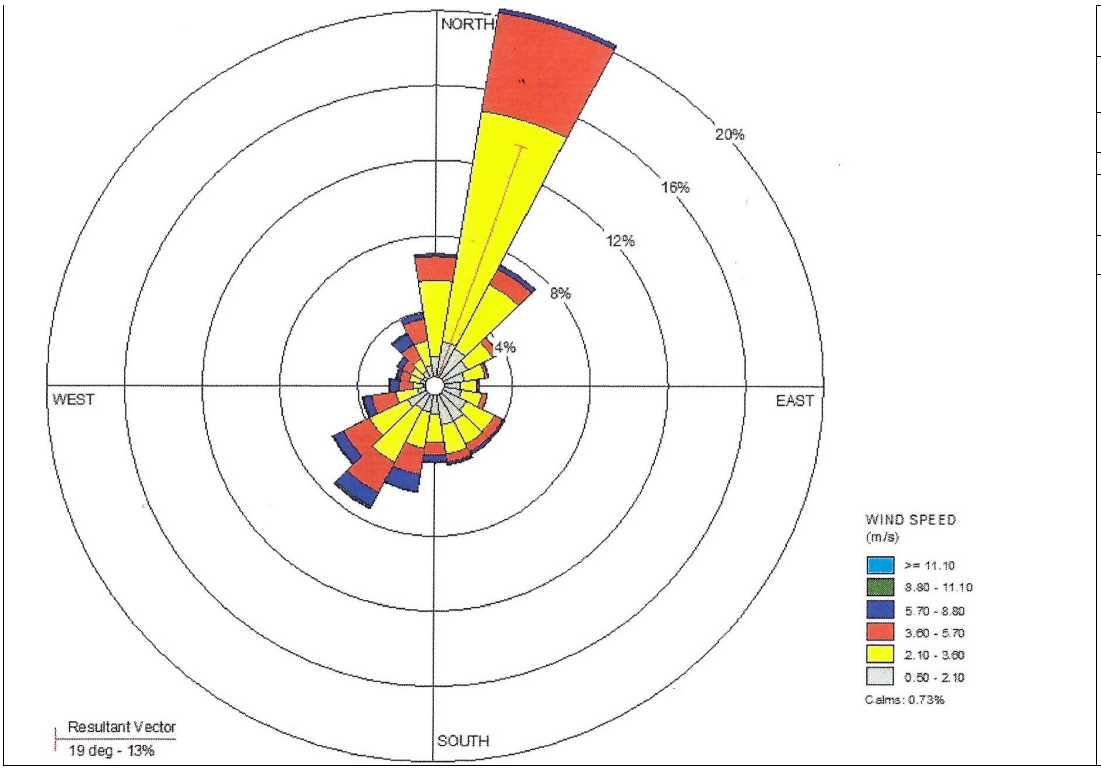
"In many cases, the low speed, drainage winds that occur at night under relatively . stable atmospheric conditions are the winds that may result in the highest radon concentrations and may contribute the most to annual doses, Thus, effects of topography should be considered when determining likely locations of highest radon concentrations,"

As indicated in the 2017 response to the WMM License renewal, the wind rose below (Figure 1), a compilation of meteorological data from the White Mesa Community, indicated the majority of the calm winds come from several of the northern sectors toward the White Mesa Community and are less than 3.6 m/s or 8 miles per hour. This same observation has been documented in the WM Mill's own data files Figures 2-6 (taken from Appendix C to the EFR's 2018 Cells 5A and 5B License and GWDP Amendment Request which are presented below). The windroses present the exact conditions of low speed drainage winds, which are cautioned by the NRC as those that pose the most risk or highest radon concentrations. These low speed winds impact the White Mesa Community and members and visitors sense these impacts through the smell of surrogate organic fumes that, unlike radon, can be experienced by the human population.

The natural features surrounding the mill and the White Mesa Community are varied, indicating a 'complex' terrain which is not accounted for in models such as MILDOS, and should be seriously evaluated as a concern to the community downwind who may be at risk.

Figure 1 UMUT Wind Data from 2016

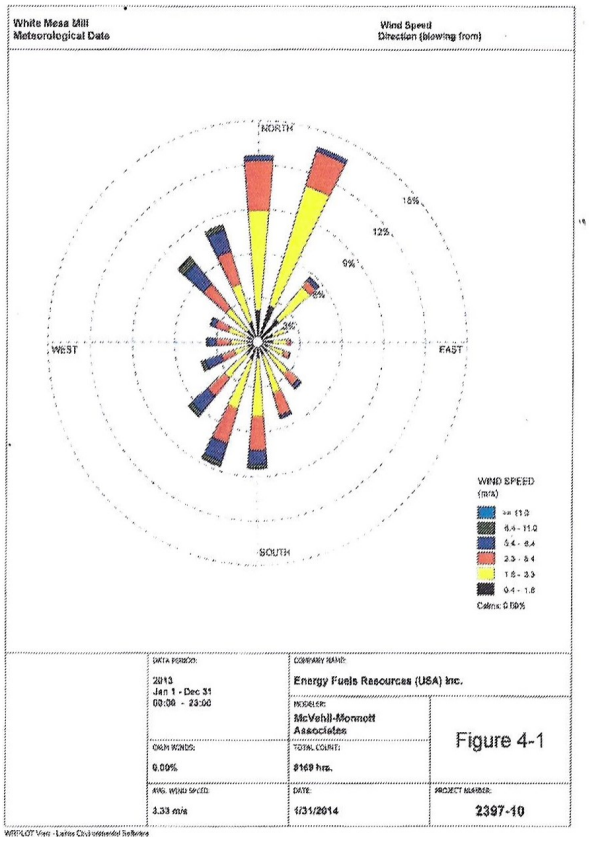
WINO ROSE ZOT: White Mæa 2016 Annual 24 hours	OEP%-AY: Wind Speed D Erection (Mowing from)	COVJZENTS:
		CATAFERiC2 Stan Date 1/112016 - 00:00 End Date 12/31/2016- 23:00



TOTAL CC%JNT: 8772 hrs.	CA%-u W;uOS: 0.73%
AVG. VV\tC, SFEECt 2/96	
%OÜELER:	
CATE: 7125/2017	
PPOÆCT	

Figure 2

Figure 3



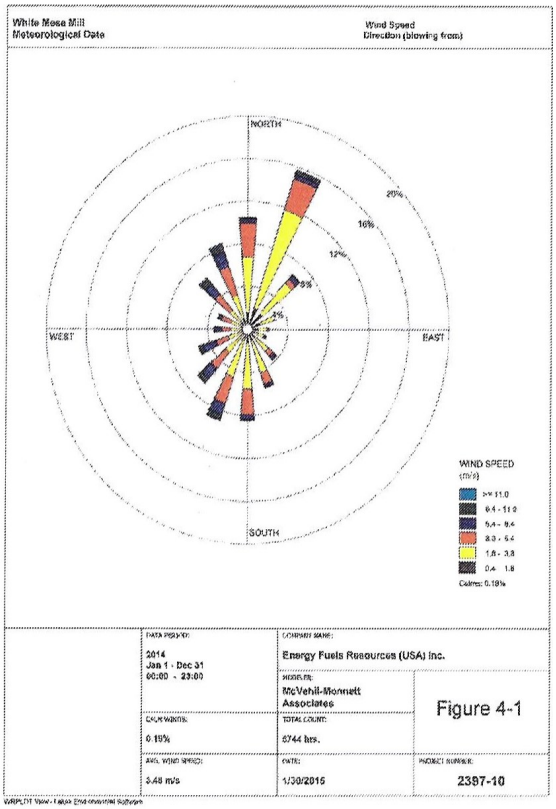
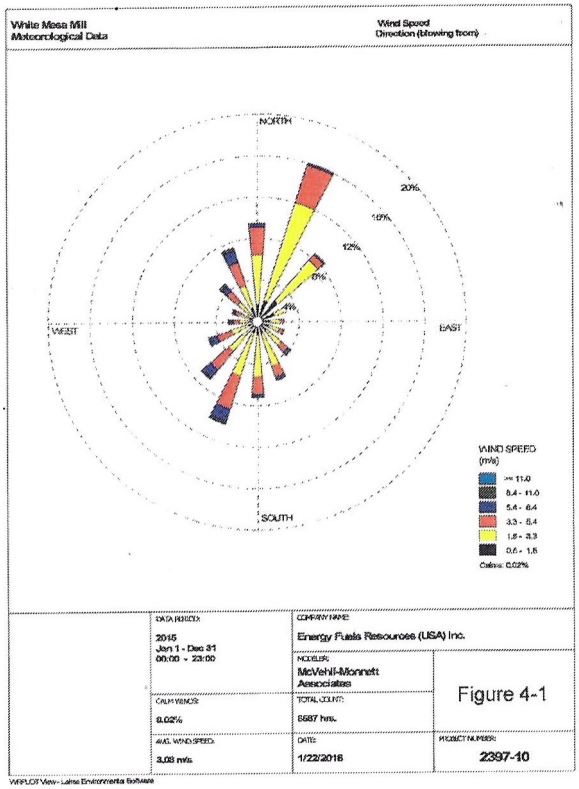


figure 4-1 January December 2013 Wind Rose ure 4-1 January December 2014 Wind Rose

Figure 4



%gure 4-1 January — December 2015 Wind Rose

Figure 5

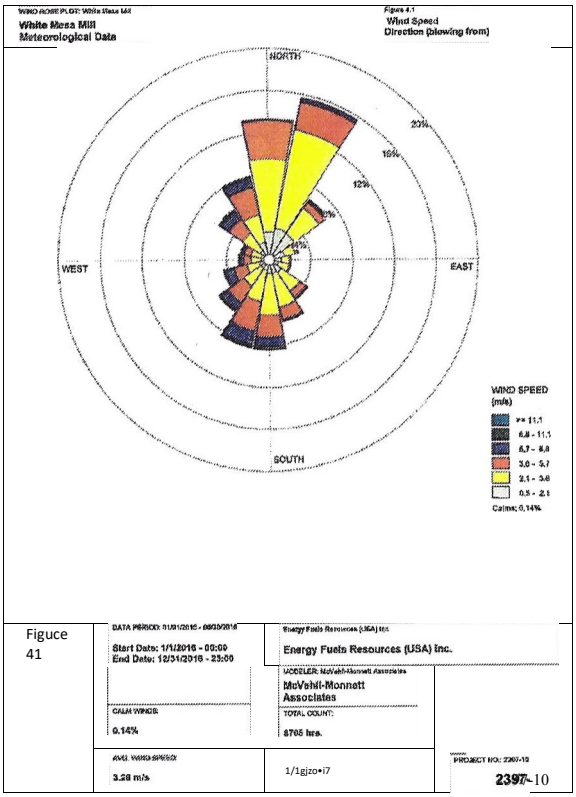


Figure 4-1 January—December 2016 Wind Rose

Figure 6

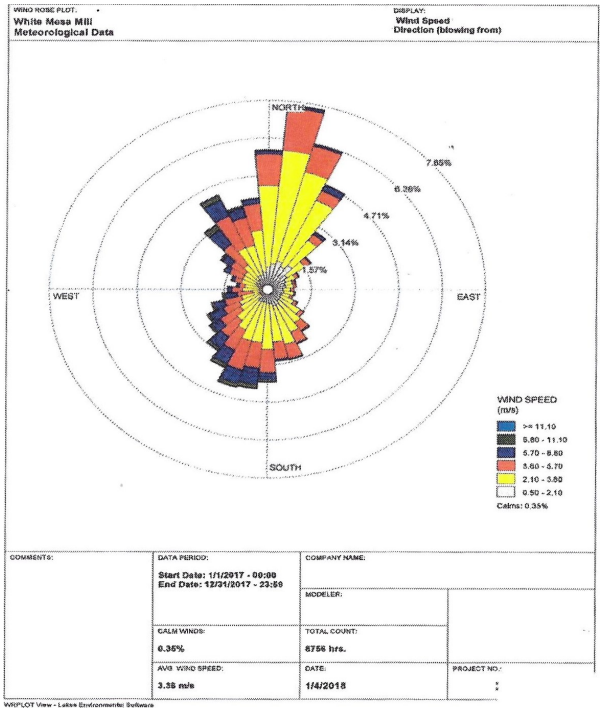


Figure January December 2017 Wind Rose

(wind direction was divided up into 32 sectors here)

17. Also on page 31 of the TEEA for the Silmet, (also reiterated in the Moffat Tunnel TEAA on page 41-42) the Division wrote,

"Radon measurements collected from the Milts environmental monitoring stations and reported to the Division in the semi-annual environmental reports confirm this study's conclusions, Therefore, processing the Silmet uranium earing material will not increase the public dose from radon, "

Regarding monitoring efforts by the WM Mill, in the 1998 Study at White Mesa Mill by Nielson and Walter of Rogers Engineering and Associates, the background location for radon had been questioned with the statement below.

"However, analysis of the total concentrations at the background location (BHV-3) during active and inactive mil/ operations shows that the " background" levels are about twice as high during active operations as during inactive periods.

The cause of the background bias may be that the back ground sit is too close to the Mill (about 26 miles, instead of the 9.4 mile minimum originally stated by NRC in its Environmental Statement for the White Mesa Mil)]. "

In effect, this statement proves that the background location is not measuring true background, but a value higher than background. Because the net effluent concentrations are a result of the effluent measurements data where the 'higher than background value' is subtracted out, this causes the reported effluent concentrations to be lower than actual.

(From Nielson, K. K. , Walter, P. , Rogers and Associates Engineering Corporation Preliminary Risk Assessment for the White Mesa Community. P 17, 1997)

18. The Silmet Materials are from what could be considered as a 'legacy' site from a country ruled under the old USSR. The plant began processing uranium in 1940, and operated through until 1990, manufacturing reactor-fuel-grade uranium during that time period from other Soviet block countries. Though the application maintains that the waste stream had operations "in a separate portion" of the facility, as stated In the Silmet Allternative Feed Application (April 2019), cross-contamination could have occurred as it had in some facilities in the US, where fission product contamination had been discovered in a uranium metal facility.

In the application, there was testing data for expected radionuclides (Ra-226 and Ra-228) and not any others. More thorough testing to include gamma spectroscopy for possible fission product identification from possible contaminants from this 'legacy' site is essential prior to acceptance and processing.

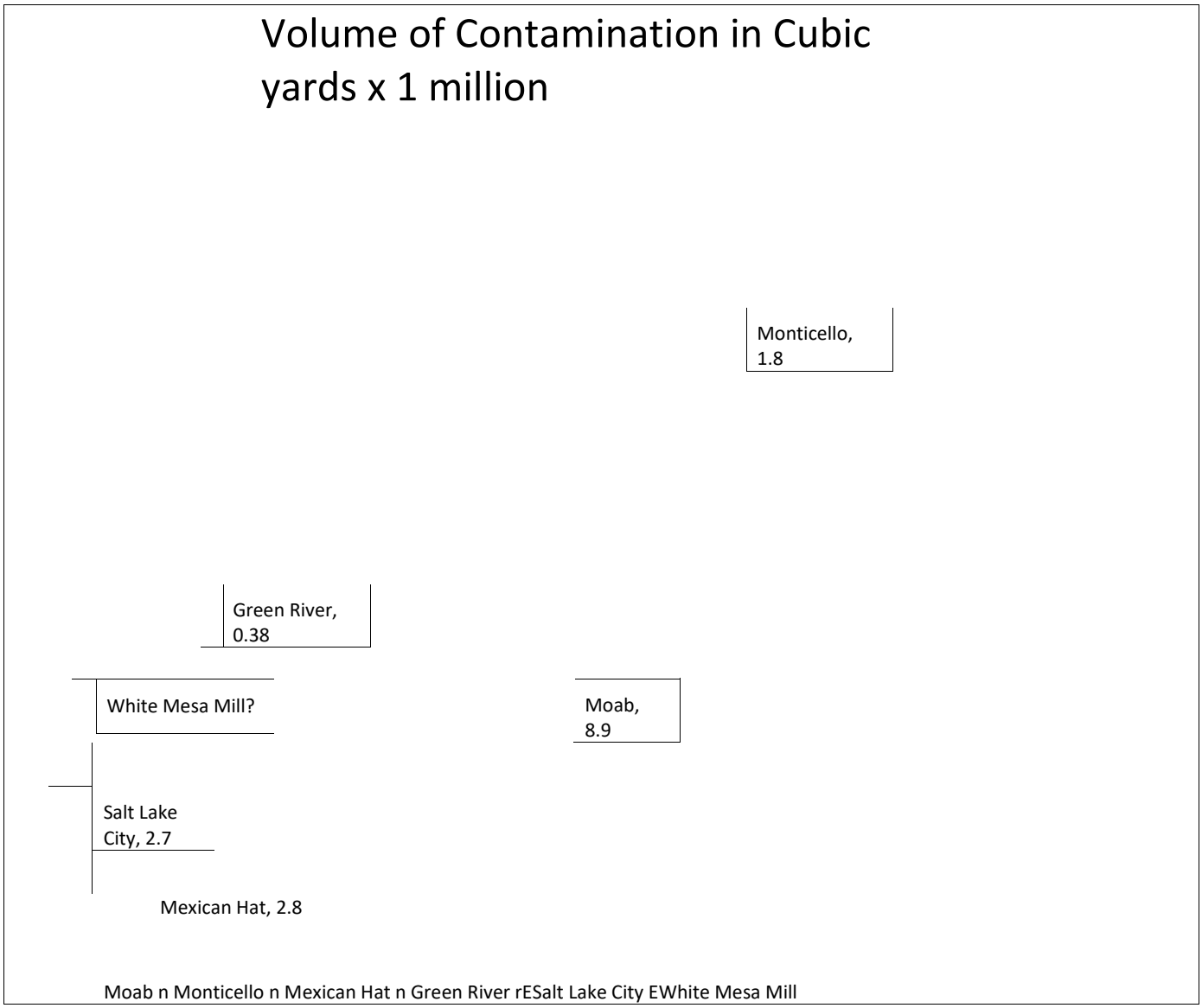
19. What is the technical basis for the Silmet Materials or the materials consisting of the residuals from niobium and tantalum recovery from columbite and tantalite ore concentrates not being disposed or further processed in Estonia? Estonia processed the materials and the materials should be kept there, reducing risk from transportation and ultimately to the White Mesa Community Members in Utah.

20. According to the original EA of 1978 and historical practices, the White Mesa Mill should have already entered closure and ceased accepting any more material. The Tribe has commented over the past years on the Alternate feed materials being processed at a Mill (originally stated in the Environmental report of 1978 that the uranium materials would be from the Colorado Plateau mines and Arizona Strip Mines). The Tribe upholds that opinion and opposes the importation of feed material from overseas. For the conventional tailing impoundments, based on maximum capacity of Cell 2 and 3, and Cell 4a processed volume (as of 2016), the amount of radioactive tailings in the White Mesa cells are about 7,360,000 cubic yards, which is about half the total volume of all the past Uranium Mill Tailing Remediation Act or Superfund Project Sites (mill tailing sites) in Utah. In fact, the tailings impoundments at the White Mesa Mill in Utah are currently almost as large as the Moab Mill cleanup. See Table 1, The Utah Uranium Mill Site Contamination Volumes and associated Areas and Costs, and Figure 7: The Utah Uranium Mill Site Contamination Volumes.

Table 1: The Utah Uranium Mill Site Contamination Volumes and associated Areas and Costs

Utah Uranium Mill Sites	Volume of contamination (Cubic Yards x 1,000,000)	Per cent of Past Total U Mill Sites	Area of Tailings	Costs of Cleanup normalized to 2010 (In Millions of Dollars)
Moab	8.9	0.54	160	720
Monticello	1.8	0.11	318	520
Mexican Hat	2.81	0.17	250	105
Green River	0.38	0.02	48	NA
Salt Lake City	2.71	0.16	128	177
Total Utah	**16.59**		904	
White Mesa Mill	*7.36*	*0.44*	*284*	

Figure 7: The Utah Uranium Mill Site Contamination Volumes



21. Statement on the Reclamation Plan Surety Costs:

In Table 1, the costs associated with the closed and reclaimed uranium mills in Utah are listed with inflation to indicate the expenses in 2010. The Energy Fuels surety required by the license should be raised to comparable levels to ensure environmental (including land, surface water and groundwater) risks will be reduced to 'safe' levels during and postclosure at the mill site for one thousand years. Current surety bonds for the White Mesa Mill are in the tens of millions (approximately $20 million on average) while clean-up costs for similar mills historically have been in the hundreds of millions.

22. The Division has provided no assessment or explanation of reclamation and the amount of reclamation surety required tb ensure adequate reclamation of the Mill as radioactive waste disposal facility with an indefinite operational life. The reclamation plan and surety should be addressed prior to, not after, approval of new waste streams.

23. Preservation and protection of the groundwater and seeps in and around White Mesa is a matter of extreme concern to the Tribe and its members.

The Mill overlies the deep Navajo aquifer which is the source of drinking water for Tribe's White Mesa Community. The shallow Burro Canyon aquifer underlies White Mesa and is connected to surface water springs relied on for cultural use which may include drinking water and for the support of native ecology and wildlife.

Under Utah's Groundwater Protection Program, the deep Navajo aquifer beneath the White Mesa is classified as a Class la_ and 1b groundwater as both a pristine and irreplaceable active source of community drinking water, while the shallow Burro Canyon . aquifer is classified varyingly as Class lc, Il and Class Ill groundwater.

Class la pristine groundwater is to be protected for use as drinking water or other similar beneficial use. UAC R317-6-3.2

Class 1b irreplaceable groundwater is a source of water for a community public drinking water system and is to be protected for use as drinking water or other similar beneficial use. UAC R317 6-3.3.

Class lc groundwater is ecologically important groundwater to be protected for the continued existence of wildlife habitat. UAC R317 6-3.4.

Class Il ground water is to be protected for use as drinking water or other similar beneficial use with conventional treatment prior to use. UAC R317-6-4.5.A.

Class Ill ground water is to be protected as a potential source of drinking water, after substantial treatment, and as a source of water for industry and agriculture. UAC R317-6-

24. Quarterly groundwater monitoring reports submitted by EFRI, including the most recent in 2020, show progressive and alarming degradation of the quality of the shallow groundwater, with exceedances of groundwater contaminant levels (GWCLs), lowering pH to more acidic conditions, and increasing trends in many monitored metals and other parameters.

a . Ongoing corrective actions to address the chloroform contaminant plume and the nitrate/chloride contaminant plume have not achieved any significant reductions in the areal extent, concentrations or contaminant masses of these plumes after several years of corrective action. Corrective Action Plan Comprehensive Monitoring Reports submitted by EFRI conclude that the current corrective actions will not remove the plumes or reduce them to acceptable levels for decades or hundreds of . years, if ever.

b The Tribe urges the Division to require EFRI take additional effective investigative and corrective actions to identify and address the root causes of the contamination, rather than artificially relaxing GWCLs to excuse noncompliant data and allow further degradation of groundwater quality.

c The Division should not approve additional waste streams and feed materials at the Mill until the root causes of the contamination have been identified and controlled.

25. EFR is being allowed to circumvent the Utah Groundwater Protection Regulations by constantly adjusting background levels to justify successive resetting of GWCLs to more lenient compliance levels to bring the facility into compliance, rather than being required to take effective corrective action to identify and control the sources of contamination and to achieve compliance with the Groundwater Contamination Limits specified in its permit.

26. The Division's regulatory approach of resetting background to allow increased GWCLs and avoid noncompliance and corrective action, is clearly inconsistent with the letter and intent of the Utah Groundwater Protection Program, because it fails to ensure, or even take into consideration whether, groundwater protection levels are being protected and residual contaminant levels are protective of human health and the environment.

27. Under the Corrective Action regulations in I-JAC R317-6.15, the Division may approve Alternate Corrective Action Concentration Limits ("ACACLs"), provided that numerous requirements are satisfied, including, among others, that the facility take steps to correct the source of the contamination and that any proposed Alternate Corrective Action Concentration Limit "shall be protective of human health, and the environment...." UCA R317-6.15 G.l. Protection of hwrnan health and the environment is the over-arching standard for corrective action, and therefore, it must necessarily be the standard for assessing ongoing compliance.

a The Division has not adequately evaluated or explained:

i how its regulatory approach of repeatedly resetting background and loosening GWCLs will preserve the shallow groundwater within the established classifications for use as drinking water;

ii how that approach is or will be protective of human health and the environment over the projected operational life of the Mill — which according to EFRI is now indefinite or for 1,000 years; or

iii how the Division and the Mill have complied with the environmental analysis requirements of UAC R313-24-3, including "consideration of the long-term impacts" that will result to groundwater (both shallow and deep) and to human health and the environment over the indefinite life of the Mill if the shallow groundwater compliance limits are continually relaxed.

26.b. The Division has a challenging and complicated regulatory responsibility to protect and preserve groundwater quality. It cannot choose expediency over its responsibility in its regulation of the Mill. The Division must require the Mill operator to identify and control the sources of the extensive and increasing contamination in the shallow groundwater and restore water quality through effective corrective action.

28. The groundwater monitoring data show that rare toxic metals, including cadmium, beryllium, thallium, cobalt, nickel, selenium, and uranium, are accumulating in increasing concentrations in the Burro Canyon aquifer. These very same metals are found in abundance in the tailings cells, mill facility, and process solutions. There is no validated empirical evidence confirming that these toxic metals come from any other source. The state and EFRI claim these metals occur naturally in the Burro Canyon formation and aquifer, yet the state has never required EFRI to do any specific testing of the geochemistry of the Burro Canyon formation to support their assumption that the metals derive from the formation in the levels being detected in the contaminated groundwater. This is a critical data gap that must be addressed if shallow groundwater is to be preserved in accordance with the Utah Groundwater Protection Program. In the absence of such test data on the geochemistry of the Burro Canyon formation, there is no scientific basis to conclude that the alarming accumulation of toxic metals comes from any source other than the Mill's tailings cells, facility, and process solutions.

The state must require EFRI to test the geochemistry of the Burro Canyon formation and provide empirical evidence to confirm whether or not the rare metals accumulating the shallow groundwater are present naturally at the levels at which they are being detected in the shallow groundwater.

The state must also require an updated comprehensive isotopic study of the shallow groundwater to provide empirical evidence of whether or not the Mill's process solutions in the tailings cells are present in the shallow groundwater.

a Cadmium is an indicator parameter of facility impact to the groundwater. . Raising the GWCL for cadmium in MW-25 will conceal continuing facility releases and impact to the Burro Canyon aquifer. MW-25 is now the fifth well which shows rising trends of Cadmium at concentrations greater than 1.5 ug/L (Map 1) and is on the way to joining MW-22, MW-24/MW-24A, MW-28 exceeding health based water quality standards (UT R-317-6).

151.0 ug/L, MW-22 Cross Plot
0.010

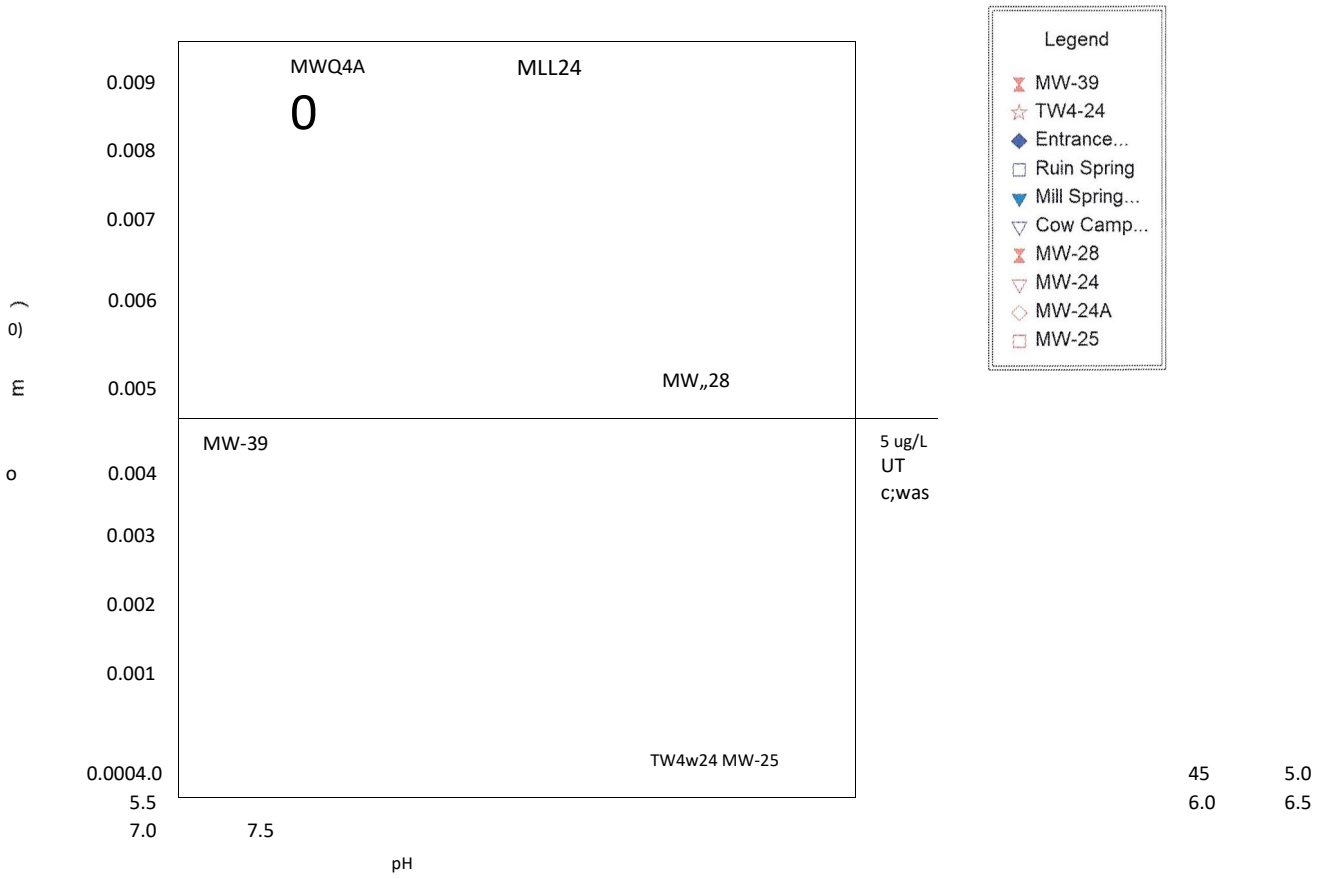
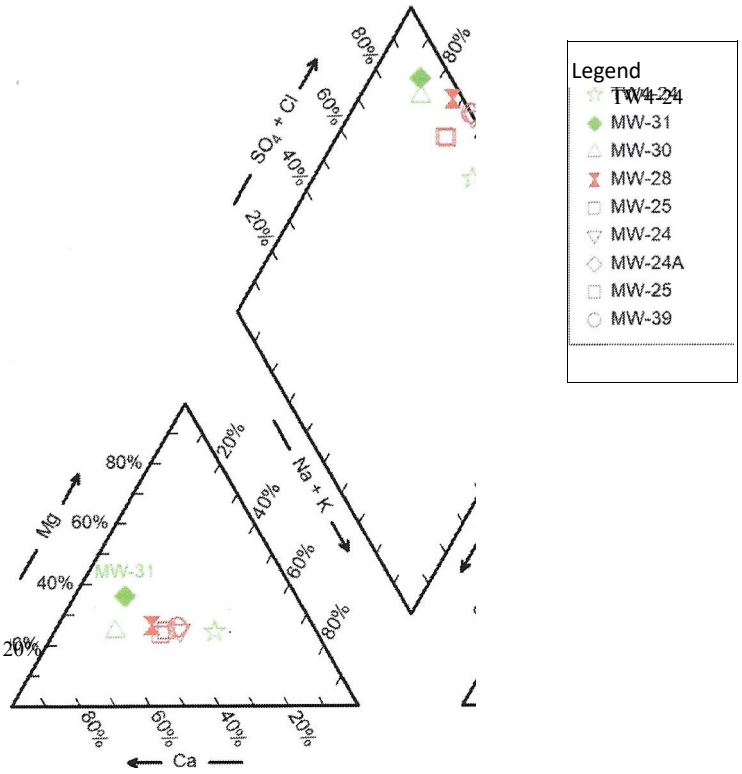


Figure 8: Cadmium/pH cross plot data for wells is from the 1st Quarter 2020 Quarterly monitoring report

b The water chemistry at MW-25 places it in a group with five wells which are exhibiting rising trends in cadmium with a corresponding decline in pH. This group is distinguished by an ion signature elevated in sulfate and depleted in sodium and alkalinity compared to monitoring wells completed in the nitrate and chloride plume like MW-30 and MW-31. TW4-24 has been revealed to have extremely elevated and dangerous concentrations of uranium (663 ppb, 05/17/2018) after we requested the well be screened for the full analyte table in the GWDP during a previous re-licensing action also has a distinct ion signature and should be required to be investigated with . isotopic testing to calculate the activity ratio for uranium isotopes to determine conclusively if it is associated directly with the mill facility.

Figure 9: Piper Diagram: 1st Quarter 2020 Groundwater Data

Piper Diagram

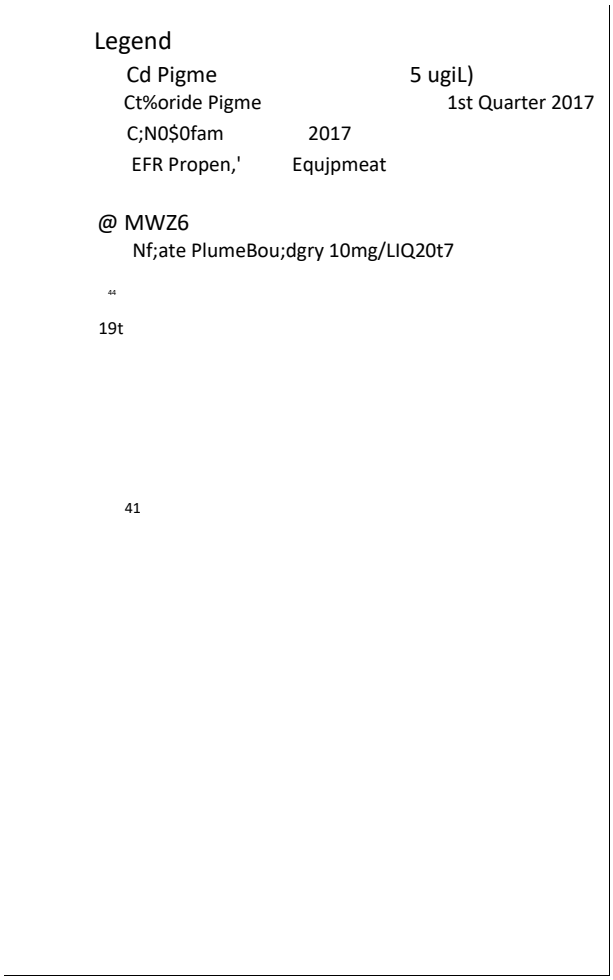


28.c. In addition to the ion and cadmium signature, the presence of rising concentrations of Cobalt and nickel in MW-24/MW-24A, MW-28, MW-39 and MW-22 distinguish this group of wells as impacted by the mill facility and are two constituents that can be expected to show up at MW-25 in the near future as impacts from the facility continue to increase to dangerous levels in the aquifer if this GWCL proposal is authorized and the facility is allowed to continue to discharge to the groundwater.

28.d. Thallium is now exceeding the Utah criteria of 2 ug/L in both MW-24 and MW-39 and beryllium is exceeding the state criteria of 4 ug/L at MW-39 and MW-22. A rising trend in Beryllium with levels rapidly approaching the criteria for this metal is apparent at MW-24/MW-24A as well.

28.e. Presence of manganese and ammonia for this group of wells also distinguishes them as impacted and indicates reducing conditions which are present in the aquifer at the margins of the oxidized conditions present in the nitrate plume. It is important that the Director and regulatory staff recognize that geochemical conditions at the site are strongly influencing contaminant fate and migration

Map I


Legend
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1st Quarter 2017
C;N0$0fam
2017
EFR Propen,'
Equjpmeat
@ MWZ6
Nf;ate PlumeBou;dgry 10mg/LIQ20t7
44
19t
41

29 . Since the state has not compelled EFR to do any specific leach testing of Burro Canyon aquifer materials to prove they may be the real source of the rare list of toxic metals accumulating in the groundwater beneath the site or an updated comprehensive isotopic study of groundwater for over a decade which has seen a radical deteriorating change in groundwater condition, the most likely source of the qontaminants are the tailing cells and the mill facility. The process solutions and cells are absolutely loaded with extreme concentrations of cadmium, beryllium, thallium, cobalt, nickel, selenium, uranium and remain the most likely explanation and source of pollution. In the past the Director has stated that contamination in the Burro Canyon aquifer is of little concern because it is a long way from potential receptors and . unrelated to the mill and the Director also implies the aquifer is not used for domestic supplies and that it doesn't deserve protection for that future use. In fact, the Burro Canyon aquifer does serve nearby residents as a home domestic supply and also supplies irrigation and stock water to hundreds of users (Kirby, 2008) and the Burro Canyon aquifer extends continuously beneath White Mesa from north of the Mill through the Mill area to the White Mesa community south of the Mill, See Stefan Kirby, Utah Geological Survey Special Study 123, "Geologic and Hydrologic Characterization of the DakotæBurro Canyon Aquifer near Blanding, San Juan County, Utah" (2008), Plate 3 — Structure Contour Map of the Base of the Burro Canyon Formation, and Plate 4 — Potentiometric Surface for the Dakota-Burro Canyon Aquifer. (Available online at: htt s: u s ub.nr.utah. ov ublications s ecial studies SS-123 ss);see also Charles Avery, State of Utah Department of Natural Resources Technical Publication No. 68, "Bedrock Aquifers of Eastern San Juan County, Utah (1986), Figure 19. "Areal extent, water levels, and water quality in the D aquifer, 1982-83." (Available online at:https://waterrights.utah.gov/docSys/v920/w920/w92000ab.pdf.

The State's role in protecting drinking water quality should be much more active. For example, with the State's agreement that the pollution in the Burro Canyon aquifer on the mill site is due to naturally occurring conditions from pumping wells, what is the implication for nearby residents with a well pumping water from the same formation every day into their drinking, cooking and bathing water? Are they at risk of exposure from cadmium, beryllium, thallium, cobalt, nickel , selenium or uranium that may naturally be rising in the formation to toxic conditions? The state has a responsibility to future generations to protect our shared water resources at the highest possible level.

30. The proposed GWCL increase for selenium and uranium at well MW30 would not be protective of human health and the environment. Rising trends in both of those parameters along with a strongly increasing trend in chloride are a signature of facility impact to the groundwater and the source of the continuing contamination must be conclusively determined with an updated comprehensive isotopic test of groundwater condition at each POC well along with a selection of wells from the general monitoring wells and the TW4 and TWN series.

31. New Well MW-24a is chemically identical to existing Well MW-24 and there is no need to spend two more years collecting data to develop new GWCL for new well MW-24a. The existing GWCL for MW-24 should be used to recognize the exceedances at this location as a POC well for old outdated cells 1 and 2. MW-24 is associated chemically with a signature of facility impact as discussed in our Comment #1. The Director is proposing to allow EFR more than two years to collect data from a new well, MW24a, as they explore if a well construction issue is to blame for the rise in specific ions and metals in MW-24 (See Comment #1, MW-24 fits in a group with MW-25, MW-28, MW-39 and MW-22). Data from the first quarter 2020 first sampling event show water chemistry in MW-24a is obviously similar to that in MW24 (Stiff . diagrams, piper diagram and comparison table below from the 1 st Quarter 2020 Groundwater Monitoring Report). There is no need to wait for additional quarterly samples, and it makes no sense to delay for two years. Water chemistry trends in MW24 are confirmed. The trends at this location fit into a distinct pattern with other site wells including MW-25, which indicates an anthropogenic continuing source from the Mill site. A source ID requirement for cadmium sitewide needs to be conducted and must include updated comprehensive geochemistry and isotopic tests for all POC wells and general monitoring wells along with TW4 and TWN series wells to conclusively determine the sources of the recognized nitrate chloride plume which is associated with uranium concentrations far above health based standards (TW4-24, 663 ppb 05/17/2018), the chloroform plume which continues to increase in size and concentration (1 st quarter 2020 chloroform report) and the cadmium plume associated with cobalt, nickel, molybdenum, thallium, beryllium and manganese.

Figure 10

Stiff Diagram: MW-24, 1st Quarter 2020

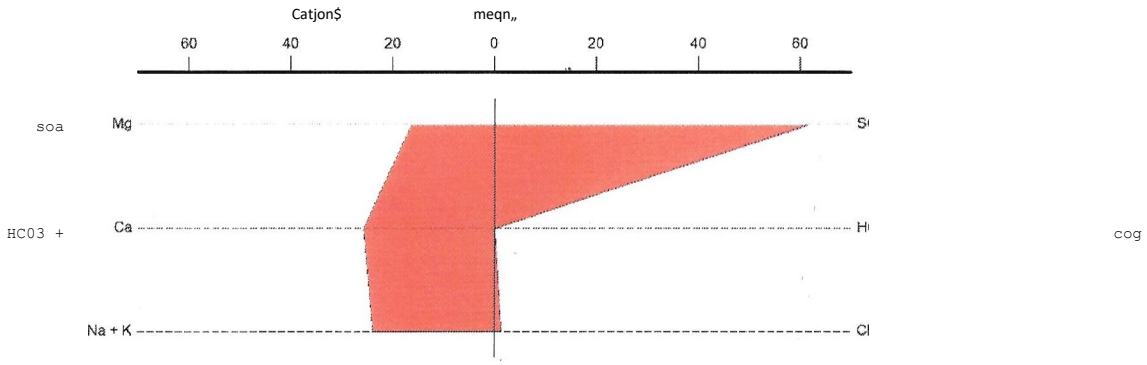


Figure 11:

Stiff Diagram: MW-24A, 1st Quarter 2020

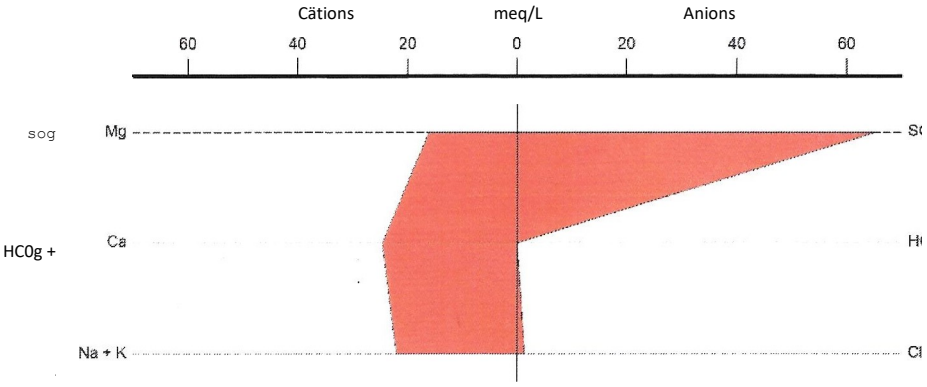
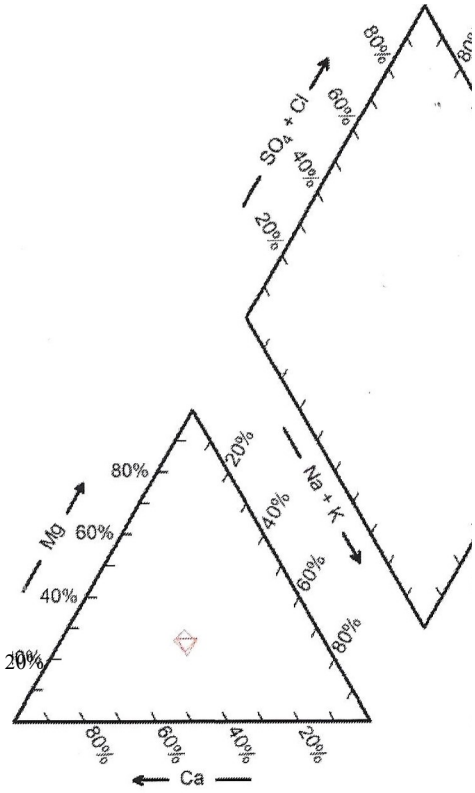


Figure 12:

Piper Diagram



Legend

MVV-24
MW%24A

Table 2: MW-24 and MW24A Data Comparison

Name	Unit		MW-24	MW-24A	
[S] Sample ID Date [p]			[s] Mw-24 1/22/2020	MW-24A	492 196

Calcium	mg/L	1122/2020	498
Magnesium	mg/L	515	12.7
[s] Sodium	mg/L	199	5.2
Potassium	mg/L	542	3130
Bicarbonate	mg/L	13.1 }	47.5
'Sulfate	mg/L	10	4420
Chloride	mg/L	2960	4.96
> Dissolved Solids	mg/L	47.8	1.41
		4160%	174
Fluoride		6.01 4	0.189
> Ammonia	mg/L	0.808	0.00396
Nitrate	mg/L	0.118	0.0093
Beryllium	mg/L	0.332	0.01
>Cadmium	mg/L	.00207	0.138
> Chromium	mg/L	0.0073	0.0122
Cobalt	mg/L	0.01	cool
Copper	mg/L	0.115	0.001
Iron	mg/L	0.01	7.43
Lead	mg/L	0.0698	0.01
Manganese	mg/L	0.0016	0.065
Molybdenum	mg/L	7001	500E-6
Nickel	mg/L	0.01	0.00125
Selenium	mg/L	0.0681	0.00543
Thallium	mg/L	.00816	0.015
Uranium	mg/L	.00192	0.125
>Vanadium	mg/L	.00489	4298
Zinc	mg/L	0.015	619
Conductivity	pmho/cm	0.143	
	mV	4400	
		693	

32. The elevated iron concentrations in groundwater downgradient of the tailings cells indicate impact to groundwater from tailings solutions. The Division should evaluate this line of inquiry. As recognized in the technical evaluation of the Moffat tunnel waste suggests that iron concentrations in can serve as a surrogate for monitoring potential impact to groundwater from this waste stream stating, "Analogous geochemical behavior of iron in the tailings wastewater with iron as a more conservative tracer of potential tailings wastewater in the groundwater than aluminum (UDWMRC, 2020.)" We presented a report in 2015 and again in 2017 with updated data (Geologic, 2017) which also used an analysis of iron concentrations in groundwater along with concentrations of other metals present in the tailings wastewater to identify tailings impact to the groundwater downgradient of the facility. These findings were presented in the report in both a written narrative and illustrated with figures like the one below and show iron and other metals spiking in concentration in the groundwater downgradient of the tailings cells:

Figure 13: from Geo-Logic Report, Geo-logic, 2017.

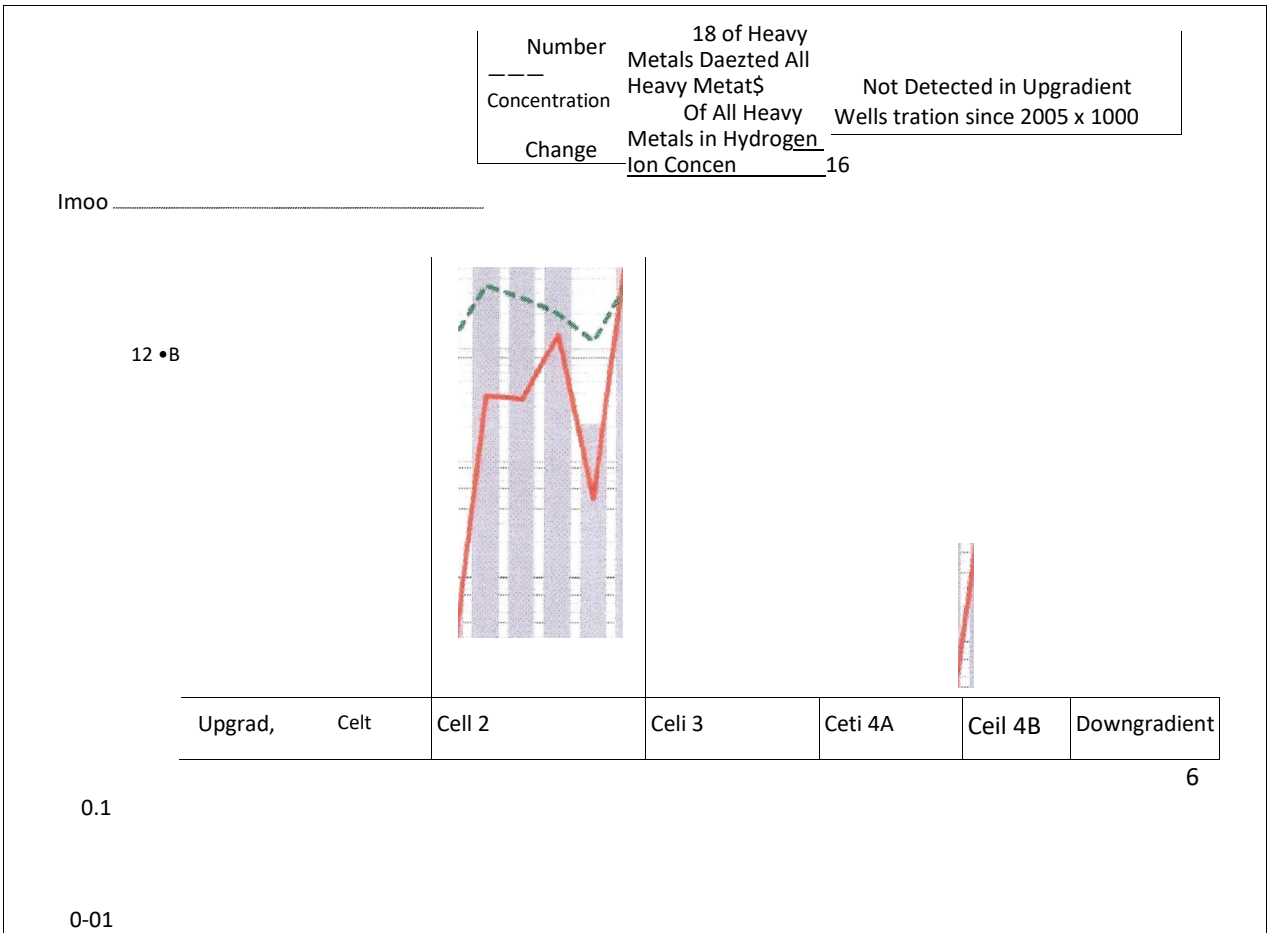


FIGURE 27 - HEAVY METALS IN MONITORING WELLS

State of Utah Department of Environmental Quality. Division of Waste Management and Radiation Control. Technical Evaluation and Environmental Analysis Moffat Tunnel Alternate Feed Request Energy Fuels Resources (USA) Inc. White Mesa Uranium Mill Utah Division of Waste. Management and Radiation Control April 2020.

33. As suggested in the Division's June 27, 2000 review memorandum and as recommended in the 2017 Geo-Logic Report as a standard industry practice, EFRI should be required to calculate an annual water balance for water received, consumed and lost at the Mill, and report the balance with annual DMT reports to assist with evaluation and performance of the discharge minimization technology required under the Groundwater Permit. Currently, there is no accounting of water use and loss at the Mill.

34. The Tribe and the DWMRC had set up a data sharing system wherein DWMRC provided formatted data for use in specific computer modeling software used by each party. This was a constructive and helpful way to share and analyze data in similar fashions. The Tribe has not been provided with any such data in more than two years, while the State has undertaken multiple groundwater permit modifications.

35. The Public Notice published by the Division misleadingly refers to "Public Comment on the White Mesa RML Renewal." There is no explanation of what renewal is contemplated. There is no basis for a renewal of the RML.

Summary:

The Tribe requests that the Director deny Amendment 10 to Radioactive Material License UT 1900479 and the proposed modification of Groundwater Quality Discharge Permit No. UGW370004. The Tribe opposes the importation of alternate feed materials from Estonia and from the perpetual source in the Moffat Tunnel. The Tribe further requests that the Director consider a holistic view of the environmental contamination occurring at the White Mesa Uranium Mill and the long-term implications to the environment and local public, including the Tribe.

Thank you for your consideration.

Sincerely,

Scott T. Clow

Environmental Programs Director

Cc: Tribal Council, Ute Mountain Ute Tribe

Manuel Heart, Chairman, Ute Mountain Ute Tribe

REFERENCES

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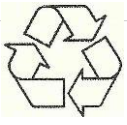


Attachment 3 – Copy of the July 9, 2020 Document from Bikepacking Roots

Bikepacking Roots
101 W Goodwin St #3849
Prescott AZ 86302
www.bikepackingroots.org

July 9, 2020

DWMRC
195 N 1950 W
Salt Lake City UT

Kurt Refsnider, Ph.D.
Bikepacking Roots
101 W Goodwin St #3849 Prescott, AZ 86302
kurt@bikepackingroots.org

RE: Public Comment on White Mesa RML Renewal: Modification to Groundwater Quality Discharge Permit No. UGW370004 and Amendment #10 of the 11e.(2) Byproduct License No. UT1900479 for Energy Fuels Resources, Inc. White Mesa Uranium Mill

To whom it may concern:

I write on behalf of the Bikepacking Roots not-for-profit organization and our 5,000+ members in expressing dismay at the interpretations of monitoring well data from down hydraulic gradient of the White Mesa Mill site. These analyses and interpretations would never stand up in peer reviewed scientific journals, and that is absolutely unacceptable when there exists the potential long-term poisoning of local communities and the broader landscape. DEQ completely neglects equally viable interpretations of data specifically from monitoring well MW-30 that could legitimately show groundwater contamination from at least one of the tailings impoundments beginning around 2010. Thus, without further scrutiny of these and other data, no discharge permit amendments or byproduct license amendments should be made for the White Mesa Mill – no increases in groundwater compliance limits (GWCLs), no increase in materials to be added to tailings impoundments, and no acceptance of materials from other countries for processing.

Our mission at Bikepacking Roots is to advocate for the bikepacking experience and for the landscapes through which we ride on behalf of the bikepacking community and our members. The Bears Ears and Grand Canyon regions are both popular among bikepackers, and the potential for future uranium mining in these region's futures, as well as any related contamination of the landscape, are especially concerning. We also have worked extensively with colleagues and organizations on Navajo Nation, and the long-term toxic impacts of uranium mining are all too real there. Given that Energy Fuels Resources owns the uranium mines in the Grand Canyon region (currently flooded with contaminated groundwater) and lobbied heavily for areas underlain by uranium-bearing bedrock to be removed from the original boundaries of Bears Ears National Monument, we find it important to engage in this current process related to the White Mesa Mill.

In writing this comment, I am representing the Bikepacking Roots organization and our members. As a geologist with a background in geochemistry, I personally have the expertise to delve into the data from the White Mesa Mill.

What is particularly dismaying is that in DRC-2019-006502, the DEQ memo reviewing the 2019 Source Assessment Report for MW-30, the DEQ

1. Accepts the linear regression fits through the 2005-2018 groundwater chemistry data despite the fact that the data show a clear change in behavior around 2010. Forcing a linear regression through this full dataset is nothing more than sloppy and deceptive statistical analysis.
2. Accepts the argument that a minor decrease in pH (less than 0.5 pH units) could alter uranium concentrations. This would *only* be the case if the groundwater was nearly saturated with respect to uranium, and that is very much not the case. Minor changes in pH in the historic range of groundwater pH values will *not* change uranium concentrations.
3. Accepts that tailings solution indictor parameters conclusively do not suggest contamination. Below I share an equally plausible interpretation of the same data and plots that point to contamination being able to just as easily explain the geochemistry trends at MW-30
4. Points to "long-standing upward trends" in SAR parameters. Again, uranium, sulfate, chloride, and pH all show a marked change in any trends around 2010. Forcing a linear regression through a longer period does not prove the existence of a long-standing trend.
5. Points to a 2008 University of Utah study that dated the groundwater in MW-30 to being older than the mill construction date of 1980. That may in fact be completely correct. But it is still possible to contaminate "old" water.

Each of these points on their own raises flags about the veracity of the interpretations of groundwater chemistry data coming from any of the monitoring wells at the White Mesa Mill site. But the fact that the validity of five of the six primary conclusions of the 2019 SAR summarized in the DRC-2019-006592 DEQ memo can be called into question is *hugely* problematic. The statistical analyses and interpretations of the 2019 SAR data from MW-30 (and likely other wells) would not stand up to any sort of scientific peer review, and DEQ's seemingly unquestioning acceptance of those analyses and interpretations does nothing to inspire faith in DEQ oversight.

Let's explore a bit of the geochemistry data from MW-30 over the years in a bit more depth, including some past interpretations of those data.

An analysis of historic chloride concentrations in a variety of wells at the White Mesa Mill site using data from 1983 to 2006 demonstrates that "chloride values are similar from 1983 to 20052006, indicating that, in spite of the variable magnitude of concentrations across the site, these comparative snap shots demonstrate that there has been little change in concentrations in samples from each well" (BGQR12292006). It was not until 2010 that chloride concentrations in MW-30 began to rise steadily (see MW-30 data plots at the end of comment with pre- and post-2010 periods highlighted for clarity; plots are taken directly from DRC-2019-000747). This increase in chloride concentrations around 2010 occurred at roughly the same time as uranium concentrations in MW-30 began to rise. It was also around 2010 that a steady decrease in sulfate concentrations at MW-30 leveled out. And no notable change in pH at MW-30 occurred at this time. Since 2010 at MW-30, the data show a steady rise in uranium and chloride concentrations and generally steady sulfate concentrations and pH; fluoride trend interpretation is hampered by high scatter pre-2010.

What might all this mean, and how should each of these indicators be interpreted? In the discussion of the merits of various "indicators of potential impact" in BGQR1229-2006 (a 2006 Background Groundwater Quality Report for the White Mesa Mill), chloride is identified as a "primary indicator of potential tailings impact." Fluoride, which has similar chemical properties as chloride, can have solubility controlled along ground water flow paths by the trace mineral apatite, resulting in fluoride being considered secondary to chloride in terms of reliability as an indicator of impact. Similarly, solubility differences between calcium chloride and calcium sulfate mineral species complicates the interpretation of sulfate data.

Returning to the MW-30 data, the steady decrease in sulfate concentrations at MW-30 between

2005 and 2010 levels off. 2010 is approximately the year that uranium and chloride concentrations at MW-30 began to increase steadily. *If* the steady decrease in sulfate concentrations between 2005 and 2010 was due to influences external to the mill site (as argued in the 2019 MW-30 SAR), groundwater contamination from mill operations could responsible for the relatively steady sulfate concentrations since 2010 as sulfate from tailings could have offset that prior decrease in sulfate concentrations (or in other words, the longer-term decrease in sulfate concentration due to environmental factors external to the mill site is masking contamination since 2010).

To summarize this simply, *all the trends observed* in uranium, chloride, and sulfate concentrations at MW-30 could potentially be explained by groundwater contamination from the mill site. The conclusions from the 2019 MW-30 SAR accepted by DEQ are not the *only* viable explanation for these trends, and I would argue that what I have presented is arguably a *more* viable explanation.

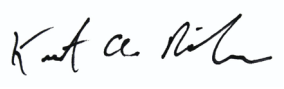
As explained in detail in BGQR12292006, the interpretation of indicators of potential impact is complicated by environmental variability in groundwater geochemistry. Thus, if interpretation of monitoring well data shows *any* potential sign of contamination, the onus is on the DEQ to require a far more thorough analysis and investigation than has been done. Decisions regarding potential uranium contamination must not be based on difficult to interpret data, shoddy and deceptive statistical analyses or conclusions that ignore other viable explanations. Far too much is at stake.

Based on all this, we request that

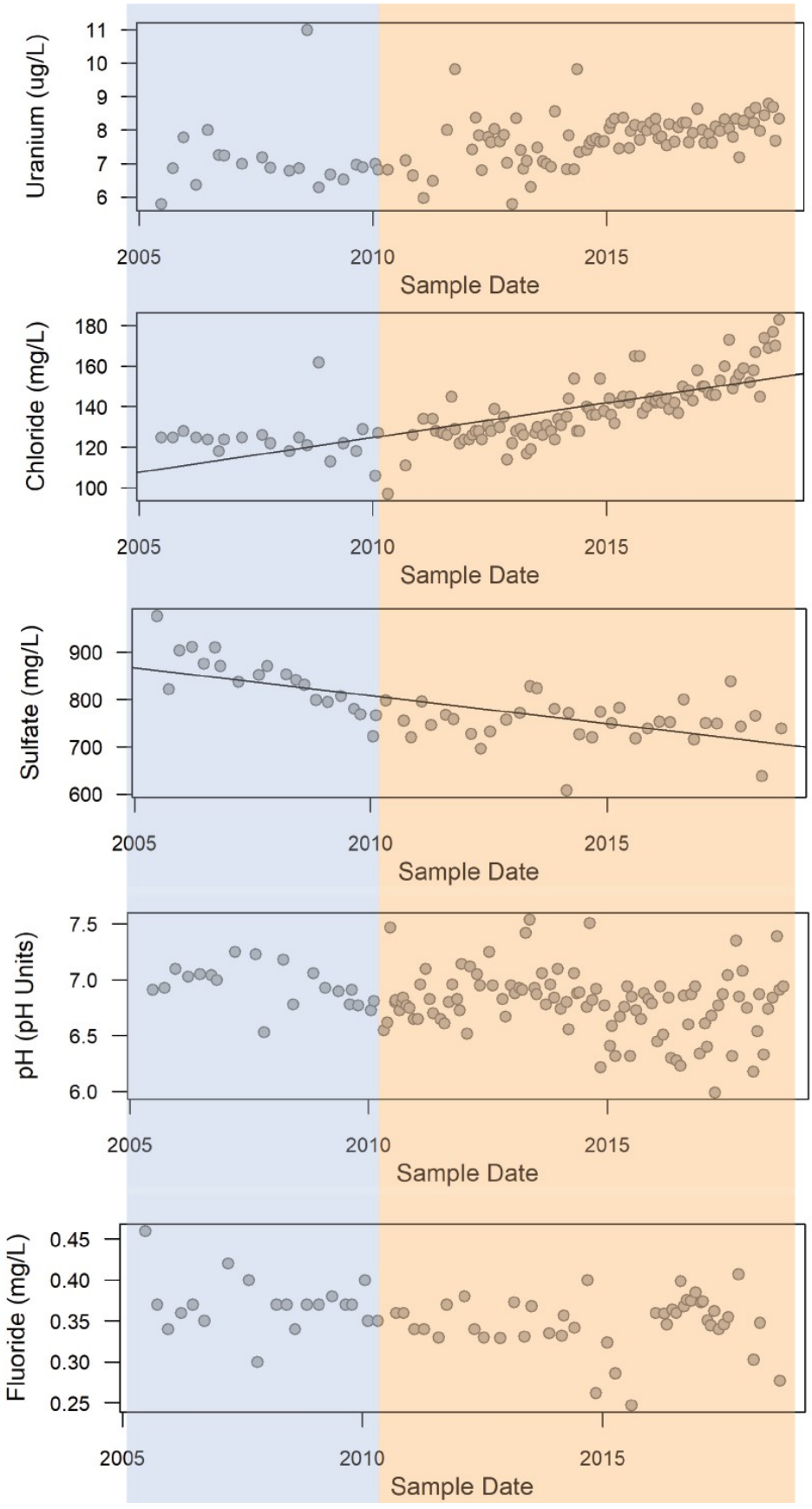
1. No changes be made in the uranium GWCLs be made. It has not been demonstrated convincingly that the increasing trends in uranium are not due to contamination.
2. No license amendment be issued for an increase in the annual limit of material added to the tailings impoundments be granted.
3. No license amendment be issued for the acceptance of alternate feed material from Estonia be granted.

The toxic legacy of uranium contamination is all too visible today across the Colorado Plateau, and particularly on Navajo Nation where so many families face the realities of cancer, birth defects, poisoned wells, and so much more as a result of past uranium mining. And just down hydraulic gradient a few miles from the White Mesa Mill sits the White Mesa Community, poised to intercept *any* groundwater contamination from the mill. One undetected leak is all it would take. And it has not been convincingly demonstrated that the changes in groundwater geochemistry at MW-30 are not evidence of a contamination that began around 2010.

Respectfully,



Kurt Refsnider, Ph.D.
Executive Director


Uranium (ug/L)
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10
9
8
7
6
2005
2010
2015
Sample Date
Chloride (mg/L)
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160
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120
100
2005
2010
2015
Sample Date
Sulfate (mg/L)
900
800
700
600
2005
2010
2015
Sample Date
pH (pH Units)
7.5
7.0
6.5
6.0
2005
2010
2015
Sample Date
Fluoride (mg/L)
0.45
0.40
0.35
0.30
0.25
2005
2010
2015
Sample Date

Attachment 4 -- Modified Permit No. UGW370004 Statement of Basis

UTAH GROUND WATER DISCHARGE PERMIT NO. UGW370004

STATEMENT OF BASIS
Permit Modification

Energy Fuels Resources (USA) Inc.
225 Union Blvd., Suite 600
Lakewood, CO 80228

March 2020

STATEMENT OF BASIS OUTLINE

Attachments:

Attachment A – Proposed Permit Modification Changes – Redline Strike-out Groundwater Discharge Permit UGW370004 ("Permit")

I. PURPOSE

This Statement of Basis describes the technical and regulatory basis for modification to Utah Ground Water Discharge Permit, No. UGW370004, ("Permit") issued for the Energy Fuels Resources (USA) Inc. ("Permittee") White Mesa Uranium Milling Facility in San Juan County, Utah ("Facility"). The Facility is located in Sections 28, 29, 32, 33, Township 37, Range 22 East, Salt Lake Baseline and Meridian, San Juan County, Utah. Within San Juan County, the Facility is located on fee land and mill site claims, covering approximately 5,415 acres, encompassing all or part of Sections 21, 22, 27, 28, 29, 32, and 33 of Township 37 South, Range 22 East, and Sections 4, 5, 6, 8, 9, and 16 of Township 38South, Range 22 East, Salt Lake Base and Meridian.

The Permit is issued and modified pursuant to the Utah Water Quality Rules, Utah Administrative Code (UAC) R317-6, which requires that any person who operates any new facility or modifies an existing or new facility, not permitted by rule under UAC R317-6-6.2, obtain a Utah Ground Water Discharge Permit. UAC R317-6 provides that a groundwater permit may be reopened for modification on an as-needed basis.

The Director of the Utah Division of Waste Management and Radiation Control ("DWMRC") has concluded that the Permit modifications discussed in this Statement of Basis are reasonable and are supported by the administrative record.

II. FACILITY BACKGROUND

The Facility was constructed during the years 1979 and 1980 and was originally licensed by the United States Nuclear Regulatory Commission ("NRC") under Source Material License No. SUA-1358.

On August 16, 2004, the NRC relinquished the Utah uranium mill regulatory program to the State of Utah by approving Agreement State status. The DWMRC became the primary regulatory authority for the Facility and subsequently issued State Radioactive Material License No. UT1900479 ("RML") and the separate Permit to the past operator, International Uranium (USA) Corporation on March 8, 2005; then to another past operator, Denison Mines (USA) Corp. on March 29, 2007. The Director of DWMRC ("Director") approved the transfer of control of the Facility to the Permittee on June 27, 2012 when the Permit and License was again transferred.

The Permit was renewed effective on January 19, 2018 and was last modified on March 19, 2019. This is the second modification since the renewal.

III. MAJOR PERMIT MODIFICATIONS

A. GROUNDWATER COMPLIANCE LIMIT (GWCL) MODIFICATIONS (Part I.C. Table 2)

The Permittee has submitted three Source Assessment Reports (SAR's) since the last Permit modification (March 19, 2019). The SAR's were required by the Permit and were reviewed and approved by the Director. The table below lists the GWCL modifications that were approved and are included in the proposed Permit modification. Note that a list of Director review memorandums and correspondence letters is found in the reference section of this Statement of Basis. A copy of the memorandums and letters can be found on the DWMRC website (https://deq.utah.gov/waste-management-and-radiation-control/stipulated-consent-agreement-ugw13-03-white-mesa-uranium-mill-energy-fuels-resources-usa-inc).

Wells/parameters subject to GWCL modifications

Monitoring Well No.	Parameter	Current GWCL	Modified GWCL
MW-11	Manganese	164.67 µg/L	237 µg/L [(a)]
MW-25	Cadmium	1.5 µg/L	1.6 µg/L [(a)]
MW-30	Uranium	8.32 µg/L	9.82 µg/L [(a)]
MW-30	Selenium	47.2 µg/L	53.6 µg/L [(b)]

[(a)] Director Approval Letter Dated September 5, 2019
[(b)] Director Approval Letter Dated July 9, 2019
[(c)] Director Approval Letter Dated November 26, 2019

IV. MINOR PERMIT MODIFICATIONS

A. CHANGE TO FACILITY LOCATION DESCRIPTION (Permit Cover Page)

The Permit cover page Facility location description was expanded to include all township and range sections in which the Permittee has land and Facility claims. This change was made in order to be consistent with the Facility description in the Radioactive Materials License. The previous Facility location description which included only the land sections in which the Facility is located was not removed, the description was expanded.

Specifically, the following location description language was included with the previous Facility location description, "*Within San Juan County, the Facility is located on fee land and mill site claims, covering approximately 5,415 acres, encompassing all or part of Sections 21, 22, 27, 28, 29, 32, and 33 of T37S, R22E, and Sections 4, 5, 6, 8, 9, and 16 of T38S, R22E, Salt Lake Base and Meridian*."

The full Facility description on the Permit cover page now reads:

"The Facility is located in Sections 28, 29, 32, 33, Township 37, Range 22 East, Salt Lake Baseline and Meridian, San Juan County, Utah. Within San Juan County, the Facility is located on fee land and mill site claims, covering approximately 5,415 acres, encompassing all or part of Sections 21, 22, 27, 28, 29, 32, and 33 of Township 37 South, Range 22 East, and Sections 4, 5, 6, 8, 9, and 16 of Township 38South, Range 22 East, Salt Lake Base and Meridian."

B. **COMPLIANCE SCHEDULE REMOVAL – SLIMES DRAIN COMPLIANCE PLAN (Part I.H.1)**

The Slimes Drain Compliance Plan was received by the Division on January 21, 2020 (Dated January 16, 2020). Per Division review it was determined that the received Plan was in conformance with the Compliance Schedule requirement. The Plan was reviewed and approved by the Division on February 18, 2020. The compliance schedule is therefore being removed from the Permit.

C. **COMPLIANCE SCHEDULE REMOVAL – INSTALLATION OF NEW GROUNDWATER MONITORING WELLS MW-38, MW-39 AND MW-40 (Part I.H.2)**

Monitoring wells MW-38, MW-39 and MW-40 were installed during the period of February 12, 2018 through February 21, 2018 and an As-Built Report was submitted by the Permittee to the Division dated June 12, 2018. The As-Built was reviewed by the Division and approved on October 3, 2018. All requirements of the compliance schedule were completed by the Permittee; therefore, it is being removed from the Permit. Monitoring wells MW-38, MW-39 and MW-40 are currently in the process of background monitoring and the modified Permit carries forward the requirement to provide a background report at which time the monitoring wells will be included in the Permit with appropriate associated GWCL's.

D. **COMPLIANCE SCHEDULE MOVE – BACKGROUND GROUNDWATER QUALITY REPORT FOR WELLS MW-38, MW39 AND MW-40 (From Part I.H.3 to Part I.H.1)**

The Permit compliance schedule item I.H.3 was moved to I.H.1. This change was needed to account for the deletion of two compliance schedules in the current Permit modification.

E. **COMPLIANCE SCHEDULE INCLUSION – BACKGROUND GROUNDWATER QUALITY REPORT FOR WELL MW-24A (Part I.H.2)**

Per Division review of a Permittee June 27, 2019 Source Assessment Report (SAR) regarding parameters at monitoring well MW-24 with two or more exceedances of the groundwater compliance limit (MW-24 Out of Compliance Parameters), it was noted that recent increasing trends for certain parameters resulted in the out-of-compliance status and warrants further investigation. Based on DWMRC review findings and a conference call discussion with the Permittee on September 3, 2019 it was decided that additional source assessment needs to be conducted for monitoring well MW-24. The Permittee discussed during the call, that there is a potential that MW-24 monitoring well construction could be the cause of the out of compliance parameters and that additional evaluation to determine if this is the cause could include the construction of a nearby monitoring well (MW-24A) and subsequent tandem sampling of the two wells to determine if well construction is an issue. Based on discussion this was determined to be a useful and reasonable element to evaluate the non-compliance.

The Permittee subsequently installed monitoring well MW-24A during the week of December 2, 2019 and submitted an as-built report in compliance with the Permit dated January 29, 2020 and received by the Division on January 31, 2020. The Division sent a letter to the Permittee dated February 11, 2020 closing-out the Division Review of the As-Built Report.

Based on the completion of construction the Division is including a new compliance schedule item requiring eight consecutive quarters of background monitoring at MW-24A and Permittee submission of a background report for MW-24A. Based on review of the future background report, monitoring well MW-24A and associated GWCL's will be included in the Permit in a future modification.

F. COMPLIANCE SCHEDULE REMOVAL – REVISED GROUNDWATER QUALITY ASSURANCE PLAN TO INCLUDE DISSOLVED OXYGEN (Part I.H.4.)

The Facility Quality Assurance Plan (QAP) was updated on May 14, 2019 (QAP Version 7.5 to included dissolved oxygen as a field monitoring parameter (QAP Section 6.2.2). The Division approved the changes via letter dated May 30, 2019 and collection and reporting of dissolved oxygen commenced at the Facility during the 3rd Quarter of 2019. Therefore, all requirements of this compliance schedule were completed and have been approved by the Division. The compliance schedule is therefore being removed from the Permit.

V. REFERENCES

[1]Energy Fuels Resources (USA) Inc., November 7, 2012*, Second Revision Hydrogeology of the Perched Groundwater Zone in the Area Southwest of the Tailings Cells White Mesa Uranium Mill Site*. Prepared by Hydro Geo Chem, Inc.

[2]Energy Fuels Resources (USA) Inc. January 15, 2019. *Source Assessment Report for MW-30, White Mesa Mill*. Prepared by Intera.

[3]Energy Fuels Resources (USA) Inc. June 27, 2019. *Source Assessment Report for MW-11 and MW-24, White Mesa Mill*. Prepared by Intera.

[4]Energy Fuels Resources (USA) Inc. June 28, 2019. *Reanalysis of Uranium Data for the Calculation of a Groundwater Compliance Limit in MW-30*. Prepared by Intera.

[6]Energy Fuels Resources (USA) Inc. September 23, 2019. *Source Assessment Report for MW-25, White Mesa Mill*. Prepared by Intera.

[7]Utah Division of Waste Management and Radiation Control. July 8, 2019. *DWMRC Staff Review of the Energy Fuels Resources (USA) Inc. January 15, 2019 Source Assessment Report for Monitoring Well MW-30*.

[8]Utah Division of Waste Management and Radiation Control. September 4, 2019. *DWMRC Staff Review of the Energy Fuels Resources June 27, 2019 Source Assessment Report for Monitoring Wells MW-11 and MW-24*.

[9]Utah Division of Waste Management and Radiation Control. November 20, 2019. *DWMRC Staff Review of the Energy Fuels Resources September 23, 2019 Source Assessment Report for Monitoring Well MW-25*.

[10]Utah Division of Waste Management and Radiation Control. July 9, 2019. *DWMRC Letter Regarding Review of the EFR January 15, 2019 Source Assessment Report for Monitoring Well MW-30*.

[11] Utah Division of Waste Management and Radiation Control. September 5, 2019. *DWMRC Letter Regarding Review of the EFR June 27, 2019 Source Assessment Report for Monitoring Wells MW-11 and MW-24*.

[12] Utah Division of Waste Management and Radiation Control, November 26, 2019. *DWMRC Letter Regarding Review of the EFR September 23, 2019 Source Assessment Report for Monitoring Well MW-25*.

Attachment 5 – Copy of the Energy Fuels Resources (USA) Inc. August 22, 2012 Redline Strikeout Permit, Permit No. UGW370004

Permit No. UGW370004

STATE OF UTAH DIVISION OF WATER QUALITY
DEPARTMENT OF ENVIRONMENTAL QUALITY UTAH WATER QUALITY BOARD
SALT LAKE CITY, UTAH 84114-4870

GROUND WATER DISCHARGE PERMIT

In compliance with the provisions of the Utah Water Quality Act, Title 19, Chapter 5, Utah Code Annotated 1953, as amended, the Act,

Energy Fuels Resources (USA) Inc.
225 Union Boulevard, Suite 600
Lakewood, CO 80228

is granted a ground water discharge permit for the operation of a uranium milling and tailings disposal facility located approximately 6 miles south of Blanding, Utah. The facility is located ~~on a tract of land~~ in Sections 28, 29, 32, and 33, Township 37 South, Range 22 East, Salt Lake Base and Meridian, San Juan County, Utah. Within San Juan County, the Facility is located on fee land and mill site claims, covering approximately 5,415 acres, encompassing all or part of Sections 21, 22, 27, 28, 29, 32, and 33 of Township 37 South, Range 22 East, and Sections 4, 5, 6, 8, 9, and 16 of Township 38 South, Range 22 East, Salt Lake Base and Meridian.

The permit is based on representations made by the Permittee and other information contained in the administrative record. It is the responsibility of the Permittee to read and understand all provisions of this Permit.

The milling and tailings disposal facility shall be operated and revised in accordance with conditions set forth in the Permit and the Utah Ground Water Quality Protection Regulations.

This Ground Water Quality Discharge Permit amends and supersedes all other Ground Water Discharge Ppermits for this facility issued previously.

Permit Modified on _____ ~~March~~ ~~19~~, 202019

This Permit shall become effective on January 19, 2018.

This Permit shall expire on January 19, 2023.

Signed this_____th day of ~~March~~, 202019.

_____
Ty L. Howard, Director
Division of Waste Management and Radiation Control

Table of Contents

List of Tables

PART I. SPECIFIC PERMIT CONDITIONS

A. GROUND WATER CLASSIFICATION - the groundwater classification of the shallow aquifer under the tailings facility has been determined on a well-by-well basis, as defined in Table 1, below:

Table 1. Ground Water Classification

	Class II Groundwater Average TDS (mg/L) DUSA Data				**Class III Groundwater** Average TDS (mg/L) DUSA Data		
Well ID	N[1]	Average Concentration[2]	Standard Deviation[2]	Well ID	N[1]	Average Concentration[2]	Standard Deviation[2]
MW-1[3]	77	1,273	93	MW-2	77	3,050	252
MW-5	82	2,058	170	MW-12	61	3,894	241
MW-11	71	1,844	178	MW-14	51	3,592	176
MW-30	42	1601	100	MW-15	47	3,857	243
				MW-17	22	4,444	321
				MW-18[3]	18	2,605	297
				MW-19[3]	22	2,457	900
				MW-20[4]	23	5,192	475
				MW-22[4]	23	7,633	656
				MW-3A	40	5,684	184
				MW-23	33	3,419	408
				MW-24	32	4,080	268
				MW-25[5]	46	2,763	97
				MW-26[6]	60	3,106	231
				MW-27[7]	45	1,067	56
				MW-28	32	3,633	101
				MW-29	40	4,332	118
				MW-31[7]	90	1,395	138
				MW-32[8]	32	3,703	166
				MW-35	24	3,725	354
				MW-36	21	4,344	154
				MW-37	21	3,881	108

Footnotes:

1) N = Number of Samples
2) Based on historic total dissolved solids (TDS) data provided by the Permittee for period between October, 1979 and September 2016. This data was obtained from the Permittee's background groundwater quality reports..
3) Background concentrations of uranium in well MW-18 (55.1 µg/L) and thallium in MW-19 (2.1 µg/L) exceed the GWQS, 30 µg/L and 2.0 µg/L, respectively. Therefore these wells have been classified as Class III groundwater rather than Class II groundwater.
4) Wells MW-1, MW-18, MW-19, MW-20, MW-22, and TW4-24 are not point of compliance monitoring wells, but instead are general monitoring wells as per Part I.E.2. Average concentrations and standard deviations for wells MW-20 and MW-22 were provided by the Permittee for the period between June, 2008 and February, 2010. This data was obtained from the Permittee's Background Groundwater Quality Report for wells MW-20 and MW-22 dated June, 2010.
5) Background concentration of manganese in well MW-25 (1,806 µg/L) exceeds the GWQS, therefore well MW-25 has been classified as Class III groundwater rather than Class II groundwater.
6) Well MW-26 was originally named TW4-15 and was installed as part of the chloroform contaminant investigation at the facility. Under this Permit, MW-26 is defined as a Point of Compliance (POC) well for the tailings cells (see Part I.E.1).
7) Background concentrations of uranium in well MW-27 (34 µg/L) and selenium in MW-31 (71 µg/L) exceed the GWQS, therefore these wells have been classified as Class III groundwater rather than Class II groundwater.
8) Well MW-32 was originally named TW4-17 and was installed as part of the chloroform contaminant investigation at the facility. Under this Permit it is included as a POC well for the tailings cells in Part I.E.1.

B. BACKGROUND WATER QUALITY - based on groundwater samples collected through June 2007 for existing wells (MW-1, MW-2, MW-3, MW-5, MW-11, MW-12, MW-14, MW-15, MW-17,

MW-18, MW-19, MW-26, and MW-32) and through December 2007 for new wells (MW-3A, MW-23, MW 24, MW-25, MW-27, MW-28, MW-29, MW-30 and MW-31), the upper boundary of background groundwater quality is determined on a well-by-well basis, pursuant to Environmental Protection Agency (EPA) guidance, and documented in the Permittee's background groundwater quality reports dated October 2007, April 30, 2008, and May 1, 2014.

C. PERMIT LIMITS - the Permittee shall comply with the following permit limits:

1. Ground Water Compliance Limits - contaminant concentrations measured in each monitoring well listed in Table 2 below shall not exceed the Ground Water Compliance Limits (GWCL) defined in Table 2, below. Groundwater quality in the wells listed in Table 2 below must at all times meet all the applicable GWQS and ad hoc GWQS defined in R317-6 even though this permit does not require monitoring for each specific contaminant.

2. Tailings Cell Operations - only 11.e.(2) by-product material authorized by Utah Radioactive Materials License No. UT-2300478 (hereafter License) shall be discharged to or disposed of in the tailings ponds.

3. Prohibited Discharges - discharge of other compounds such as paints, used oil, antifreeze, pesticides, or any other contaminant not defined as 11e.(2) material is prohibited.

Table 2. Groundwater Compliance Limits (GWCL)

		Upgradient Well	Down or Lateral Gradient Wells										
		MW-27 (Class III)	**MW-2** (Class III)	**MW-3A** (Class III)	**MW-5** (Class II)	**MW-11** (Class II)	**MW-12** (Class III)	**MW-14** (Class III)	**MW-15** (Class III)	**MW-17** (Class III)	**MW-23** (Class III)	**MW-24** (Class III)	**MW-25** (Class III)
Contaminant	**GWQS** [1]	GWCL	GWCL [6]	GWCL	GWCL	GWCL [7]	GWCL	GWCL	GWCL	GWCL	GWCL	GWCL	GWCL
Nutrients (mg/L)													
Ammonia (as N)	25 [2]	12.5	12.5	0.6	1.02	6.25	0.6	12.5	0.21	0.26	0.6	7	0.77
Nitrate + Nitrite (as N)	10	5.6	0.12	1.3	2.5	2.5	5	5	0.27	5 [8]	5	5	5
Heavy Metals (µg/L)													
Arsenic	50	25	25	25	17	15	25	25	25	25	25	17	25
Beryllium	4	2	2	2	1	1	2	2	2	2	2	2	2
Cadmium	5	2.5	2.5	3.55	2	1.25	7	2.5	2.5	2.5	2.5	6.43	1.65 –
Chromium	100	50	50	50	25	25	50	50	50	50	50	50	50
Cobalt	730 [5]	365	365	365	182.5	182.5	365	365	365	365	365	365	365
Copper	1,300	650	650	650	325	325	650	650	650	650	650	650	650
Iron	11,000 [5]	5,500	151.6	5,500	2,750	2,750	5,500	5,500	81.7	5,500	5,500	4,162	5,500
Lead	15	7.5	7.5	7.5	4.1	3.75	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Manganese	800 [4]	400	378.76	383	376.74	237~~164.67~~	2,088.80	2,230.30	400	915.4	550	7,507	1,806
Mercury	2	1	1	1	1	0.5	1	1	1	1	1	1	1
Molybdenum	40 [2]	20	20	20	10	10	20	25	30	20	20	20	20
Nickel	100 [3]	50	60	105	44.1	46.2	60	50	97	50	50	50	50
Selenium	50	25	26.6	109.58	12.5	12.5	39	25	128.7	25	25	25	25
Silver	100	50	50	50	25	25	50	50	50	50	50	50	50
Thallium	2	1	1	1.4	0.5	0.5	1	1	1	1	1.5	2.01	1.1
Tin	17,000 [4]	8,500	8,500	8,500	4,250	4,250	8,500	8,500	8,500	8,500	8,500	8,500	8,500
Uranium	30 [3]	34	18.45	35	7.5	7.5	23.5	98	65.7	46.66	32	11.9	7.25
Vanadium	60 [4]	30	30	30	15	15	30	30	40	30	30	30	30
Zinc	5,000	2,500	2,500	155	87.38	1,250	2,500	35.04	2,500	2,500	74	2,500	2,500
Radiologics (pCi/L)													
Gross Alpha	15	2	3.2	7.5	3.75	3.75	7.5	7.5	7.5	2.8	2.86	7.5	7.5
Volatile Organic Compounds (µg/L)													
Acetone	700 [4]	350	350	350	175	175	350	350	350	350	350	350	350
Benzene	5	2.5	2.5	2.5	1.25	1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5
2-Butanone (MEK)	4,000 [2]	2,000	2,000	2,000	1,000	1,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Carbon Tetrachloride	5	2.5	2.5	2.5	1.25	1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Chloroform	70 [4]	35	35	35	17.5	17.5	35	35	35	35	35	35	35
Chloromethane	30 [2]	15	15	9.4	7.5	7.5	15	15	15	15	5.7	15	15
Dichloromethane	5 [3]	2.5	2.5	2.5	1.25	1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Naphthalene	100 [2]	50	50	50	25	25	50	50	50	50	50	50	50
Tetrahydrofuran	46 [4]	23	23	23	11.5	11.5	23	23	23	23	23	23	23
Toluene	1,000	500	500	500	250	250	500	500	500	500	500	500	500
Xylenes (total)	10,000	5,000	5,000	5,000	2,500	2,500	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Others													
Field pH (S.U.)	6.5 - 8.5	6.47 - 8.5	6.72 - 8.5	5.84 - 8.5	7.04 - 8.5	6.25 - 8.5	5.86 - 8.5	5.42 - 8.5	5.88 - 8.5	6.27 - 8.5	5.97 - 8.5	5.03 - 8.5	5.77 - 8.5
Fluoride (mg/L)	4	0.85	0.43	1.6	1.42	1	2	0.22	2	2	2	0.47	0.42
Chloride (mg/L)		38	20	70	71	39.16	80.5	27	57.1	46.8	10	71	35
Sulfate (mg/L)		462	2,147	3,949.27	1,518	1,309	2,560	2,330	2,549.02	2,860	2,524	2,903	1,933
TDS (mg/L)		1,185.72	3,800	6,028	2,575	2,528	4,323	4,062	4,530	5,085.42	3,670	4,450	2,976

Table 2 Continued. Groundwater Compliance Limits (GWCL)

		Down or Lateral Gradient Wells								
		MW-26 (Class III)	**MW-28** (Class III)	**MW-29** (Class III)	**MW-30** (Class II)	**MW-31** (Class III)	**MW-32** (Class III)	**MW-35** (Class III)	**MW-36** (Class III)	**MW-37** (Class III)
Contaminant	**GWQS** [1]	GWCL	GWCL	GWCL	GWCL	GWCL	GWCL [7]	GWCL	GWCL	GWCL
Nutrients (mg/L)										
Ammonia (as N)	25 [2]	0.92	12.5	1.3	0.14	12.5	1.17	0.14	12.5	12.5
Nitrate + Nitrite (as N)	10	0.62	5	5	2.5	5	5	5	5	2.22
Heavy Metals (µg/L)										
Arsenic	50	25	21	25	12.5	25	25	25	25	25
Beryllium	4	2	2	2	1	2	2	2	2	2
Cadmium	5	2.5	5.2	2.5	1.25	2.5	4.72	2.5	2.5	2.5
Chromium	100	50	50	50	25	50	50	50	50	50
Cobalt	730 [5]	365	47	365	182.5	365	75.21	365	365	365
Copper	1,300	650	650	650	325	650	650	650	650	650
Iron	11,000 [5]	2,675.83	299	1,869	2,750	5,500	14,060	330.08	5,500	5,500
Lead	15	7.5	7.5	7.5	3.75	7.5	7.5	7.5	7.5	7.5
Manganese	800 [4]	1,610	1,837	5,624	61	400	5,594.90	290.68	400	400
Mercury	2	1	1	1	0.5	1	1	1	1	1
Molybdenum	40 [2]	20	20	20	10	20	20	20	20	20
Nickel	100 [3]	50	50	50	25	50	94	50	50	50
Selenium	50	25	11.1	25	53.6~~47.2~~	119.4	25	25	307.42	25
Silver	100	50	50	50	25	50	50	50	50	50
Thallium	2	1	1	1.2	0.5	1	1	1	1.35	1
Tin	17,000 [4]	8,500	8,500	8,500	4,250	8,500	8,500	8,500	8,500	8,500
Uranium	30 [3]	119	4.9	15	9.82~~8.32~~	15	5.26	26.76	26.42	18.08
Vanadium	60 [4]	30	30	30	15	30	30	30	30	30
Zinc	5,000	2,500	83	30	1,250	2,500	230	2,500	2,500	41.25
Radiologics (pCi/L)										
Gross Alpha	15	4.69	2.42	2	3.75	7.5	7	7.5	7.5	4.2
Volatile Organic Compounds (µg/L)										
Acetone	700 [4]	350	350	350	175	350	350	350	350	350
Benzene	5	2.5	2.5	2.5	1.25	2.5	2.5	2.5	2.5	2.5
2-Butanone (MEK)	4,000 [2]	2,000	2,000	2,000	1,000	2,000	2,000	2,000	2,000	2,000
Carbon Tetrachloride	5	5	2.5	2.5	1.25	2.5	2.5	2.5	2.5	2.5
Chloroform	70 [4]	70	35	35	17.5	35	35	35	35	35
Chloromethane	30 [2]	30	4.6	15	7.5	6.1	15	15	15	15
Dichloromethane	5 [3]	5	2.5	2.5	1.25	2.5	2.5	2.5	2.5	2.5
Naphthalene	100 [2]	50	50	50	25	50	50	50	50	50
Tetrahydrofuran	46 [4]	23	23	23	11.5	23	23	23	23	23
Toluene	1,000	500	500	500	250	500	500	500	500	500
Xylenes (total)	10,000	5,000	5,000	5,000	2,500	5,000	5,000	5,000	5,000	5,000
Others										
Field pH (S.U.)	6.5 - 8.5	5.61 - 8.5	5.58 - 8.5	5.94 - 8.5	6.47 - 8.5	6.23 - 8.5	5.31 - 8.5	6.15 - 8.5	6.49 - 8.5	6.61 - 8.5
Fluoride (mg/l)	4	2	0.73	1.1	0.51	2	2	0.42	0.35	0.31
Chloride (mg/l)		58.31	105	41	128	143	35.39	69.12	73	57.3
Sulfate (mg/l)		2,082.06	2,533	2,946	972	993	2,556.70	2,400	3,146.21	2,927.65
TDS (mg/l)		3,284.19	3,852	4,570	1,918	2,132	3,960	4,821.88	5,470	4,866.25

Footnotes:

1) Utah Ground Water Quality Standards (GWQS) as defined in UAC R317-6, Table 2. Ad hoc GWQS also provided herein, as noted, and as allowed by UAC R317-6-2.2.
2) Ad hoc GWQS for ammonia (as N), molybdenum, 2-Butanone (MEK), chloromethane, and naphthalene based on EPA drinking water lifetime health advisories.
3) Ad hoc GWQS for nickel, uranium, and dichloromethane (methylene chloride, CAS No. 75-09-2) based on final EPA drinking water maximum concentration limits (MCL).
4) Ad hoc GWQS for manganese, tin, vanadium, acetone, chloroform (CAS No. 67-66-3), and tetrahydrofuran based on drinking water ad hoc lifetime health advisories prepared by or in collaboration with EPA Region 8 staff.
5) Ad hoc GWQS for cobalt and iron based on EPA Region 3 Risk Based Concentration limits for tap water.
6) Ground Water Compliance Limits (GWCL) were set after Director review and approval of two Background Groundwater Quality Reports dated October_2007 and April 30, 2008 from the Permittee.
7) GWCLs listed in the table above are those proposed by the Permittee in the October 2007, April 30, 2008, and May 1, 2014 EFR Background Groundwater Quality Reports, and approved by the Director and also include values modified by the Director after review of GWCLs proposed in the Permittee's October 2007, April 30, 2008, May 1, 2014 Background Groundwater Quality Reports. For wells MW-2, MW-3, MW-5, MW-11, MW-12, MW-14, MW-15, MW-17, MW-26, and MW-32; these modifications are documented in the June 16, 2008 URS Completeness Review for the October, 2007 Revised Background Groundwater Quality Report for Existing Wells. For wells MW-3A, MW-23, MW-24, MW-25, MW-27, MW-28, MW-29, MW-30, and MW-31; these modifications are documented in the June 24, 2008 DRC Findings Memorandum regarding the April 30, 2008 Revised Background Groundwater Quality Report for New Wells. For wells MW-35, MW-36, MW-37; these modifications are documented in the July 14, 2014 DRC Findings Memorandum regarding the May 1, 2014 Background Groundwater Quality Report for Wells MW-35, MW-36, and MW-37

D. DISCHARGE MINIMIZATION AND BEST AVAILABLE TECHNOLOGY STANDARDS - the tailings disposal facility must be built, operated, and maintained according to the following Discharge Minimization Technology (DMT) and Best Available Technology (BAT) standards:

1. DMT Design Standards for Existing Tailings Cells 1, 2, and 3 - shall be based on existing construction as described by design and construction information provided by the Permittee, as summarized in Table 3 below for Tailings Cells 1, 2, and 3:

Table 3. DMT Engineering Design and Specifications

Tailings Cell	Report Type	Engineering Report	Design Figures	Construction Specifications
Cell 1	Design	June, 1979 D'Appolonia Consulting Engineers, Inc (1)	Appendix A, Sheets 2, 4, 8, 9, 12-15	Appendix B
Cell 2	Design	June, 1979 D'Appolonia Consulting Engineers, Inc (1)	Appendix A, Sheets 2, 4, 7-10, 12-15	Appendix B
	As-Built	February, 1982 D'Appolonia Consulting Engineers, Inc (2)	Figures 1, 2, and 11	N/A
Cell 3	Design	May, 1981 D'Appolonia Consulting Engineers, Inc (3)	Sheets 2-5	Appendix B
	As-Built	March, 1983 Energy Fuels Nuclear, Inc. (4)	Figures 1-4	N/A

Footnotes:

1) D'Appolonia Consulting Engineers, Inc., June, 1979, "Engineers Report Tailings Management System White Mesa Uranium Project Blanding, Utah Energy Fuels Nuclear, Inc. Denver, Colorado", unpublished consultants report, approximately 50 pp., 2 figures, 16 sheets, 2 appendices.
2) D'Appolonia Consulting Engineers, Inc., February, 1982, "Construction Report Initial Phase - Tailings Management System White Mesa Uranium Project Blanding, Utah Energy Fuels Nuclear, Inc. Denver, Colorado", unpublished consultants report, approximately 7 pp., 6 tables, 13 figures, 4 appendices.
3) D'Appolonia Consulting Engineers, Inc., May, 1981, "Engineer's Report Second Phase Design - Cell 3 Tailings Management System White Mesa Uranium Project Blanding, Utah Energy Fuels Nuclear, Inc. Denver, Colorado", unpublished consultants report, approximately 20 pp., 1 figure, 5 sheets, and 3 appendices.
4) Energy Fuels Nuclear, Inc., March, 1983, "Construction Report Second Phase Tailings Management System White Mesa Uranium Project Energy Fuels Nuclear, Inc.", unpublished company report, 18 pp., 3 tables, 4 figures, 5 appendices.

a) Tailings Cell 1 - consisting of the following major design elements:

1) Cross-valley Dike and East Dike - constructed on the south side of the pond of native granular materials with a 3:1 slope, a 20-foot crest width, and a crest elevation of about 5,620 ft above mean sea level (amsl). A dike of similar design was constructed on the east margin of the pond, which forms a continuous earthen structure with the south dike. The remaining interior slopes are cut-slopes at 3:1 grade.

2) Liner System - including a single 30 mil PVC flexible membrane liner (FML) constructed of solvent welded seams on a prepared sub-base. Top elevation of the FML liner was 5,618.5 ft amsl on both the south dike and the north cut-slope. A protective soil cover layer was constructed immediately over the FML with a thickness of 12-inches on the cell floor and 18-inches on the interior sideslope.

3) Crushed Sandstone Underlay - immediately below the FML a nominal 6-inch thick layer of crushed sandstone was prepared and rolled smooth as a FML sub-base layer. Beneath this underlay, native sandstone and other foundation materials were graded to drain to a single low point near the upstream toe of the south

cross-valley dike. Inside this layer, an east-west oriented pipe was installed to gather fluids at the upstream toe of the cross-valley dike.

b) Tailings Cell 2 - which consists of the following major design elements:

1) Cross-valley Dike - constructed at the south margin of Cell 2 of native granular materials with a 3:1 slope, a 20-foot crest width, and crest elevation of about 5,615 ft amsl. The east and west interior slopes consist of cut-slopes with a 3:1 grade. The Cell 1 south dike forms the north margin of Cell 2, with a crest elevation of 5,620 ft amsl.

2) Liner System - includes a single 30 mil PVC FML liner constructed of solvent welded seams on a prepared sub-base, and overlain by a slimes drain collection system. Top elevation of the FML liner in Cell 2 is 5,615.0 ft and 5,613.5 ft amsl on the north and south dikes, respectively. Said Cell 2 FML liner is independent of all other disposal cell FML liners. Immediately above the FML, a nominal 12-inch (cell floor) to 18-inch (inside sideslope) soil protective blanket was constructed of native sands from on-site excavated soils.

3) Crushed Sandstone Underlay - immediately below the FML a nominal 6-inch thick layer of crushed sandstone was prepared and rolled smooth as a FML sub-base layer. Beneath this underlay, native sandstone and other foundation materials were graded to drain to a single low point near the upstream toe of the south cross-valley dike. Inside this layer, an east-west oriented pipe was installed to gather fluids at the upstream toe of the cross-valley dike.

4) Slimes Drain Collection System immediately above the FML a nominal 12-inch thick protective blanket layer was constructed of native silty-sandy soil. On top of this protective blanket, a network of 1.5-inch PVC perforated pipe laterals was installed on a grid spacing interval of about 50-feet. These pipe laterals gravity drain to a 3-inch diameter perforated PVC collector pipe which also drains toward the south dike and is accessed from the ground surface via a 24-inch diameter, vertical non-perforated HDPE access pipe. Each run of lateral drainpipe and collector piping was covered with a 12 to 18-inch thick berm of native granular filter material. At cell closure, leachate head inside the pipe network will be removed via a submersible pump installed inside the 24-inch diameter HDPE access pipe.

c) Tailings Cell 3 - consisting of the following major design elements:

1) Cross-valley Dike - constructed at the south margin of Cell 3 of native granular materials with a 3:1 slope, a 20-foot crest width, and a crest elevation of 5,610 ft amsl. The east and west interior slopes consist of cut-slopes with a 3:1 grade. The Cell 2 south dike forms the north margin of Cell 3, with a crest elevation of 5,615 ft amsl.

2) Liner System - includes a single 30 mil PVC FML liner constructed of solvent welded seams on a prepared sub-base, and overlain by a slimes drain collection system. Top elevation of the FML liner in Cell 3 is 5,613.5 ft and 5,608.5 ft amsl on the north and south dikes, respectively. Said Cell 3 FML liner is independent of all other disposal cell FML liners.

3) Crushed Sandstone Underlay - immediately below the FML a nominal 6-inch thick layer of crushed sandstone was prepared and rolled smooth as a FML sub-base layer. Beneath this underlay, native sandstone and other foundation materials were graded to drain to a single low point near the upstream toe of the south cross-valley dike. Inside this layer, an east-west oriented pipe was installed to gather fluids at the upstream toe of the cross-valley dike.

4) Slimes Drain Collection Layer and System - immediately above the FML, a nominal 12-inch (cell floor) to 18-inch (inside sideslope) soil protective blanket was constructed of native sands from on-site excavated soils (70%) and dewatered and cyclone separated tailings sands from the mill (30%). On top of this protective blanket, a network of 3-inch PVC perforated pipe laterals was installed on approximately 50-foot centers. This pipe network gravity drains to a 3-inch perforated PVC collector pipe which also drains toward the south dike, where it is accessed from the ground surface by a 12-inch diameter, inclined HDPE access pipe. Each run of the 3-inch lateral drainpipe and collector pipe was covered with a 12 to 18-inch thick berm of native granular filter media. At cell closure, leachate head inside the pipe network will be removed via a submersible pump installed inside the 12-inch diameter inclined access pipe.

~~2.~~ Existing Tailings Cell Construction Authorized - tailings disposal in existing Tailings Cells 1, 2, and 3 is authorized by this Permit as defined in Table 3 and Part I.D.1, above. Authorized operation and maximum disposal capacity in each of the existing tailings cells shall not exceed the levels authorized by the License. Under no circumstances shall the freeboard be less than three feet, as measured from the top of the FML. Any modification by the Permittee to any approved engineering design parameter at these existing tailings cells shall require prior Director approval, modification of this Permit, and issuance of a construction permit.

~~3.~~ Existing Facility DMT Performance Standards - the Permittee shall operate and maintain certain mill site facilities and the existing tailings disposal cells to minimize the potential for wastewater release to groundwater and the environment, including, but not limited to the following additional DMT compliance measures:

a) DMT Monitoring Wells at Tailings Cell 1 - at all times the Permittee shall operate and maintain Tailings Cell 1 to prevent groundwater quality conditions in any nearby monitoring well from exceeding any Ground Water Compliance Limit established in Table 2 of this Permit.

b) Tailings Cells 2 and 3 - including the following performance criteria:

1) Slimes Drain Maximum Allowable Head - the Permittee shall at all times maintain the average wastewater recovery head in the slimes drain access pipe to be as low as reasonably achievable (ALARA) in each tailings disposal cell, in accordance with the currently approved DMT Monitoring Plan.

2) Quarterly Slimes Drain Recovery Test - effective July 11, 2011, the Permittee shall conduct a quarterly slimes drain recovery test at each tailings cell slimes drain that meets the following minimum requirements:

i. Includes a duration of at least 90-hours, as measured from the time that pumping ceases, and

ii. Achieves a stable water level at the end of the test, as measured by three consecutive hourly water level depth measurements, with no change in water level, as measured to the nearest 0.01 foot.

3) Annual Slimes Drain Compliance – The Permittee shall submit an annual report on or before March 1 following the reporting year which includes but is not limited to; 1) Monthly volumes of fluid pumped from the slimes drain for each applicable tailings disposal cell; 2) The results of all quarterly slimes drain recovery tests; 3) A calculation of average annual wastewater recovery elevation in the slimes drain access pipe, and; 4) The annual report shall include an assessment and verification that the maximum fluid volume which could practicably be extracted from the slimes drain in accordance with the systems in place was removed.

c) Maximum Tailings Waste Solids Elevation - upon closure of any tailings cell, the Permittee shall ensure that the maximum elevation of the tailings waste solids does not exceed the top of the FML liner.

d) DMT Monitoring Wells - at all times the Permittee shall operate and maintain Tailings Cells 2 and 3 to prevent groundwater quality conditions in any nearby monitoring well from exceeding any Ground Water Compliance Limit established in Table 2 of this Permit.

e) Feedstock Storage Area - open-air or bulk storage of all feedstock materials at the facility awaiting mill processing shall be limited to the eastern portion of the mill site area described in Table 4, below. Storage of feedstock materials at the facility outside this area, shall meet the requirements in Part I.D.11. At the time of mill site closure, the Permittee shall reclaim and decommission the Feedstock Storage Area in compliance with an approved Reclamation Plan. The Permittee shall maintain a minimum 4-foot wide buffer zone on the inside margin of the Feedstock Storage Area between the storage area fence and the Feedstock which shall be absent of feed material in order to assure that materials do not encroach on the boundary of the storage area.

Table 4. Feedstock Storage Area Coordinates [1]

Corner	Northing (ft)	Easting (ft)
Northeast	323,595	2,580,925
Southeast	322,140	2,580,920
Southwest	322,140	2,580,420
West 1	322,815	2,580,410
West 2	323,040	2,580,085
West 3	323,120	2,580,085
West 4	323,315	2,580,285
West 5	323,415	2,579,990
Northwest	323,600	2,579,990

Footnote:

1) Approximate State Plane Coordinates beginning from the extreme northeast corner and progressing clockwise around the feedstock area (from 6/22/01 DUSA Response, Attachment K, Site Topographic Map, Revised June,2001.)

f) Mill Site Chemical Reagent Storage - for all chemical reagents stored at existing storage facilities and held for use in the milling process, the Permittee shall provide secondary containment to capture and contain all volumes of reagent(s) that might be released at any individual storage area. Response to spills, cleanup thereof, and

required reporting shall comply with the provisions of the approved Emergency Response Plan as found in the currently approved Stormwater Best Management Practices Plan. For any new construction of reagent storage facilities, said secondary containment and control shall prevent any contact of the spilled or otherwise released reagent or product with the ground surface.

4. Best Available Technology Requirements for New Construction - any construction, modification, or operation of new waste or wastewater disposal, treatment, or storage facilities shall require submittal of engineering design plans and specifications, and prior Director review and approval. All engineering plans or specifications submitted shall demonstrate compliance with all Best Available Technology (BAT) requirements stipulated by the Utah Ground Water Quality Protection Regulations (UAC R317-6). Upon Director approval this Permit may be re-opened and modified to include any necessary requirements.

5. BAT Design Standards for Tailings Cell 4A - the BAT design standard for Tailings Cell 4A shall be defined by and construction conform to the requirements of the June 25, 2007 Director design approval letter for the relining of former existing Tailings Cell No. 4A, and as summarized by the engineering drawings, specifications, and description in Table 5, below:

Table 5. Approved Tailings Cell 4A Engineering Design and Specifications

Engineering Drawings			
Name	Date	Revision No.	Title
Sheet 1 of 7	June, 2007		Title Sheet
Sheet 2 of 7	June 15, 2007	Rev. 1	Site Plan
Sheet 3 of 7	June 15, 2007	Rev. 1	Base Grading Plan
Sheet 4 of 7	June 15, 2007	Rev. 1	Pipe Layout Plan
Sheet 5 of 7	June 15, 2007	Rev. 1	Lining System Details I
Sheet 6 of 7	June 15, 2007	Rev. 1	Lining System Details II
Sheet 7 of 7	June 15, 2007	Rev. 1	Lining System Details III
Figure 1	August, 2008	-	Spillway Splash Pad Anchor

Engineering Specifications		
Date	Document Title	Prepared by
June, 2007	Revised Technical Specifications for the Construction of Cell 4A Lining System	Geosyntec Consultants
June, 2007	Revised Construction Quality Assurance Plan for the Construction of Cell 4A Lining System	Geosyntec Consultants
March 27, 2007	Revised Geosynthetic Clay Liner Hydration Demonstration Work Plan (1)	Geosyntec Consultants
November 27, 2006	Cell Seismic Study (2)	MFG Consulting Scientists and Engineers
October 6, 2006	Calculation of Action Leakage Rate Through the Leakage Detection System Underlying a Geomembrane Liner	Geosyntec Consultants
June 22, 2006	Slope Stability Analysis Cell 4A - Interim Conditions	Geosyntec Consultants
June 23, 2006	Settlement Evaluation of Berms (2)	Geosyntec Consultants
August 22, 2006	Pipe Strength Calculations	Geosyntec Consultants
September 27, 2007	DMC Cell 4A - GCL Hydration	Geosyntec Consultants

Footnotes:

1) As qualified by conditions found in May 2, 2007 Division of Radiation Control letter.
2) As clarified by February 8, 2007 Division of Radiation Control Round 6 Interrogatory.

Tailings Cell 4A Design and Construction - approved by the Director will consist of the following major elements:

a) Dikes - consisting of existing earthen embankments of compacted soil, constructed by the Permittee between 1989 and1990, and composed of four dikes, each including a 15-foot wide road at the top (minimum). On the north, east, and south margins these dikes have slopes of 3H to 1V. The west dike has an interior slope of 2H to 1V. Width of these dikes varies; each has a minimum crest width of at least 15 feet to support an access road. Base width also varies from 89-feet on the east dike (with no exterior embankment), to 211-feet at the west dike.

b) Foundation - including existing subgrade soils over bedrock materials. Foundation preparation included excavation and removal of contaminated soils, compaction of imported soils to a maximum dry density of 90%. Floor of Cell 4A has an average slope of 1% that grades from the northeast to the southwest corners.

c) Tailings Capacity - the floor and inside slopes of Cell 4A encompass about 40 acres and have a maximum capacity of about 1.6 million cubic yards of tailings material storage (as measured below the required 3-foot freeboard).

d) Liner and Leak Detection Systems - including the following layers, in descending order:

1) Primary Flexible Membrane Liner (FML) - consisting of impermeable 60 mil high density polyethylene (HDPE) membrane that extends across both the entire cell floor and the inside side-slopes, and is anchored in a trench at the top of the dikes on all four sides. The primary FML will be in direct physical contact with the tailings material over most of the Cell 4A floor area. In other locations, the primary FML will be in contact with the slimes drain collection system (discussed below).

2) Leak Detection System - includes a permeable HDPE geonet fabric that extends across the entire area under the primary FML in Cell 4A, and drains to a leak detection sump in the southwest corner. Access to the leak detection sump is via an 18-inch inside diameter (ID) PVC pipe placed down the inside slope, located between the primary and secondary FML liners. At its base this pipe will be surrounded with a gravel filter set in the leak detection sump, having dimensions of 10 feet by 10 feet by 2 feet deep. In turn, the gravel filter layer will be enclosed in an envelope of geotextile fabric. The purpose of both the gravel and geotextile fabric is to serve as a filter.

3) Secondary FML - consisting of an impermeable 60-mil HDPE membrane found immediately below the leak detection geonet. Said FML also extends across the entire Cell 4A floor, up the inside side-slopes and is also anchored in a trench at the top of all four dikes.

4) Geosynthetic Clay Liner - consisting of a manufactured geosynthetic clay liner (GCL) composed of 0.2-inch of low permeability bentonite clay centered and stitched between two layers of geotextile. Prior to disposal of any wastewater in Cell 4A, the Permittee shall demonstrate that the GCL has achieved a moisture

content of at least 50% by weight. This item is a revised requirement per DRC letter to DUSA dated September 28, 2007.

e) Slimes Drain Collection System - including a two-part system of strip drains and perforated collection pipes both installed immediately above the primary FML, as follows:

1) Horizontal Strip Drain System - is installed in a herringbone pattern across the floor of Cell 4A that drain to a "backbone" of perforated collection pipes. These strip drains are made of a prefabricated two-part geo-composite drain material (solid polymer drainage strip) core surrounded by an envelope of non-woven geotextile filter fabric. The strip drains are placed immediately over the primary FML on 50-foot centers, where they conduct fluids downgradient in a southwesterly direction to a physical and hydraulic connection to the perforated slimes drain collection pipe. A series of continuous sand bags, filled with filter sand cover the strip drains. The sand bags are composed of a woven polyester fabric filled with well graded filter sand to protect the drainage system from plugging.

2) Horizontal Slimes Drain Collection Pipe System - includes a "backbone" piping system of 4-inch ID Schedule 40 perforated PVC slimes drain collection (SDC) pipe found at the downgradient end of the strip drain lines. This pipe is in turn overlain by a berm of gravel that runs the entire diagonal length of the cell, surrounded by a geotextile fabric cushion in immediate contact with the primary FML. In turn, the gravel is overlain by a layer of non-woven geotextile to serve as an additional filter material. This perforated collection pipe serves as the "backbone" to the slimes drain system and runs from the far northeast corner downhill to the far southwest corner of Cell 4A where it joins the slimes drain access pipe.

3) Slimes Drain Access Pipe - consisting of an 18-inch ID Schedule 40 PVC pipe placed down the inside slope of Cell 4A at the southwest corner, above the primary FML. Said pipe then merges with another horizontal pipe of equivalent diameter and material, where it is enveloped by gravel and woven geotextile that serves as a cushion to protect the primary FML. A reducer connects the horizontal 18-inch pipe with the 4-inch SDC pipe. At some future time, a pump will be set in this 18-inch pipe and used to remove tailings wastewaters for purposes of de-watering the tailings cell.

f) Cell 4A North Dike Splash Pads - three 20-foot wide splash pads will be constructed on the north dike to protect the primary FML from abrasion and scouring by tailings slurry. These pads will consist of an extra layer of 60 mil HDPE membrane that will be installed in the anchor trench and placed down the inside slope of Cell 4A, from the top of the dike, under the inlet pipe, and down the inside slope to a point 5-feet beyond the toe of the slope.

g) Cell 4A Emergency Spillway - a concrete lined spillway will be constructed near the western corner of the north dike to allow emergency runoff from Cell 3 into Cell 4A. This spillway will be limited to a 6-inch reinforced concrete slab set directly over the primary FML in a 4-foot deep trapezoidal channel. No other spillway or overflow structure will be constructed at Cell 4A. All stormwater runoff and tailings

wastewaters not retained in Cells 2 and 3, will be managed and contained in Cell 4A, including the Probable Maximum Precipitation and flood event.

6. BAT Performance Standards for Tailings Cell 4A - the Permittee shall operate and maintain Tailings Cell 4A so as to prevent release of wastewater to groundwater and the environment in accordance with the currently approved Cell 4A BAT, Monitoring, Operations and Maintenance Plan. Any failure to achieve or maintain the required BAT performance standards shall constitute a violation of the Permit and shall be reported to the Director in accordance with Part I.G.3. Performance standards for Tailings Cell 4A shall include the following:

   a) Leak Detection System (LDS) Maximum Allowable Daily Head - the fluid head in the LDS shall not exceed 1 foot above the lowest point on the lower flexible membrane liner on the cell floor. For purposes of compliance this elevation will equate to a maximum distance of 2.28 feet above the LDS transducer. At all times the Permittee shall operate the LDS pump and transducer in a horizontal position at the lowest point of the LDS sump floor.

   b) LDS Maximum Allowable Daily Leak Rate - shall not exceed 24,160 gallons/day.

   c) Slimes Drain Annual Average Recovery Head Criteria - after the Permittee initiates pumping conditions in the slimes drain layer in Cell 4A, the Permittee will provide: 1) continuous declining fluid heads in the slimes drain layer, in a manner equivalent to the requirements found in Part I.D.3(b), and 2) a maximum head of 1.0 feet in the tailings (as measured from the lowest point of upper flexible membrane liner) in 6.4 years or less.

   d) Maximum Weekly Wastewater Level - under no circumstance shall the freeboard be less then 3-feet in Cell 4A, as measured from the top of the upper FML.

7. Definition of 11e.(2) Waste - for purposes of this Permit, 11e.(2) waste is defined as: "... tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content", as defined in Section 11e.(2) of the U.S. Atomic Energy Act of 1954, as amended; which includes other process related wastes and waste streams described by a March 7, 2003 NRC letter from Paul H. Lohaus to William J. Sinclair.

8. Closed Cell Performance Requirements - before reclamation and closure of any tailings disposal cell, the Permittee shall ensure that the final design, construction, and operation of the cover system at each tailings cell will comply with all requirements of an approved Reclamation Plan, and will for a period of not less than 200 years meet the following minimum performance requirements:

   a) Minimize infiltration of precipitation or other surface water into the tailings, including, but not limited to the radon barrier,

   b) Prevent the accumulation of leachate head within the tailings waste layer that could rise above or over-top the maximum FML liner elevation internal to any disposal cell, i.e. create a “bathtub” effect, and

c) Ensure that groundwater quality at the compliance monitoring wells does not exceed the Ground Water Quality Standards or Ground Water Compliance Limits specified in Part I.C.1 and Table 2 of this Permit.

~~9.~~ Facility Reclamation Requirements - upon commencement of decommissioning, the Permittee shall reclaim the mill site and all related facilities, stabilize the tailings cells, and construct a cover system over the tailings cells in compliance with all engineering design and specifications in an approved Reclamation Plan. The Director reserves the right to require modifications of the Reclamation Plan for purposes of compliance with the Utah Ground Water Quality Protection Regulations, including but not limited to containment and control of contaminants, or discharges, or potential discharges to Waters of the State.

~~10.~~ Stormwater Management and Spill Control Requirements - the Permittee will manage all contact and non-contact stormwater and control contaminant spills at the facility in accordance with the currently approved Stormwater Best Management Practices Plan. Said plan includes the following minimum provisions:

a) Protect groundwater quality or other waters of the state by design, construction, and/or active operational measures that meet the requirements of the Ground Water Quality Protection Regulations found in UAC R317-6-6.3(G) and R317-6-6.4(C),

b) Prevent, control and contain spills of stored reagents or other chemicals at the mill site,

c) Cleanup spills of stored reagents or other chemicals at the mill site immediately upon discovery, and

d) Report reagent spills or other releases at the mill site to the Director in accordance with UAC 19-5-114.

Reconstruction of stormwater management and/or chemical reagent storage facilities, existing at the time of original Permit issuance, may be required by the Director after occurrence of a major spill or catastrophic failure, pursuant to Part IV.N.3 of this Permit.

~~11.~~ BAT Requirements for Feedstock Material Stored Outside the Feedstock Storage Area - the Permittee shall store and manage feedstock materials outside the ore storage pad in accordance with the following minimum performance requirements:

a) Feedstock materials shall be stored at all times in water-tight containers or water-tight container overpacks, and aisle ways will be provided at all times to allow visual inspection of each and every feedstock container and container overpack, or

b) Feedstock containers shall be stored on a hardened surface to prevent spillage onto subsurface soils, and that conforms with the following minimum physical requirements:

1) A storage area composed of a hardened engineered surface of asphalt or concrete, and

2) A storage area designed, constructed, and operated in accordance with engineering plans and specifications approved in advance by the Director. All such engineering plans or specifications submitted shall demonstrate compliance with Part I.D.4,

3) A storage area that provides containment berms to control stormwater run-on and run-off, and

4) Stormwater drainage works approved in advance by the Director, or

5) Other storage facilities and means approved in advance by the Director.

~~12.~~ BAT Design Standards for Tailings Cell 4B - the BAT design standard for Tailings Cell 4B shall be defined by and constructed in accordance with the requirements as summarized by the engineering drawings, specifications, and description in Table 6, below:

Table 6. Approved Tailings Cell 4B Engineering Design and Specifications

Engineering Drawings			
Name	Date	Revision No.	Title
Sheet 1 of 8	January 2009	Rev. 1	Cover Sheet
Sheet 2 of 8	January 2009	Rev. 1	Site Plan
Sheet 3 of 8	January 2009	Rev. 1	Base Grading Plan
Sheet 4 of 8	January 2009	Rev. 1	Pipe Layout and Details
Sheet 5 of 8	December 2007	Rev. 0	Lining System Details I
Sheet 6 of 8	January 2009	Rev. 1	Lining System Details II
Sheet 7 of 8	January 2009	Rev. 1	Lining System Details III
Sheet 8 of 8	January 2009	Rev. 1	Lining System Details IV
Figure 1	January 2009	-	Mill Site Drainage Basins (supporting reference)

Engineering Specifications		
Date	Document Title	Prepared by
January 2009	Slope Stability Analysis Calculation Package	Geosyntec Consultants
January 2009	Seismic Deformation Analysis Calculation Package	Geosyntec Consultants
January 2009	Revised Pipe Strength Analysis Calculation Package	Geosyntec Consultants
January 2009	Revised Comparison of Flow Though Compacted Clay Liner and Geosynthetic Clay Liner Calculation Package	Geosyntec Consultants
January 2009	Revised Action Leakage Rate Calculation Package	Geosyntec Consultants
August 2009	Blasting - Locations and Profiles, Attachment: Figures 1 and 2	Geosyntec Consultants
August 2009	(Revised) Technical Specifications, with the exception of Section 02200 (Earthwork)	Geosyntec Consultants
August 2009	Cell 4B Capacity Calculations	Geosyntec Consultants
August 2009	Revised Cushion Fabric Calculations	
August 2009	Construction Quality Assurance Plan for the Construction of Cell 4B Lining System	Geosyntec Consultants
September 2009	(Revised) Technical Specification Section 02200 (Earthwork)	Geosyntec Consultants
August 6, 2009	Blast Plan, KGL and Associates and Blast Plan Review, Geosyntec Consultants letter dated September 10, 2009	KGL and Associates and Geosyntec Consultants
September 2009	Probable Maximum Precipitation (PMP) Event Computation	Geosyntec Consultants
January 2009	Slope Stability Analysis Calculation Package	Geosyntec Consultants

Tailings Cell 4B Design and Construction - approved by the Director will consist of the following major elements:

a) Dikes - consisting of newly constructed dikes on the south and west side of the cell, each including a 20-foot wide road at the top (minimum) to support an access road. The grading plan for the Cell 4B excavation includes interior slopes of 2H to 1V. The exterior slopes of the southern and western dikes will have typical slopes of 3H to 1V. Limited portions of the Cell 4B interior sideslopes in the northwest corner and southeast corner of the cell, (where the slimes drain and leak detection sump will be located will also have a slope of 3H to 1V. The base width of the southern dikes varies from approximately 92 feet at the western end to approximately 190 feet at the eastern end of the dike, with no exterior embankment present on any other side of the cell.

b) Foundation - including existing subgrade soils over bedrock materials. Foundation preparation included excavation and removal of contaminated soils, compaction of imported soils to a maximum dry density of 90% at a moisture content between +3% and -3% of optimum moisture content, as determined by ASTM D-1557. The floor of Cell 4B has an average slope of 1% that grades from the northwest corner to the southeast corner.

c) Tailings Capacity - the floor and inside slopes of Cell 4B encompass about 44 acres, and the cell will have a water surface area of 40 acres and a maximum capacity of about 1.9 million cubic yards of tailings material storage (as measured below the required 3-foot freeboard).

d) Liner and Leak Detection Systems - including the following layers, in descending order:

    1) Primary Flexible Membrane Liner (FML) - consisting of 60-mil high density polyethylene (HDPE) membrane that extends across both the entire cell floor and the inside side-slopes, and is anchored in a trench at the top of the dikes on all four sides. The primary FML will be in direct physical contact with the tailings material over most of the Cell 4B floor area. In other locations, the primary FML will be in contact with the slimes drain collection system (discussed below).

    2) Leak Detection System - includes a permeable HDPE geonet that extends across the entire area under the primary FML in Cell 4B, and drains to a leak detection sump in the southeast corner. Access to the leak detection sump is via an 18-inch inside diameter (ID) PVC pipe placed down the inside slope, located between the primary and secondary FML liners. At its base this pipe will be surrounded with a gravel filter set in a sump having dimensions of 15 feet by 10 feet by 2 feet deep that contains a leak detection system sump area. In turn, the gravel filter layer will be enclosed in an envelope of geotextile fabric. The purpose of both the gravel and geotextile fabric is to serve as a filter.

    3) Secondary FML - consisting of a 60-mil HDPE membrane found immediately below the leak detection geonet. Said FML also extends across the entire Cell 4B floor, up the inside side-slopes and is also anchored in a trench at the top of all four dikes.

    4) Geosynthetic Clay Liner - consisting of a manufactured geosynthetic clay liner (GCL) composed of 0.2-inch of low permeability bentonite clay centered and

stitched between two layers of geotextile. Prior to disposal of any wastewater in Cell 4B, the Permittee shall demonstrate that the GCL has achieved a moisture content of at least 50% by weight.

e) Slimes Drain Collection System - including a two-part system of strip drains and perforated collection pipes both installed immediately above the primary FML, as follows:

   1) Horizontal Strip Drain System - is installed in a herringbone pattern across the floor of Cell 4B that drain to a "backbone" of perforated collection pipes. These strip drains are made of a prefabricated two-part geo-composite drain material (solid polymer drainage strip) core surrounded by an envelope of non-woven geotextile filter fabric. The strip drains are placed immediately over the primary FML on 50-foot centers, where they conduct fluids downgradient in a southwesterly direction to a physical and hydraulic connection to the perforated slimes drain collection pipe. A series of continuous sand bags, filled with filter sand cover the strip drains. The sand bags are composed of a woven polyester fabric filled with well graded filter sand to protect the drainage system from plugging.

   2) Horizontal Slimes Drain Collection Pipe System - includes a "backbone" piping system of 4-inch ID Schedule 40 perforated PVC slimes drain collection (SDC) pipe found at the downgradient end of the strip drain lines. This pipe is in turn overlain by a berm of gravel that runs the entire diagonal length of the cell, surrounded by a geotextile fabric cushion in immediate contact with the primary FML. In turn, the gravel is overlain by a layer of non-woven geotextile to serve as an additional filter material. This perforated collection pipe serves as the "backbone" to the slimes drain system and runs from the far northwest corner downhill to the far southeast corner of Cell 4B where it joins the slimes drain access pipe.

   3) Slimes Drain Access Pipe - consisting of an 18-inch ID Schedule 40 PVC pipe placed down the inside slope of Cell 4B at the southeast corner, above the primary FML. Said pipe then merges with another horizontal pipe of equivalent diameter and material, where it is enveloped by gravel and woven geotextile that serves as a cushion to protect the primary FML. A reducer connects the horizontal 18-inch pipe with the 4-inch SDC pipe. At some future time, a pump will be set in this 18-inch pipe and used to remove tailings wastewaters for purposes of de-watering the tailings cell.

f) Cell 4B North and East Dike Splash Pads - Nine 20-foot-wide splash pads will be constructed on the north and east dikes to protect the primary FML from abrasion and scouring by tailings slurry. These pads will consist of an extra layer of 60 mil HDPE membrane that will be installed in the anchor trench and placed down the inside slope of Cell 4B, from the top of the dike, under the inlet pipe, and down the inside slope to a point at least 5 feet onto the Cell 4B floor beyond the toe of the slope.

g) Cell 4B Emergency Spillway - a concrete lined spillway will be constructed near the southeastern corner of the east dike to allow emergency runoff from Cell 4A into Cell 4B. This spillway will be limited to a 6-inch reinforced concrete slab, with a welded

wire fabric installed within it at its midsection, set atop a cushion geotextile placed directly over the primary FML in a 4-foot deep trapezoidal channel. A 100-foot wide, 60-mil HDPE membrane splash pad will be installed beneath the emergency spillway. No other spillway or overflow structure will be constructed at Cell 4B. All stormwater runoff and tailings wastewaters not retained in Cells 2 and 3, and 4A will be managed and contained in Cell 4B, including the Probable Maximum Precipitation and flood event.

~~13.~~ BAT Performance Standards for Tailings Cell 4B - the Permittee shall operate and maintain Tailings Cell 4B so as to prevent release of wastewater to groundwater and the environment in accordance with the currently approved Cell 4B BAT, Monitoring, Operations and Maintenance Plan. Any failure to achieve or maintain the required BAT performance standards shall constitute a violation of the Permit and shall be reported to the Director in accordance with Part I.G.3. Performance standards for Tailings Cell 4B shall include the following:

a) Leak Detection System (LDS) Maximum Allowable Daily Head - the fluid head in the LDS shall not exceed 1 foot above the lowest point on the lower flexible membrane liner on the cell floor. At all times the Permittee shall operate the LDS pump and transducer in a horizontal position at the lowest point of the LDS sump floor.

b) LDS Maximum Allowable Daily Leak Rate - shall not exceed 26,145 gallons/day.

c) Slimes Drain Annual Average Recovery Head Criteria - after the Permittee initiates pumping conditions in the slimes drain layer in Cell 4B, the Permittee will provide: 1) continuous declining fluid heads in the slimes drain layer, in a manner equivalent to the requirements found in Part I.D.3(b), and 2) a maximum head of 1.0 feet in the tailings (as measured from the lowest point of upper flexible membrane liner) in 5.5 years or less.

d) Maximum Weekly Wastewater Level - under no circumstance shall the freeboard be less than 3-feet in Cell 4B, as measured from the top of the upper FML.

~~14.~~ BAT Performance Standards for the New Decontamination Pad - the Permittee shall operate and maintain the New Decontamination Pad (NDP) to prevent release of wastewater to groundwater and the environment in accordance with the currently approved DMT Monitoring Plan. Any failure to achieve or maintain the required BAT performance standards shall constitute a violation of the Permit and shall be reported to the Director in accordance with Part I.G.3. Performance standards for the NDP shall include, but are not limited to, the following:

a) NDP LDS Access Pipes - the water level shall not exceed 0.10 foot above the concrete floor in any LDS access pipe, at any time. Compliance will be defined as a depth to standing water present in any of the LDS access pipes of more than or equal to 6.2 feet as measured from the water measuring point (top of access pipe).

b) Soil and debris will be removed from the wash pad of the NDP, in accordance with the currently approved DMT Monitoring Plan. Cracks in the wash pad greater than 1/8 inch (width) will be repaired within five working days of discovery.

E. GROUND WATER COMPLIANCE AND TECHNOLOGY PERFORMANCE MONITORING - beginning with the effective date and lasting through the term of this Permit or as stated in an approved closure plan, the Permittee shall sample groundwater monitoring wells, tailing cell wastewaters, seeps and springs, monitor groundwater levels, monitor water levels of process solutions, and monitor and keep records of the operation of the facility, as follows:

~~1.~~ Routine Groundwater Compliance Monitoring - the Permittee shall monitor upgradient, lateral gradient, and downgradient groundwater monitoring wells completed in the shallow aquifer in the vicinity of all potential discharge sources that could affect local groundwater conditions at the facility, as follows:

a) Ground Water Monitoring Quality Assurance Plan - all groundwater monitoring and analysis performed under this Permit shall be conducted in accordance with a Quality Assurance Plan (QAP) currently approved by the Director. Any non-conformance with QAP requirements in a given quarterly groundwater monitoring period will be corrected and reported to the Director on or before submittal of the next quarterly groundwater monitoring report pursuant to Part I.F.1.

b) Quarterly Monitoring - the Permittee shall monitor on a quarterly basis all monitoring wells listed in Table 2 of this Permit where local groundwater average linear velocity has been found by the Director to be equal to or greater than 10 feet/year. For purposes of this Permit, quarterly monitoring is required at the following wells:

1) Upgradient Wells: none

2) Lateral or Downgradient Wells: MW-11, MW-14, MW-25, MW-26 (formerly TW4-15), MW-30, MW-31, MW-36.

c) Semi-annual Monitoring - the Permittee shall monitor on a semi-annual basis all monitoring wells listed in Table 2 of this Permit, where local groundwater average linear velocity has been found by the Director to be less than 10 feet/year, and all general monitoring wells. For purposes of this Permit, semi-annual monitoring is required at the following wells:

1) Monitoring Wells Listed on Table 2:

i. Upgradient Well: MW-27.

ii. Lateral or Downgradient Wells: MW-2, MW-3A, MW-5, MW-12, MW-15, MW-17, MW-23, MW-24, MW-28, MW-29, and MW-32 (formerly TW4-17), MW-35, and MW-37.

2) General Monitoring Wells:

i. Upgradient Wells: MW-1, MW-18, and MW-19.

ii. Lateral or Downgradient Wells: TW4-24, MW-20 and MW-22.

d) Compliance Monitoring Parameters - all groundwater samples collected shall be analyzed for the following parameters:

1) Field Parameters - depth to groundwater, pH, temperature, specific conductance, dissolved oxygen, and redox potential (Eh).

2) Laboratory Parameters

i. GWCL Parameters - all contaminants specified in Table 2.

ii. General Inorganics - chloride, sulfate, carbonate, bicarbonate, sodium, potassium, magnesium, calcium, and total anions and cations.

e) Special Provisions for Groundwater Monitoring - the Permittee shall ensure that all groundwater monitoring conducted and reported complies with the following requirements:

1) Depth to Groundwater Measurements - shall always be made to the nearest 0.01 foot.

2) Minimum Detection Limits - all groundwater quality analyses reported shall have a minimum detection limit or reporting limit that is less than its respective Ground Water Compliance Limit concentration defined in Table 2.

3) Gross Alpha Counting Variance - all gross alpha analysis shall be reported with an error term. All gross alpha analysis reported with an activity equal to or greater than the GWCL, shall have a counting variance that is equal to or less than 20% of the reported activity concentration. An error term may be greater than 20% of the reported activity concentration when the sum of the activity concentration and error term is less than or equal to the GWCL.

4) All equipment used for purging and sampling of groundwater shall be made of inert materials.

~~2.~~ Groundwater Monitoring: General Monitoring Wells - Upgradient wells MW-1, MW-18, and MW-19; Lateral Monitoring Well TW4-24; and Downgradient wells MW-20 and MW-22. The Permittee shall monitor wells MW-1, MW-18, MW-19, TW4-24, MW-20 and MW-22 on a semi-annual basis. Said sampling shall comply with the following Permit requirements, but shall not be considered compliance monitoring for the purposes of Part G:

a) Routine groundwater compliance monitoring requirements of Part I.E.1.

b) Groundwater head monitoring requirements of Part I.E.3

c) Well monitoring procedure requirements of Part I.E.5.

~~3.~~ Groundwater Head Monitoring - on a quarterly basis and at the same frequency as groundwater monitoring required by Part I.E.1, the Permittee shall measure depth to groundwater in the following wells and/or piezometers:

a) Point of Compliance Wells - identified in Table 2 and Part I.E.1 of this Permit.

b) Piezometers - P-1, P-2, P-3, P-4, and P-5.

c) Head Monitoring Well - MW-34.

d) General Monitoring Wells - Upgradient wells MW-1, MW-18, and MW-19; Lateral well TW4-24; and Downgradient wells MW-20 and MW-22.

e) Contaminant Investigation Wells - any well required by the Director as a part of a contaminant investigation or groundwater corrective action.

f) Any other wells or piezometers required by the Director.

4. Groundwater Monitoring Well Design and Construction Criteria - all new groundwater monitoring wells installed at the facility shall comply with the following design and construction criteria:

   a) Located as close as practical to the contamination source, tailings cell, or other potential origin of groundwater pollution.

   b) Screened and completed in the shallow aquifer.

   c) Designed and constructed in compliance with UAC R317-6-6.3(I)(6), including the EPA RCRA Ground Water Monitoring Technical Enforcement Guidance Document, 1986, OSWER-9950.1.

   d) Aquifer tested to determine local hydraulic properties, including but not limited to hydraulic conductivity.

5. Monitoring Procedures for Wells - beginning with the date of Permit issuance, all monitoring shall be conducted by the Permittee in conformance with the following procedures:

   a) Sampling - grab samples shall be taken of the groundwater, only after adequate removal or purging of standing water within the well casing has been performed.

   b) Sampling Plan - all sampling shall be conducted to ensure collection of representative samples, and reliability and validity of groundwater monitoring data.

   c) Laboratory Approval - all analyses shall be performed by a laboratory certified by the State of Utah to perform the tests required.

   d) Damage to Monitoring Wells - if any monitor well is damaged or is otherwise rendered inadequate for its intended purpose, the Permittee shall notify the Director in writing within five calendar days of discovery.

   e) Field Monitoring Equipment Calibration and Records - immediately prior to each monitoring event, the Permittee shall calibrate all field monitoring equipment in accordance with the respective manufacturer's procedures and guidelines. The Permittee shall make and preserve on-site written records of such equipment calibration in accordance with Part II.G and H of this Permit. Said records shall identify the manufacturer's and model number of each piece of field equipment used and calibration.

6. White Mesa Seeps and Springs Monitoring - the Permittee shall conduct annual monitoring of all seeps and springs identified in the currently approved Sampling Plan for Seeps and Springs in the Vicinity of the White Mesa Uranium Mill. Said monitoring shall include, but is not limited to:

   a) Field Measurements - including: pH, temperature, and specific conductivity.

   b) Water Quality Sampling and Analysis - the Permittee shall collect grab samples and perform laboratory analysis of all water quality parameters identified in Table 2 of this Permit.

   c) Certified Laboratory Analysis - all laboratory analysis will be conducted by a Utah certified laboratory.

   d) Analytical Methods - all laboratory analysis shall be conducted using analytical methods listed in the currently approved QAP pursuant to Part I.E.1 of this Permit.

e) Minimum Detection Limits - all seeps or springs water quality analyses reported shall have a minimum detection limit or reporting limit that is less than or equal to the respective:

1) Ground Water Quality Standards concentrations defined in Table 2 of this Permit, and

2) For TDS, Sulfate, and Chloride, the Minimum Detection Limit for those constituents for seeps and springs monitoring will be as follows: 10 mg/L, 1 mg/L, and 1 mg/L, respectively.

f) Quality Control Samples - the Permittee will conduct quality control (QC) sampling and analysis as a part of all seeps and springs sampling, in accordance with the requirements of Section 4.3 of the currently approved QAP; pursuant to Part I.E.1 of this Permit. Said QC samples shall include, but are not limited to: trip blanks, duplicate samples, and equipment rinse blanks.

g) Prior Notification - at least 15 calendar days before any fieldwork or water quality sample collection, the Permittee shall provide written notice to allow the Director to observe or split sample any or all seeps or springs.

~~7.~~ DMT Performance Standards Monitoring - the Permittee shall perform technology performance monitoring in accordance with the currently approved DMT Monitoring Plan to determine if DMT is effective in minimizing and controlling the release of contaminants pursuant to the provisions of Parts I.D.1 and I.D.3 of this Permit, including, but not limited to the following activities:

a) Weekly Tailings Wastewater Pool Elevation Monitoring: Cells 1 and 3 - the Permittee shall monitor and record weekly the elevation of wastewater in Tailings Cells 1 and 3 to ensure compliance with the maximum wastewater elevation criteria mandated by Condition 10.3 of the License. Said measurements shall be made from a wastewater level gauge or elevation survey to the nearest 0.01 foot.

b) Quarterly Slimes Drain Water Level Monitoring: Cells 2 and 3 - the Permittee shall monitor and record quarterly the depth to wastewater in the slimes drain access pipes as described in Part I.D.3 of this Permit and the currently approved DMT Monitoring Plan at Tailings Cells 2 and 3 to determine the recovery head. For purposes of said monitoring, the Permittee shall at each tailings cell:

1) Perform at least 1 separate slimes drain recovery test at each disposal cell in each quarterly period of each calendar year that meets the requirements of Part I.D.3,

2) Designate, operate, maintain, and preserve one water level measuring point at the centerline of the slimes drain access pipe that has been surveyed and certified by a Utah licensed engineer or land surveyor,

3) Make all slimes drain recovery head test (depth to fluid) measurements from the same designated water level measuring point, and

4) Record and report all fluid depth measurements to the nearest 0.01 foot.

5) For Cell 3 these requirements shall apply upon initiation of tailings de-watering operations.

c) Weekly Feedstock Storage Area Inspection - the Permittee shall conduct weekly inspections of all feedstock storage to: 1) Confirm the bulk feedstock materials are maintained within the approved Feedstock Storage Area defined by Table 4, and 2) Verify that all alternate feedstock materials located outside the Feedstock Area defined in Table 4, are stored in accordance with the requirements found in Part I.D.11.

d) Feedstock Material Stored Outside the Feedstock Storage Area Inspections

a) Weekly Inspection - the Permittee will conduct weekly inspections to verify that each feed material container complies with the requirements of Part I.D.11.

b) Hardened Surface Storage Area - in the event the Permittee constructs a hardened surface storage area for feed materials, pursuant to Part I.D.11, prior Director approval will be secured for the following:

i. Engineering Design and Specifications - in accordance with the requirements of Part I.D.4, and

ii. Operation and Maintenance Plan.

e) Inspections of Tailing Cell and Pond Liner Systems - the Permittee shall inspect the liner system at Tailing Cells 1, 2, and 3 on a daily basis pursuant to the requirements of Sections 2.1 and 2.2 of the currently approved DMT Monitoring Plan. In the event that any liner defect or damage is identified during a liner system inspection, the Permittee shall: 1) report and repair said defect or damage pursuant to Part I.G.3 by implementation of the currently approved Liner Maintenance Provisions, and 2) report all repairs made pursuant to Part I.F.2.

f) Weekly New Decontamination Pad Inspection - the Permittee shall conduct weekly inspections of the New Decontamination Pad as described in Part I.D.14 of this Permit and the currently approved DMT Monitoring Plan.

~~8.~~ Cell 4A BAT Performance Standards Monitoring and Maintenance - in accordance with the currently approved Cell 4A BAT, Monitoring, Operations and Maintenance Plan, the Permittee shall immediately implement all monitoring and recordkeeping requirements therein. The Cell 4A BAT monitoring includes the following:

a) Weekly Leak Detection System (LDS) Monitoring - including:

1) Leak Detection System Pumping and Monitoring Equipment - the Permittee shall provide continuous operation of the leak detection system pumping and monitoring equipment, including, but not limited to, the submersible pump, pump controller, head monitoring, and flow meter equipment approved by the Director. Failure of any LDS pumping or monitoring equipment not repaired and made fully operational within 24-hours of discovery shall constitute failure of BAT, and a violation of this Permit.

2) Maximum Allowable Head - the Permittee shall measure the fluid head above the lowest point on the secondary flexible membrane by the use of procedures and equipment approved by the Director. Under no circumstance shall fluid head in the leak detection system sump exceed a 1-foot level above the lowest point in the lower flexible membrane liner on the cell floor. For purposes of compliance

monitoring this 1-foot distance shall equate to 2.28 feet above the leak detection system transducer.

3) Maximum Allowable Daily LDS Flow Rates - the Permittee shall measure the volume of all fluids pumped from the LDS. Under no circumstances shall the average daily LDS flow volume exceed 24,160 gallons/day.

4) 3-foot Minimum Vertical Freeboard Criteria - the Permittee shall operate and maintain wastewater levels to provide a 3-foot Minimum of vertical freeboard in Tailings Cell 4A. Said measurements shall be made to the nearest 0.1 foot.

b) Quarterly Slimes Drain Recovery Head Monitoring - immediately after the Permittee initiates pumping conditions in the Tailings Cell 4A slimes drain system, quarterly recovery head tests and fluid level measurements will be made in accordance with the requirements of Parts I.D.3 and I.E.7(b) of this Permit and the currently approved Cell 4A BAT, Monitoring, Operations and Maintenance Plan.

c) Liner Maintenance and Repair - all repairs to the liner shall be completed in accordance with Section 9.4 of the approved June 2007 Geosyntec Consultants Cell 4A Construction Quality Assurance Plan (CQA/QC Plan) as found in Table 5 of this Permit. Repairs shall be performed by qualified liner repair personnel and shall be reported in a Liner Repair Report, certified by a Utah licensed Professional Engineer. The Liner Repair Report shall be submitted to for Director approval in accordance with Part I.F.3 of the Permit. Any leak, hole, or other damage to the liner will be reported to the Director pursuant to the requirements found in Part I.G.3.

~~9.~~ On-site Chemicals Inventory - the Permittee shall monitor and maintain a current inventory of all chemicals used at the facility at rates equal to or greater than 100 kg/yr. Said inventory shall be maintained on-site, and shall include, but is not limited to:

a) Identification of chemicals used in the milling process and the on-site laboratory, and

b) Determination of volume and mass of each raw chemical currently held in storage at the facility.

~~10.~~ Tailings Cell Wastewater Quality Monitoring - on an annual basis, the Permittee shall collect wastewater quality samples from each wastewater source at each tailings cell at the facility, including, but not limited to:

a) One surface impounded wastewater location at each of Tailings Cells 1, 3, 4A, and 4B.

b) One slimes drain wastewater access pipe at each of Tailings Cells 2, 3, 4A, and 4B. For Cells 3, 4A, and 4B, this requirement shall apply immediately after initiation of de-watering operations at these cells, and

c) One leak detection wastewater access pipe at Tailings Cells 4A and 4B.

d) All such sampling shall be conducted in August of each calendar year in compliance with the currently approved White Mesa Uranium Mill Tailing and Slimes Drain Sampling Program. Said annual monitoring shall include, but is not limited to:

1) Water Quality Sampling and Analysis - the Permittee shall collect grab samples and perform laboratory analysis of all:

i. Water quality parameters identified in Table 2 of this Permit, and

ii. Semi-volatile compounds identified in EPA Method 8270D.

2) Certified Laboratory Analysis - all laboratory analysis will be conducted by a Utah certified laboratory.

3) Analytical Methods - all laboratory analysis shall be conducted using analytical methods listed in the currently approved QAP pursuant to Part I.E.1 of this Permit.

4) Minimum Detection Limits - all water quality analyses reported shall have a minimum detection limit or reporting limit that is less than or equal to the respective:

   i. Ground Water Quality Standards concentrations defined in Table 2 of this Permit,

   ii. For TDS, Sulfate, and Chloride, the Minimum Detection Limit for those constituents for Tailing Cell wastewater monitoring will be as follows: 1,000 mg/L, 1,000 mg/L, and 1 mg/L, respectively, and

   iii. Lower limits of quantitation for groundwater for semi-volatile organic compounds listed in Table 2 of EPA Method 8270D, Revision 4, dated February, 2007.

5) Quality Control Samples - the Permittee will conduct quality control (QC) sampling and analysis as a part of all tailings wastewater sampling, in accordance with the requirements of Section 4.3 of the currently approved QAP; pursuant to Part I.E.1 of this Permit. Said QC samples shall include, but are not limited to: trip blanks, duplicate samples, and equipment rinse blanks.

6) Prior Notification - at least 30 calendar days before any water quality sample collection, the Permittee shall provide written notice to allow the Director to observe or split sample any tailings cell, slimes drain, or leak detection wastewaters.

7) Sample Omission - in the course of each annual sampling event, the Permittee shall sample and analyze all tailings cell, slimes drain, and leak detection wastewater sources identified in the currently approved Tailings and Slimes Drain Sampling Program (pp. 1-3), or as required by this Permit, whichever is greater. The Permittee shall not omit sampling of any of tailings cell wastewater source during said annual event, without prior written approval from the Director.

~~11.~~ Groundwater Monitoring Modifications - before any modification of groundwater monitoring or analysis procedures, methods, or equipment, the Permittee must obtain prior written approval from the Director.

~~12.~~ Cell 4B BAT Performance Standards Monitoring and Maintenance - immediately following Director approval of the Cell 4B BAT, Monitoring, Operations and Maintenance Plan, the Permittee shall immediately implement all monitoring and recordkeeping requirements therein. The Cell 4B BAT monitoring shall include the following: Weekly Leak Detection System (LDS) Monitoring - including:

1) Leak Detection System Pumping and Monitoring Equipment - the Permittee shall provide continuous operation of the leak detection system pumping and

monitoring equipment, including, but not limited to, the submersible pump, pump controller, head monitoring, and flow meter equipment approved by the Director. Failure of any LDS pumping or related monitoring equipment not repaired and made fully operational within 24-hours of discovery shall constitute failure of BAT, and a violation of this Permit.

2) Maximum Allowable Head - the Permittee shall measure the fluid head above the lowest point on the secondary flexible membrane by the use of procedures and equipment approved by the Director. Under no circumstance shall fluid head in the leak detection system (LDS) sump exceed a 1-foot level above the lowest point in the lower flexible membrane liner on the cell floor. Any occurrence of leak detection system fluids above this 1-foot limit shall constitute failure of BAT, and a violation of this Permit.

3) Maximum Allowable Daily LDS Flow Rates - the Permittee shall measure the volume of all fluids pumped from the LDS. Under no circumstances shall the average daily LDS flow volume exceed 26,145 gallons/day.

4) 3-foot Minimum Vertical Freeboard Criteria - the Permittee shall operate and maintain wastewater levels to provide a 3-foot Minimum of vertical freeboard in Tailings Cell 4B. Said measurements shall be made to the nearest 0.1 foot.

b) Quarterly Slimes Drain Recovery Head Monitoring - immediately after the Permittee initiates pumping conditions in the Tailings Cell 4B slimes drain system, quarterly recovery head tests and fluid level measurements will be made in accordance with the requirements of Parts I.D.3 and I.E.7(b) of this Permit and the currently approved Cell 4B BAT, Monitoring, Operations and Maintenance Plan.

c) Liner Maintenance and Repairs - all repairs to the liner shall be completed in accordance with Section 10.4 of the approved August 2009 Geosyntec Consultants Cell 4B Construction Quality Assurance Plan (CQA/QC Plan) as found in Table 6 of this Permit. Repairs shall be performed by qualified liner repair personnel and shall be reported in a Liner Repair Report, certified by a Utah licensed Professional Engineer. The Liner Repair Report shall be submitted for Director approval in accordance with Part I.F.3 of the Permit. Any leak, hole, or other damage to the liner will be reported pursuant to the requirements found in Part I.G.3.

F. REPORTING REQUIREMENTS - The following reporting procedures for routine and compliance reports must be met.

1. Routine Groundwater Monitoring Reports - the Permittee shall submit quarterly monitoring reports of field and laboratory analyses of all well monitoring and samples described in Parts I.E.1, I.E.2, I.E.3, and I.E.5 of this Permit for Director review and approval. Reports shall be submitted according to the following schedule:

Table 7. Groundwater Monitoring Reporting Schedule

Quarter	Period	Due Date
First	January - March	June 1
Second	April - June	September 1
Third	July - September	December 1
Fourth	October - December	March 1

Failure to submit the reports by the due date shall be deemed as noncompliance with this Permit. Said monitoring reports shall include, but are not limited to, the following minimum information:

a) Field Data Sheets - or copies thereof that provide the following: well name, date and time of well purging, date and time of well sampling, type and condition of well pump, depth to groundwater before purging and sampling, calculated well casing volume, volume of water purged before sampling, volume of water collected for analysis, types of sample containers and preservatives.

b) Laboratory Results - or copies thereof that provide the following: date and time sampled, date received by laboratory, and for each parameter analyzed, the following information: laboratory result or concentration, units of measurement, minimum detection limit or reporting limit, analytical method, date of analysis, counting error for radiological analyses, total cations and anions for inorganic analysis.

c) Water Table Contour Map - which provides the location and identity of all wells sampled that quarter, the measured groundwater elevation at each well measured in feet above mean sea level, and isocontour lines to delineate groundwater flow directions observed during the quarterly sampling event.

d) Quality Assurance Evaluation and Data Validation - including a written description and findings of all quality assurance and data validation efforts conducted by the Permittee in compliance with the currently approved Groundwater Monitoring Quality Assurance Plan. Said report shall verify the accuracy and reliability of the groundwater quality compliance data, after evaluation of sample collection techniques and equipment, sample handling and preservation, analytical methods used, etc

e) Non-conformance disclosure - with each quarterly groundwater monitoring report the Permittee shall fully and completely disclose all non-conformance with requirements of the currently approved QAP, mandated by Part I.E.1(a).

f) Electronic Data Files and Format - in addition to written results required for every sampling report, the Permittee shall provide an electronic copy of all laboratory results for groundwater quality monitoring conducted. Said electronic files shall

consist of Comma Separated Values (CSV) format, or as otherwise approved by the Director.

g) Time Concentration Plots - with each quarterly groundwater monitoring report the Permittee shall submit time concentration plots for each monitoring well for the following constituents: chloride, fluoride, sulfate, and uranium.

~~2.~~ Routine DMT Performance Standards Monitoring Report - the Permittee shall provide quarterly monitoring reports of all DMT performance standards monitoring required by Parts I.D.3 and I.E.7 of this Permit. DMT monitoring shall be conducted in compliance with this Permit and the currently approved DMT Monitoring Plan. When a liner repair is performed at any DMT impoundment, a Repair Report is required by the Liner Maintenance Provisions. This Repair Report shall be included with the next quarterly DMT Report. Said monitoring reports and results shall be submitted for Director approval on the schedule provided in Table 7, above.

~~3.~~ Routine Cell 4A and 4B BAT Performance Standards Monitoring Reports - the Permittee shall provide quarterly monitoring reports of all BAT performance standards monitoring required by Parts I E.8 and I.E.12 of this Permit. BAT Monitoring at Cells 4A and 4B shall be conducted in compliance with the currently approved BAT Monitoring, Operations and Maintenance Plan. When a liner repair is performed at Tailings Cell 4A or 4B, a Repair Report is required by Parts I.E.8(c) and I.E.12(c) of the Permit. This Repair Report shall be included with the next quarterly BAT Report. Said monitoring report and results shall be submitted for Director approval on the schedule provided in Table 7 above. At a minimum, reporting of BAT monitoring for Cells 4A and 4B will include:

a) LDS Monitoring - including:

1) Report on the operational status of the LDS pumping and monitoring equipment during the quarter, including identification of any intervals of non-operational status and repairs.

2) Measurement of the weekly fluid head at the lowest point of the secondary membrane.

3) Measurement of the volume of all fluids pumped from the LDS.

b) Measurement of the weekly wastewater fluids elevation in the Cells 4A and 4B to determine freeboard.

c) Slimes Drain Recovery Head Monitoring as per the requirements of Parts I.D.6 and I.E.8(b).

~~4.~~ DMT and BAT Performance Upset Reports - the Permittee shall report any non-compliance with the DMT or BAT performance criteria of Part I.D in accordance with the requirements of Part I.G.3 of this Permit.

~~5.~~ Other Information - when the Permittee becomes aware of a failure to submit any relevant facts in the permit application or submittal of incorrect information in a permit

application or in any report to the Director, the Permittee shall submit such facts or information within 10 calendar days of discovery.

6. Groundwater Monitoring Well As-Built Reports - as-built reports for new groundwater monitoring wells shall be submitted for Director approval within 60 calendar days of well completion, and at a minimum will include the following information:

   a) Geologic Logs - that detail all soil and rock lithologies and physical properties of all subsurface materials encountered during drilling. Said logs shall be prepared by a Professional Geologist licensed by the State of Utah, or otherwise approved beforehand by the Director.

   b) Well Completion Diagram - that detail all physical attributes of the well construction, including:

      1) Total depth and diameters of boring,

      2) Depth, type, diameter, and physical properties of well casing and screen, including well screen slot size,

      3) Depth intervals, type and physical properties of annular filterpack and seal materials used,

      4) Design, type, diameter, and construction of protective surface casing, and

      5) Survey coordinates prepared by a State of Utah licensed engineer or land surveyor, including horizontal coordinates and elevation of water level measuring point, as measured to the nearest 0.01 foot.

   c) Aquifer Permeability Data - including field data, data analysis, and interpretation of slug test, aquifer pump test or other hydraulic analysis to determine local aquifer hydraulic conductivity in each well.

7. White Mesa Seeps and Springs Monitoring Reports - a seeps and springs monitoring report shall be submitted for Director review and approval with the 4th Quarter Routine Groundwater Monitoring Report due on March 1, of each calendar year. Said report shall include, but is not limited to:

   a) Field Measurement Results and Worksheets - for each sample collected that comply with the requirements of Part I.F.1(a) of this Permit,

   b) Laboratory Results - for each sample collected that comply with the requirements of Part I.F.1(b) of this Permit,

   c) Water Table Contour Map - that includes groundwater elevations for each well at the facility and the elevations of the phreatic surfaces observed at each of the seeps and springs sampled. The contour map will include all water level data measurements from seeps, springs, and monitoring wells at the site from the 3rd Quarter Routine Groundwater Monitoring event of each year. The contour map shall be at a map scale, such that, all seeps and springs listed in the approved Sampling Plan for Seeps and Springs in the Vicinity of the White Mesa Uranium Mill and the monitoring wells on site may be seen on one map,

   d) Data Evaluation - and interpretation of all groundwater quality data collected,

e) Quality Assurance Evaluation and Data Validation - for the seeps and springs water quality data that meets the requirements of Part I.F.1(d),

f) Electronic Data Files and Format - that meet the requirements of Part I.F.1(e) of this Permit, and

g) Survey data for the seeps and springs shall be based on an elevation survey, conducted under the direction of and certified by a Utah licensed professional engineer or land surveyor. The survey will include State Plan Coordinates (northings and eastings) and vertical elevations. The surveyed coordinates and elevations of the seeps and springs shall be within 1 foot of the highest point of the saturated seepage face on the day of the survey. This survey data must be obtained before any samples are collected.

~~8.~~ Chemicals Inventory Report - at the time of submittal of an application for Permit renewal the Permittee shall submit a report to update the facilities chemical inventory report. Said report shall include:

a) Identification of all chemicals used in the milling and milling related processes at the White Mesa Mill, and

b) Provide all inventory information gathered pursuant to Part I.E.9,

c) Determination of the total volumes currently in use and historically used, as data is available.

~~9.~~ Tailings Cell Wastewater Quality Reports - all annual wastewater quality sampling and analysis required by Part I.E.10 shall be reported to the Director with the 3rd Quarter groundwater quality report due on December 1, of each calendar year. Said report shall include:

a) Data evaluation and interpretation of all wastewater quality samples collected,

b) All information required by Part I.F.1(a), (b), (d), and (e) of this Permit, and

c) For slimes drain samples, the Permittee shall report depth to wastewater measurements from the water level measurement point. Said wastewater level shall be measured immediately before sample collection.

~~10.~~ Revised Hydrogeologic Report - pursuant to Part IV.D of this Permit, and at least 180 calendar days prior to Permit expiration, the Permittee shall submit for Director approval a revised hydrogeologic report for the facility and surrounding area. Said report shall provide a comprehensive update and evaluation of:

a) Local hydrogeologic conditions in the shallow aquifer, including, but not limited to: local geologic conditions; time relationships and distribution of shallow aquifer head measurements from facility wells and piezometers; local groundwater flow directions; and distribution of aquifer permeability and average linear groundwater velocity across the site, and

b) Well specific groundwater quality conditions measured at facility monitoring wells for all groundwater monitoring parameters required by this Permit, including, but not limited to: temporal contaminant concentrations and trends from each monitoring well; statistical tests for normality of each contaminant and well, including univariate

or equivalent tests; calculation of the mean concentration and standard deviation for each well and contaminant.

~~11.~~ Annual Slimes Drain Recovery Head Report - on or before March 1 of each year the Permittee shall submit for Director approval an annual slimes drain recovery head report for Tailings Cells 2 and 3. Said report shall conform to the requirements of Part I.D.3(b), I.E.7(b), and II.G of this Permit, and:

a) Provide the individual slimes drain recovery head monitoring data for the previous calendar year, including, but not limited to: date and time for the start and end of recovery test, initial water level, final depth to stable water level and equivalent recovery water level elevation.

b) Calculate the average slimes drain recovery head for the previous calendar year.

c) Include a time series chart to show trends of the recovery water level elevations at each slimes drain.

d) Include the results of a quality assurance evaluation and data validation. Said examination shall provide written descriptions and findings that:

1) Evaluate all data collected, data collection methods, and all related calculations required by this Permit, and

2) Verify the accuracy and reliability of both the data and calculations reported.

e) Demonstrate compliance status with the requirements of Part I.D.3(b) and I.E.7(b) of this Permit.

~~12.~~ Decontamination Pads Annual Inspection Report - the New Decontamination Pad and Existing Decontamination Pad will be taken out of service and inspected annually during the second quarter of each year, to ensure integrity of the concrete wash pad surfaces. If physical defects in the wash pad as defined by Part I.D.14 of the Permit are identified during the inspection, repairs shall be made prior to resuming the use of the facility. Said defects include, but are not limited to concrete deterioration, cracking, subsidence, etc. The results of the annual inspection and all repairs will be documented on inspection forms in accordance with the currently approved DMT Monitoring Plan. The inspection forms and documentation of all repairs completed shall be included in the 2nd Quarter DMT Monitoring Report due September 1, of each calendar year.

G. OUT OF COMPLIANCE STATUS

~~1.~~ Accelerated Monitoring Status - is required if the concentration of a pollutant in any compliance monitoring sample exceeds a GWCL in Table 2 of the Permit; the facility shall then:

a) Notify the Director in writing (the Exceedance Notice) within 30 calendar days of receipt of the last analytical data report for samples collected within a quarter, including quarterly and monthly samples, but no later than 60 days after the end of the quarter, and

b) Initiate accelerated sampling of the pollutant as follows:

1) Quarterly Baseline Monitoring Wells - for wells defined by Part I.E.1(b) the Permittee shall initiate monthly monitoring. Monthly monitoring shall begin the month following the month in which the Exceedance Notice is provided to the Director.

2) Semi-annual Baseline Monitoring Wells - for wells defined by Part I.E.1(c) the Permittee shall initiate quarterly monitoring. Quarterly monitoring shall begin the quarter following the quarter in which the Exceedance Notice is provided to the Director.

3) Said accelerated monitoring shall continue at the frequencies defined above until the compliance status of the facility can be determined by the Director.

~~2.~~ Violation of Permit Limits - out-of-compliance status exists when the concentration of a pollutant in two consecutive samples from a compliance monitoring point exceeds a GWCL in Table 2 of this Permit.

~~3.~~ Failure to Maintain DMT or BAT Required by Permit

a) Permittee to Provide Information - in the event that the Permittee fails to maintain DMT or BAT or otherwise fails to meet DMT or BAT standards as required by the Permit, the Permittee shall submit to the Director a notification and description of the failure according to R317-6-6.16(C)(1). Notification shall be given orally within 24-hours of the Permittee's discovery of the failure of DMT or BAT, and shall be followed up by written notification, including the information necessary to make a determination under R317-6-6.16(C)(2), within five calendar days of the Permittee's discovery of the failure of best available technology.

b) The Director shall use the information provided under R317-6-6.16.C(1) and any additional information provided by the Permittee to determine whether to initiate a compliance action against the Permittee for violation of Permit conditions. A compliance action shall not be initiated, if the Director determines that the Permittee has met the standards for an affirmative defense, as specified in R317-6-6.16(C)(3)(c).

c) Affirmative Defense - in the event a compliance action is initiated against the Permittee for violation of Permit conditions relating to best available technology or DMT, the Permittee may affirmatively defend against that action by demonstrating the following:

1) The Permittee submitted notification according to R317-6-6.13,

2) The failure was not intentional or caused by the Permittee's negligence, either in action or in failure to act,

3) The Permittee has taken adequate measures to meet Permit conditions in a timely manner or has submitted to the Director, for the Director's approval, an adequate plan and schedule for meeting Permit conditions, and

4) The provisions of UCA 19-5-107 have not been violated.

~~4.~~ Facility Out of Compliance Status - if the facility is out of compliance, the following is required:

a) The Permittee shall notify the Director of the out of compliance status within 24-hours after detection of that status, followed by a written notice within 5 calendar days of the detection.

b) The Permittee shall continue accelerated sampling pursuant to Part I.G.1, unless the Director determines that other periodic sampling is appropriate, until the facility is brought into compliance.

c) The Permittee shall prepare and submit to the Director within 30 calendar days following the date the Exceedance Notice is submitted to the Director, a plan and a time schedule for assessment of the sources, extent and potential dispersion of the contamination, and an evaluation of potential remedial action to restore and maintain groundwater quality to insure that Permit limits will not be exceeded at the compliance monitoring point and that DMT or BAT will be reestablished.

d) The Director may require immediate implementation of the currently approved contingency plan in order to regain and maintain compliance with the Permit limit standards at the compliance monitoring point or to reestablish DMT or BAT as defined in the Permit.

e) Where it is infeasible to reestablish DMT or BAT as defined in the Permit, the Permittee may propose an alternative DMT or BAT for approval by the Director.

H. COMPLIANCE SCHEDULE REQUIREMENTS. The Permittee will comply with the schedules as described and summarized below:

~~1. Slimes Drain Compliance Plan - Within two (2) years after the effective date of the Permit Renewal (January 19, 2018), the Permittee shall submit a Slimes Drain Compliance Plan for Director Review and Approval. The Plan shall include measures to ensure that wastewater removal from the tailings cell slimes drain is effectively dewatering the tailings to the extent practicable in order to allow placement of final cover within specified time frames. The Plan may incorporate multiple methods to evaluate the effectiveness of tailings cell dewatering and projected timelines for placement of final tailings cell cover, including, but not limited to; 1. Demonstration of decreasing fluid elevation trends as measured by slimes drain recovery tests; 2. Evaluations of head data from piezometers installed in the affected tailings cell demonstrating net dewatering, and 3. Demonstration of decreasing trends in cell settlement monitoring. The Plan shall include specific measures for Tailings Cell 2 and will incorporate Tailings Cell 3 after initiation of dewatering operations.~~

~~2. Installation of New Groundwater Monitoring Wells – the Permittee shall install three new groundwater monitoring wells within 90 calendar days of issuance of the Permit, designated MW-38, MW-39 and MW-40, located southeast of the tailings cells between monitoring wells MW-17 and MW-22. Specifically, the monitoring well locations shall include the three locations identified by the Permittee in Figure 1 attached to the January 2018 License/Permit Statement of Basis. These monitoring wells shall be drilled and installed in accordance with the following requirements:~~

~~a) All new monitoring wells must be properly designed, installed, screened/completed, and developed in accordance with Part I.E.4 of the Permit.~~

~~b) All new monitoring well screens will fully encompass the Burro Canyon Formation saturated zone.~~

~~c) All new monitoring wells will be designed to be monitored for the full suite of monitoring parameters listed in the Permit Table 2.~~

~~d) On or before August 31, 2018 or as otherwise approved by the Director, the Permittee shall submit a monitoring well As- built report for the monitoring wells installed to document the well construction. The As-built report shall comply with the requirements of Part I.F.6.~~

~~e) The Permittee shall provide at least a 14 calendar day written notice prior to field drilling and construction of the monitoring wells to allow the Director to observe all drilling and well installation activities.~~

~~3.~~1. Background Groundwater Quality Report for Wells MW-38, MW-39, MW-40 - within 30 calendar days of Director approval of the new monitoring well As-built Report, required by Part I.H.2, above, the Permittee shall commence a quarterly groundwater sampling program that will comply with the following Permit requirements:

a) Routine groundwater compliance monitoring requirements of Part I.E.1.

b) Well monitoring procedure requirements of Part I.E.5.

c) After completion of eight consecutive quarters of groundwater sampling and analysis of wells MW-38, MW-39, MW-40 ~~required by Part I.H.2~~, the Permittee shall submit a Background Report for Director approval, that will include:

1) Data preparation and statistical analysis of groundwater quality data, including, but not limited to, evaluation of data characteristics and internal data consistency, treatment of non-detectable values, and statistical methods used. These statistics shall be calculated using the Decision Tree/Flowchart used for the previous Background Reports that was conditionally approved by the DRC on August 24, 2007.

2) Shallow aquifer average linear groundwater velocity calculated for the new wells, based on well specific hydraulic conductivity, hydraulic gradient, and effective aquifer porosity.

d) If after review of the report, and the Director determines that additional information is required, the Permittee shall provide all requested information, resolve all issues identified, and re-submit the report for Director review and approval within a timeframe approved by the Director. After approval of this report, the Director will re-open this Permit and establish an appropriate monitoring frequency with the criteria found in Part I.E.1(b). Designation of these wells as "compliance" or "general" monitoring wells will be determined after analysis of the Background Quality Groundwater Report. If the new wells are determined to be compliance wells, the Director will establish Groundwater Compliance Limits in Table 2 for wells MW-38, MW-39, MW-40.

2. Background Groundwater Quality Report for Well MW-24A - within 30 calendar days of Director approval of the new monitoring well As-built Report, the Permittee shall commence a quarterly groundwater sampling program that will comply with the following Permit requirements:

a) Routine groundwater compliance monitoring requirements of Part I.E.1. b)

Well monitoring procedure requirements of Part I.E.5.

c) After completion of eight consecutive quarters of groundwater sampling and analysis of well MW-24A, the Permittee shall submit a Background Report for Director approval, that will include:

1) Data preparation and statistical analysis of groundwater quality data, including, but not limited to, evaluation of data characteristics and internal data consistency, treatment of non-detectable values, and statistical methods used. These statistics shall be calculated using the Decision Tree/Flowchart used for the previous Background Report that was conditionally approved by the DRC on August 24, 2007.

2) Shallow aquifer average linear groundwater velocity calculated for the new well, based on well specific hydraulic conductivity, hydraulic gradient, and effective aquifer porosity.

d) If after review of the report, the Director determines that additional information is required, the Permittee shall provide all requested information, resolve all issues identified, and re-submit the report for Director review and approval within a time frame approved by the Director. After approval of this report, the Director will re-open this Permit and establish Groundwater Compliance Limits in Table 2 for wells MW-24A.

~~4. Revised Groundwater Quality Assurance Plan to Include Dissolved Oxygen – The Permittee shall update the White Mesa Mill Groundwater Quality Assurance Plan (QAP) to include the collection of dissolved oxygen during field sampling (QAP Parts6.2.2 and Attachment 2-3 (Purging Procedures) and field sampling form) and submit a draft copy of the updated QAP including the updated field sampling form to The Director for review and approval within 60 calendar days of issuance of the modified Permit. The Permittee shall commence field sampling of dissolved oxygen within 30 days of the Director approval of the revised QAP in conformance with Part I.E.1d of the Permit.~~

PART II. REPORTING REQUIREMENTS

A. REPRESENTATIVE SAMPLING. Samples taken in compliance with the monitoring requirements established under Part I shall be representative of the monitored activity.

B. ANALYTICAL PROCEDURES. Water sample analysis must be conducted according to test procedures specified under UAC R317-6-6.3.12 unless other test procedures have been specified in this Permit.

C. PENALTIES FOR TAMPERING. The Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this Permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

D. REPORTING OF MONITORING RESULTS. Monitoring results obtained during reporting periods specified in the Permit, shall be submitted to the Director at the following address, no later than the date specified following the completed reporting period:

Division of Waste Management and Radiation Control Utah
Department of Environmental Quality
195 North 1950 West
P.O. Box 144880
Salt Lake City, Utah 84114-4880

The quarterly due dates for reporting are: June 1, September 1, December 1, and March 1.

E. COMPLIANCE SCHEDULES. Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any Compliance Schedule of this Permit shall be submitted no later than 14 calendar days following each schedule date.

F. ADDITIONAL MONITORING BY THE PERMITTEE. If the Permittee monitors any pollutant more frequently than required by this Permit, using approved test procedures as specified in this Permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted. Such increased frequency shall also be indicated.

G. RECORDS CONTENTS.

1. Records of monitoring information shall include:
   a) The date, exact place, and time of sampling, observations, or measurements:
   b) The individual(s) who performed the sampling, observations, or measurements;
   c) The date(s) and time(s) analyses were performed;
   d) The name of the certified laboratory which performed the analyses;
   e) The analytical techniques or methods used; and,
   f) The results of such analyses.

H. RETENTION OF RECORDS. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and copies of all reports required by this Permit, and records of all data used to complete the application for this Permit, for a period of at least five years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

I. NOTICE OF NONCOMPLIANCE REPORTING.

1. The Permittee shall verbally report any noncompliance which may endanger public health or the environment as soon as possible, but no later than 24-hours from the time the Permittee first became aware of the circumstances. The report shall be made to the Utah Department of Environmental Quality 24-hour number, (801) 538-6333, or to the Division of Water Quality, Ground Water Protection Section at (801) 538-6146, during normal business hours (8:00 am - 5:00 pm Mountain Time).

2. A written submission shall also be provided to the Director within five calendar days of the time that the Permittee becomes aware of the circumstances. The written submission shall contain:

   a) A description of the noncompliance and its cause;

   b) The period of noncompliance, including exact dates and times;

   c) The estimated time noncompliance is expected to continue if it has not been corrected; and,

   d) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

3. Reports shall be submitted to the addresses in Part II.D, Reporting of Monitoring Results.

J. OTHER NONCOMPLIANCE REPORTING. Instances of noncompliance not required to be reported within 5 calendar days, shall be reported at the time that monitoring reports for Part II.D are submitted.

K. INSPECTION AND ENTRY. The Permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the Permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and,

4. Sample or monitor at reasonable times, for the purpose of assuring Permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

PART III. COMPLIANCE RESPONSIBILITIES

A. DUTY TO COMPLY. The Permittee must comply with all conditions of this Permit. Any Permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and re-issuance, or modification; or for denial of a permit renewal application. The Permittee shall give advance notice to the Director of the Division of Water Quality of any planned changes in the permitted facility or activity which may result in noncompliance with Permit requirements.

B. PENALTIES FOR VIOLATIONS OF PERMIT CONDITIONS. The Act provides that any person who violates a Permit condition implementing provisions of the Act is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates Permit conditions is subject to a fine not exceeding $25,000 per day of violation. Any person convicted under Section 19-5-115 of the Act a second time shall be punished by a fine not exceeding $50,000 per day. Nothing in this Permit shall be construed to relieve the Permittee of the civil or criminal penalties for noncompliance.

C. NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE. It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Permit.

D. DUTY TO MITIGATE. The Permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this Permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. PROPER OPERATION AND MAINTENANCE. The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of the Permit.

PART IV. GENERAL REQUIREMENTS

A. PLANNED CHANGES. The Permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required when the alteration or addition could significantly change the nature of the facility or increase the quantity of pollutants discharged.

B. ANTICIPATED NONCOMPLIANCE. The Permittee shall give advance notice of any planned changes in the permitted facility or activity which may result in noncompliance with Permit requirements.

C. PERMIT ACTIONS. This Permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and re-issuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

D. DUTY TO REAPPLY. If the Permittee wishes to continue an activity regulated by this Permit after the expiration date of this Permit, the Permittee must apply for and obtain a new permit. The application should be submitted at least 180 calendar days before the expiration date of this Permit.

E. DUTY TO PROVIDE INFORMATION. The Permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this Permit.

F. OTHER INFORMATION. When the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Director, it shall promptly submit such facts or information.

G. SIGNATORY REQUIREMENTS. All applications, reports or information submitted to the Director shall be signed and certified.

1. All permit applications shall be signed as follows:
    a) For a corporation: by a responsible corporate officer;
    b) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.
    c) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

2. All reports required by the Permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
    a) The authorization is made in writing by a person described above and submitted to the Director, and,

b) The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).

3. Changes to Authorization. If an authorization under Part IV.G.2. is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part IV.G.2 must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. PENALTIES FOR FALSIFICATION OF REPORTS. The Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this Permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

I. AVAILABILITY OF REPORTS. Except for data determined to be confidential by the Permittee, all reports prepared in accordance with the terms of this Permit shall be available for public inspection at the offices of the Director. As required by the Act, permit applications, permits, effluent data, and groundwater quality data shall not be considered confidential.

J. PROPERTY RIGHTS. The issuance of this Permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

K. SEVERABILITY. The provisions of this Permit are severable, and if any provision of this Permit, or the application of any provision of this Permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Permit, shall not be affected thereby.

L. TRANSFERS. This Permit may be automatically transferred to a new Permittee if:

1. The current Permittee notifies the Director at least 30 calendar days in advance of the proposed transfer date;

2. The notice includes a written agreement between the existing and new Permittee containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,

3. The Director does not notify the existing Permittee and the proposed new Permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.

M. STATE LAWS. Nothing in this Permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, penalties established pursuant to any applicable state law or regulation under authority preserved by Section 19-5-115 of the Act.

N. REOPENER PROVISIONS. This Permit may be reopened and modified (following proper administrative procedures) to include the appropriate limitations and compliance schedule, if necessary, if one or more of the following events occurs:

1. If new ground water standards are adopted by the Board, the Permit may be reopened and modified to extend the terms of the Permit or to include pollutants covered by new standards. The Permittee may apply for a variance under the conditions outlined in R317-6-6.4(D).

2. Changes have been determined in background groundwater quality.

3. The Director determines permit modification is necessary to protect human health or the environment.

Attachment 6 – Final Modified Groundwater Permit UGW370004 – Blackline

Permit No. UGW370004

STATE OF UTAH
DIVISION OF WATER QUALITY
DEPARTMENT OF ENVIRONMENTAL QUALITY
UTAH WATER QUALITY BOARD
SALT LAKE CITY, UTAH 84114-4870

GROUND WATER DISCHARGE PERMIT

In compliance with the provisions of the Utah Water Quality Act, Title 19, Chapter 5, Utah Code Annotated 1953, as amended, the Act,

Energy Fuels Resources (USA) Inc.
225 Union Boulevard, Suite 600
Lakewood, CO 80228

is granted a ground water discharge permit for the operation of a uranium milling and tailings disposal facility located approximately 6 miles south of Blanding, Utah. The facility is located in Sections 28, 29, 32, and 33, Township 37 South, Range 22 East, Salt Lake Base and Meridian, San Juan County, Utah. Within San Juan County, the Facility is located on fee land and mill site claims, covering approximately 5,415 acres, encompassing all or part of Sections 21, 22, 27, 28, 29, 32, and 33 of Township 37 South, Range 22 East, and Sections 4, 5, 6, 8, 9, and 16 of Township 38 South, Range 22 East, Salt Lake Base and Meridian.

The permit is based on representations made by the Permittee and other information contained in the administrative record. It is the responsibility of the Permittee to read and understand all provisions of this Permit.

The milling and tailings disposal facility shall be operated and revised in accordance with conditions set forth in the Permit and the Utah Ground Water Quality Protection Regulations.

This Ground Water Quality Discharge Permit amends and supersedes all other Ground Water Discharge Permits for this facility issued previously.

Permit Modified on February 22, 2021

This Permit shall become effective on January 19, 2018.

This Permit shall expire on January 19, 2023.

Signed this _____ day of _____, 2021.

_____
Ty L. Howard, Director
Division of Waste Management and Radiation Control

Table of Contents

List of Tables

PART I. SPECIFIC PERMIT CONDITIONS

A. GROUND WATER CLASSIFICATION - the groundwater classification of the shallow aquifer under the tailings facility has been determined on a well-by-well basis, as defined in Table 1, below:

Table 1. Ground Water Classification

	Class II Groundwater Average TDS (mg/L) DUSA Data				**Class III Groundwater** Average TDS (mg/L) DUSA Data		
Well ID	N[1]	Average Concentration[2]	Standard Deviation[2]	Well ID	N[1]	Average Concentration[2]	Standard Deviation[2]
MW-1[3]	77	1,273	93	MW-2	77	3,050	252
MW-5	82	2,058	170	MW-12	61	3,894	241
MW-11	71	1,844	178	MW-14	51	3,592	176
MW-30	42	1601	100	MW-15	47	3,857	243
				MW-17	22	4,444	321
				MW-18[3]	18	2,605	297
				MW-19[3]	22	2,457	900
				MW-20[4]	23	5,192	475
				MW-22[4]	23	7,633	656
				MW-3A	40	5,684	184
				MW-23	33	3,419	408
				MW-24	32	4,080	268
				MW-25[5]	46	2,763	97
				MW-26[6]	60	3,106	231
				MW-27[7]	45	1,067	56
				MW-28	32	3,633	101
				MW-29	40	4,332	118
				MW-31[7]	90	1,395	138
				MW-32[8]	32	3,703	166
				MW-35	24	3,725	354
				MW-36	21	4,344	154
				MW-37	21	3,881	108

Footnotes:

1) N = Number of Samples
2) Based on historic total dissolved solids (TDS) data provided by the Permittee for period between October, 1979 and September 2016. This data was obtained from the Permittee's background groundwater quality reports..
3) Background concentrations of uranium in well MW-18 (55.1 µg/L) and thallium in MW-19 (2.1 µg/L) exceed the GWQS, 30 µg/L and 2.0 µg/L, respectively. Therefore these wells have been classified as Class III groundwater rather than Class II groundwater.
4) Wells MW-1, MW-18, MW-19, MW-20, MW-22, and TW4-24 are not point of compliance monitoring wells, but instead are general monitoring wells as per Part I.E.2. Average concentrations and standard deviations for wells MW-20 and MW-22 were provided by the Permittee for the period between June, 2008 and February, 2010. This data was obtained from the Permittee's Background Groundwater Quality Report for wells MW-20 and MW-22 dated June, 2010.
5) Background concentration of manganese in well MW-25 (1,806 µg/L) exceeds the GWQS, therefore well MW-25 has been classified as Class III groundwater rather than Class II groundwater.
6) Well MW-26 was originally named TW4-15 and was installed as part of the chloroform contaminant investigation at the facility. Under this Permit, MW-26 is defined as a Point of Compliance (POC) well for the tailings cells (see Part I.E.1).
7) Background concentrations of uranium in well MW-27 (34 µg/L) and selenium in MW-31 (71 µg/L) exceed the GWQS, therefore these wells have been classified as Class III groundwater rather than Class II groundwater.
8) Well MW-32 was originally named TW4-17 and was installed as part of the chloroform contaminant investigation at the facility. Under this Permit it is included as a POC well for the tailings cells in Part I.E.1.

B. BACKGROUND WATER QUALITY - based on groundwater samples collected through June 2007 for existing wells (MW-1, MW-2, MW-3, MW-5, MW-11, MW-12, MW-14, MW-15, MW-17, MW-18, MW-19, MW-26, and MW-32) and through December 2007 for new wells (MW-3A, MW-23, MW 24, MW-25, MW-27, MW-28, MW-29, MW-30 and MW-31), the upper boundary of background groundwater quality

is determined on a well-by-well basis, pursuant to Environmental Protection Agency (EPA) guidance, and documented in the Permittee's background groundwater quality reports dated October 2007, April 30, 2008, and May 1, 2014.

C. PERMIT LIMITS - the Permittee shall comply with the following permit limits:

1. Ground Water Compliance Limits - contaminant concentrations measured in each monitoring well listed in Table 2 below shall not exceed the Ground Water Compliance Limits (GWCL) defined in Table 2, below. Groundwater quality in the wells listed in Table 2 below must at all times meet all the applicable GWQS and ad hoc GWQS defined in R317-6 even though this permit does not require monitoring for each specific contaminant.

2. Tailings Cell Operations - only 11.e.(2) by-product material authorized by Utah Radioactive Materials License No. UT-2300478 (hereafter License) shall be discharged to or disposed of in the tailings ponds.

3. Prohibited Discharges - discharge of other compounds such as paints, used oil, antifreeze, pesticides, or any other contaminant not defined as 11e.(2) material is prohibited.

Table 2. Groundwater Compliance Limits (GWCL)

		Upgradient Well	Down or Lateral Gradient Wells										
		MW-27 (Class III)	**MW-2** (Class III)	**MW-3A** (Class III)	**MW-5** (Class II)	**MW-11** (Class II)	**MW-12** (Class III)	**MW-14** (Class III)	**MW-15** (Class III)	**MW-17** (Class III)	**MW-23** (Class III)	**MW-24** (Class III)	**MW-25** (Class III)
Contaminant	**GWQS** [1]	GWCL	GWCL [6]	GWCL	GWCL	GWCL [7]	GWCL	GWCL	GWCL	GWCL	GWCL	GWCL	GWCL
Nutrients (mg/L)													
Ammonia (as N)	25 [2]	12.5	12.5	0.6	1.02	6.25	0.6	12.5	0.21	0.26	0.6	7	0.77
Nitrate + Nitrite (as N)	10	5.6	0.12	1.3	2.5	2.5	5	5	0.27	5 [8]	5	5	5
Heavy Metals (µg/L)													
Arsenic	50	25	25	25	17	15	25	25	25	25	25	17	25
Beryllium	4	2	2	2	1	1	2	2	2	2	2	2	2
Cadmium	5	2.5	2.5	3.55	2	1.25	7	2.5	2.5	2.5	2.5	6.43	1.6
Chromium	100	50	50	50	25	25	50	50	50	50	50	50	50
Cobalt	730 [5]	365	365	365	182.5	182.5	365	365	365	365	365	365	365
Copper	1,300	650	650	650	325	325	650	650	650	650	650	650	650
Iron	11,000 [5]	5,500	151.6	5,500	2,750	2,750	5,500	5,500	81.7	5,500	5,500	4,162	5,500
Lead	15	7.5	7.5	7.5	4.1	3.75	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Manganese	800 [4]	400	378.76	383	376.74	237	2,088.80	2,230.30	400	915.4	550	7,507	1,806
Mercury	2	1	1	1	1	0.5	1	1	1	1	1	1	1
Molybdenum	40 [2]	20	20	20	10	10	20	25	30	20	20	20	20
Nickel	100 [3]	50	60	105	44.1	46.2	60	50	97	50	50	50	50
Selenium	50	25	26.6	109.58	12.5	12.5	39	25	128.7	25	25	25	25
Silver	100	50	50	50	25	25	50	50	50	50	50	50	50
Thallium	2	1	1	1.4	0.5	0.5	1	1	1	1	1.5	2.01	1.1
Tin	17,000 [4]	8,500	8,500	8,500	4,250	4,250	8,500	8,500	8,500	8,500	8,500	8,500	8,500
Uranium	30 [3]	34	18.45	35	7.5	7.5	23.5	98	65.7	46.66	32	11.9	7.25
Vanadium	60 [4]	30	30	30	15	15	30	30	40	30	30	30	30
Zinc	5,000	2,500	2,500	155	87.38	1,250	2,500	35.04	2,500	2,500	74	2,500	2,500
Radiologics (pCi/L)													
Gross Alpha	15	2	3.2	7.5	3.75	3.75	7.5	7.5	7.5	2.8	2.86	7.5	7.5
Volatile Organic Compounds (µg/L)													
Acetone	700 [4]	350	350	350	175	175	350	350	350	350	350	350	350
Benzene	5	2.5	2.5	2.5	1.25	1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5
2-Butanone (MEK)	4,000 [2]	2,000	2,000	2,000	1,000	1,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Carbon Tetrachloride	5	2.5	2.5	2.5	1.25	1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Chloroform	70 [4]	35	35	35	17.5	17.5	35	35	35	35	35	35	35
Chloromethane	30 [2]	15	15	9.4	7.5	7.5	15	15	15	15	5.7	15	15
Dichloromethane	5 [3]	2.5	2.5	2.5	1.25	1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Naphthalene	100 [2]	50	50	50	25	25	50	50	50	50	50	50	50
Tetrahydrofuran	46 [4]	23	23	23	11.5	11.5	23	23	23	23	23	23	23
Toluene	1,000	500	500	500	250	250	500	500	500	500	500	500	500
Xylenes (total)	10,000	5,000	5,000	5,000	2,500	2,500	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Others													
Field pH (S.U.)	6.5 - 8.5	6.47 - 8.5	6.72 - 8.5	5.84 - 8.5	7.04 - 8.5	6.25 - 8.5	5.86 - 8.5	5.42 - 8.5	5.88 - 8.5	6.27 - 8.5	5.97 - 8.5	5.03 - 8.5	5.77 - 8.5
Fluoride (mg/L)	4	0.85	0.43	1.6	1.42	1	2	0.22	2	2	2	0.47	0.42
Chloride (mg/L)		38	20	70	71	39.16	80.5	27	57.1	46.8	10	71	35
Sulfate (mg/L)		462	2,147	3,949.27	1,518	1,309	2,560	2,330	2,549.02	2,860	2,524	2,903	1,933
TDS (mg/L)		1,185.72	3,800	6,028	2,575	2,528	4,323	4,062	4,530	5,085.42	3,670	4,450	2,976

Table 2 Continued. Groundwater Compliance Limits (GWCL)

		Down or Lateral Gradient Wells								
		MW-26 (Class III)	**MW-28** (Class III)	**MW-29** (Class III)	**MW-30** (Class II)	**MW-31** (Class III)	**MW-32** (Class III)	**MW-35** (Class III)	**MW-36** (Class III)	**MW-37** (Class III)
Contaminant	**GWQS** [1]	GWCL	GWCL	GWCL	GWCL	GWCL	GWCL [7]	GWCL	GWCL	GWCL
Nutrients (mg/L)										
Ammonia (as N)	25 [2]	0.92	12.5	1.3	0.14	12.5	1.17	0.14	12.5	12.5
Nitrate + Nitrite (as N)	10	0.62	5	5	2.5	5	5	5	5	2.22
Heavy Metals (µg/L)										
Arsenic	50	25	21	25	12.5	25	25	25	25	25
Beryllium	4	2	2	2	1	2	2	2	2	2
Cadmium	5	2.5	5.2	2.5	1.25	2.5	4.72	2.5	2.5	2.5
Chromium	100	50	50	50	25	50	50	50	50	50
Cobalt	730 [5]	365	47	365	182.5	365	75.21	365	365	365
Copper	1,300	650	650	650	325	650	650	650	650	650
Iron	11,000 [5]	2,675.83	299	1,869	2,750	5,500	14,060	330.08	5,500	5,500
Lead	15	7.5	7.5	7.5	3.75	7.5	7.5	7.5	7.5	7.5
Manganese	800 [4]	1,610	1,837	5,624	61	400	5,594.90	290.68	400	400
Mercury	2	1	1	1	0.5	1	1	1	1	1
Molybdenum	40 [2]	20	20	20	10	20	20	20	20	20
Nickel	100 [3]	50	50	50	25	50	94	50	50	50
Selenium	50	25	11.1	25	53.6	119.4	25	25	307.42	25
Silver	100	50	50	50	25	50	50	50	50	50
Thallium	2	1	1	1.2	0.5	1	1	1	1.35	1
Tin	17,000 [4]	8,500	8,500	8,500	4,250	8,500	8,500	8,500	8,500	8,500
Uranium	30 [3]	119	4.9	15	9.82	15	5.26	26.76	26.42	18.08
Vanadium	60 [4]	30	30	30	15	30	30	30	30	30
Zinc	5,000	2,500	83	30	1,250	2,500	230	2,500	2,500	41.25
Radiologics (pCi/L)										
Gross Alpha	15	4.69	2.42	2	3.75	7.5	7	7.5	7.5	4.2
Volatile Organic Compounds (µg/L)										
Acetone	700 [4]	350	350	350	175	350	350	350	350	350
Benzene	5	2.5	2.5	2.5	1.25	2.5	2.5	2.5	2.5	2.5
2-Butanone (MEK)	4,000 [2]	2,000	2,000	2,000	1,000	2,000	2,000	2,000	2,000	2,000
Carbon Tetrachloride	5	5	2.5	2.5	1.25	2.5	2.5	2.5	2.5	2.5
Chloroform	70 [4]	70	35	35	17.5	35	35	35	35	35
Chloromethane	30 [2]	30	4.6	15	7.5	6.1	15	15	15	15
Dichloromethane	5 [3]	5	2.5	2.5	1.25	2.5	2.5	2.5	2.5	2.5
Naphthalene	100 [2]	50	50	50	25	50	50	50	50	50
Tetrahydrofuran	46 [4]	23	23	23	11.5	23	23	23	23	23
Toluene	1,000	500	500	500	250	500	500	500	500	500
Xylenes (total)	10,000	5,000	5,000	5,000	2,500	5,000	5,000	5,000	5,000	5,000
Others										
Field pH (S.U.)	6.5 - 8.5	5.61 - 8.5	5.58 - 8.5	5.94 - 8.5	6.47 - 8.5	6.23 - 8.5	5.31 - 8.5	6.15 - 8.5	6.49 - 8.5	6.61 - 8.5
Fluoride (mg/l)	4	2	0.73	1.1	0.51	2	2	0.42	0.35	0.31
Chloride (mg/l)		58.31	105	41	128	143	35.39	69.12	73	57.3
Sulfate (mg/l)		2,082.06	2,533	2,946	972	993	2,556.70	2,400	3,146.21	2,927.65
TDS (mg/l)		3,284.19	3,852	4,570	1,918	2,132	3,960	4,821.88	5,470	4,866.25

Footnotes:

1) Utah Ground Water Quality Standards (GWQS) as defined in UAC R317-6, Table 2. Ad hoc GWQS also provided herein, as noted, and as allowed by UAC R317-6-2.2.
2) Ad hoc GWQS for ammonia (as N), molybdenum, 2-Butanone (MEK), chloromethane, and naphthalene based on EPA drinking water lifetime health advisories.
3) Ad hoc GWQS for nickel, uranium, and dichloromethane (methylene chloride, CAS No. 75-09-2) based on final EPA drinking water maximum concentration limits (MCL).
4) Ad hoc GWQS for manganese, tin, vanadium, acetone, chloroform (CAS No. 67-66-3), and tetrahydrofuran based on drinking water ad hoc lifetime health advisories prepared by or in collaboration with EPA Region 8 staff.
5) Ad hoc GWQS for cobalt and iron based on EPA Region 3 Risk Based Concentration limits for tap water.
6) Ground Water Compliance Limits (GWCL) were set after Director review and approval of two Background Groundwater Quality Reports dated October_2007 and April 30, 2008 from the Permittee.
7) GWCLs listed in the table above are those proposed by the Permittee in the October 2007, April 30, 2008, and May 1, 2014 EFR Background Groundwater Quality Reports, and approved by the Director and also include values modified by the Director after review of GWCLs proposed in the Permittee's October 2007, April 30, 2008, May 1, 2014 Background Groundwater Quality Reports. For wells MW-2, MW-3, MW-5, MW-11, MW-12, MW-14, MW-15, MW-17, MW-26, and MW-32; these modifications are documented in the June 16, 2008 URS Completeness Review for the October, 2007 Revised Background Groundwater Quality Report for Existing Wells. For wells MW-3A, MW-23, MW-24, MW-25, MW-27, MW-28, MW-29, MW-30, and MW-31; these modifications are documented in the June 24, 2008 DRC Findings Memorandum regarding the April 30, 2008 Revised Background Groundwater Quality Report for New Wells. For wells MW-35, MW-36, MW-37; these modifications are documented in the July 14, 2014 DRC Findings Memorandum regarding the May 1, 2014 Background Groundwater Quality Report for Wells MW-35, MW-36, and MW-37

D. DISCHARGE MINIMIZATION AND BEST AVAILABLE TECHNOLOGY STANDARDS - the tailings disposal facility must be built, operated, and maintained according to the following Discharge Minimization Technology (DMT) and Best Available Technology (BAT) standards:

1. DMT Design Standards for Existing Tailings Cells 1, 2, and 3 - shall be based on existing construction as described by design and construction information provided by the Permittee, as summarized in Table 3 below for Tailings Cells 1, 2, and 3:

Table 3. DMT Engineering Design and Specifications

Tailings Cell	Report Type	Engineering Report	Design Figures	Construction Specifications
Cell 1	Design	June, 1979 D'Appolonia Consulting Engineers, Inc (1)	Appendix A, Sheets 2, 4, 8, 9, 12-15	Appendix B
Cell 2	Design	June, 1979 D'Appolonia Consulting Engineers, Inc (1)	Appendix A, Sheets 2, 4, 7-10, 12-15	Appendix B
	As-Built	February, 1982 D'Appolonia Consulting Engineers, Inc (2)	Figures 1, 2, and 11	N/A
Cell 3	Design	May, 1981 D'Appolonia Consulting Engineers, Inc (3)	Sheets 2-5	Appendix B
	As-Built	March, 1983 Energy Fuels Nuclear, Inc. (4)	Figures 1-4	N/A

Footnotes:

1) D'Appolonia Consulting Engineers, Inc., June, 1979, "Engineers Report Tailings Management System White Mesa Uranium Project Blanding, Utah Energy Fuels Nuclear, Inc. Denver, Colorado", unpublished consultants report, approximately 50 pp., 2 figures, 16 sheets, 2 appendices.
2) D'Appolonia Consulting Engineers, Inc., February, 1982, "Construction Report Initial Phase - Tailings Management System White Mesa Uranium Project Blanding, Utah Energy Fuels Nuclear, Inc. Denver, Colorado", unpublished consultants report, approximately 7 pp., 6 tables, 13 figures, 4 appendices.
3) D'Appolonia Consulting Engineers, Inc., May, 1981, "Engineer's Report Second Phase Design - Cell 3 Tailings Management System White Mesa Uranium Project Blanding, Utah Energy Fuels Nuclear, Inc. Denver, Colorado", unpublished consultants report, approximately 20 pp., 1 figure, 5 sheets, and 3 appendices.
4) Energy Fuels Nuclear, Inc., March, 1983, "Construction Report Second Phase Tailings Management System White Mesa Uranium Project Energy Fuels Nuclear, Inc.", unpublished company report, 18 pp., 3 tables, 4 figures, 5 appendices.

a) Tailings Cell 1 - consisting of the following major design elements:

1) Cross-valley Dike and East Dike - constructed on the south side of the pond of native granular materials with a 3:1 slope, a 20-foot crest width, and a crest elevation of about 5,620 ft above mean sea level (amsl). A dike of similar design was constructed on the east margin of the pond, which forms a continuous earthen structure with the south dike. The remaining interior slopes are cut-slopes at 3:1 grade.

2) Liner System - including a single 30 mil PVC flexible membrane liner (FML) constructed of solvent welded seams on a prepared sub-base. Top elevation of the FML liner was 5,618.5 ft amsl on both the south dike and the north cut-slope. A protective soil cover layer was constructed immediately over the FML with a thickness of 12-inches on the cell floor and 18-inches on the interior sideslope.

3) Crushed Sandstone Underlay - immediately below the FML a nominal 6-inch thick layer of crushed sandstone was prepared and rolled smooth as a FML sub-base layer. Beneath this underlay, native sandstone and other foundation materials were graded to drain to a single low point near the upstream toe of the south cross-valley dike. Inside this layer, an east-west oriented pipe was installed to gather fluids at the upstream toe of the cross-valley dike.

b) Tailings Cell 2 - which consists of the following major design elements:

1) Cross-valley Dike - constructed at the south margin of Cell 2 of native granular materials with a 3:1 slope, a 20-foot crest width, and crest elevation of about 5,615 ft amsl. The east

and west interior slopes consist of cut-slopes with a 3:1 grade. The Cell 1 south dike forms the north margin of Cell 2, with a crest elevation of 5,620 ft amsl.

2) Liner System - includes a single 30 mil PVC FML liner constructed of solvent welded seams on a prepared sub-base, and overlain by a slimes drain collection system. Top elevation of the FML liner in Cell 2 is 5,615.0 ft and 5,613.5 ft amsl on the north and south dikes, respectively. Said Cell 2 FML liner is independent of all other disposal cell FML liners. Immediately above the FML, a nominal 12-inch (cell floor) to 18-inch (inside sideslope) soil protective blanket was constructed of native sands from on-site excavated soils.

3) Crushed Sandstone Underlay - immediately below the FML a nominal 6-inch thick layer of crushed sandstone was prepared and rolled smooth as a FML sub-base layer. Beneath this underlay, native sandstone and other foundation materials were graded to drain to a single low point near the upstream toe of the south cross-valley dike. Inside this layer, an east-west oriented pipe was installed to gather fluids at the upstream toe of the cross-valley dike.

4) Slimes Drain Collection System immediately above the FML a nominal 12-inch thick protective blanket layer was constructed of native silty-sandy soil. On top of this protective blanket, a network of 1.5-inch PVC perforated pipe laterals was installed on a grid spacing interval of about 50-feet. These pipe laterals gravity drain to a 3-inch diameter perforated PVC collector pipe which also drains toward the south dike and is accessed from the ground surface via a 24-inch diameter, vertical non-perforated HDPE access pipe. Each run of lateral drainpipe and collector piping was covered with a 12 to 18-inch thick berm of native granular filter material. At cell closure, leachate head inside the pipe network will be removed via a submersible pump installed inside the 24-inch diameter HDPE access pipe.

c) Tailings Cell 3 - consisting of the following major design elements:

1) Cross-valley Dike - constructed at the south margin of Cell 3 of native granular materials with a 3:1 slope, a 20-foot crest width, and a crest elevation of 5,610 ft amsl. The east and west interior slopes consist of cut-slopes with a 3:1 grade. The Cell 2 south dike forms the north margin of Cell 3, with a crest elevation of 5,615 ft amsl.

2) Liner System - includes a single 30 mil PVC FML liner constructed of solvent welded seams on a prepared sub-base, and overlain by a slimes drain collection system. Top elevation of the FML liner in Cell 3 is 5,613.5 ft and 5,608.5 ft amsl on the north and south dikes, respectively. Said Cell 3 FML liner is independent of all other disposal cell FML liners.

3) Crushed Sandstone Underlay - immediately below the FML a nominal 6-inch thick layer of crushed sandstone was prepared and rolled smooth as a FML sub-base layer. Beneath this underlay, native sandstone and other foundation materials were graded to drain to a single low point near the upstream toe of the south cross-valley dike. Inside this layer, an east-west oriented pipe was installed to gather fluids at the upstream toe of the cross-valley dike.

4) Slimes Drain Collection Layer and System - immediately above the FML, a nominal 12-inch (cell floor) to 18-inch (inside sideslope) soil protective blanket was constructed of native sands from on-site excavated soils (70%) and dewatered and cyclone separated tailings sands from the mill (30%). On top of this protective blanket, a network of 3-inch PVC perforated pipe laterals was installed on approximately 50-foot centers. This pipe network gravity drains to a 3-inch perforated PVC collector pipe which also drains toward the south dike, where it is accessed from the ground surface by a 12-inch diameter, inclined HDPE access pipe. Each run of the 3-inch lateral drainpipe and collector pipe was covered with a 12 to 18-inch thick berm of native granular filter media. At cell closure, leachate

head inside the pipe network will be removed via a submersible pump installed inside the 12-inch diameter inclined access pipe.

2. Existing Tailings Cell Construction Authorized - tailings disposal in existing Tailings Cells 1, 2, and 3 is authorized by this Permit as defined in Table 3 and Part I.D.1, above. Authorized operation and maximum disposal capacity in each of the existing tailings cells shall not exceed the levels authorized by the License. Under no circumstances shall the freeboard be less than three feet, as measured from the top of the FML. Any modification by the Permittee to any approved engineering design parameter at these existing tailings cells shall require prior Director approval, modification of this Permit, and issuance of a construction permit.

3. Existing Facility DMT Performance Standards - the Permittee shall operate and maintain certain mill site facilities and the existing tailings disposal cells to minimize the potential for wastewater release to groundwater and the environment, including, but not limited to the following additional DMT compliance measures:

   a) DMT Monitoring Wells at Tailings Cell 1 - at all times the Permittee shall operate and maintain Tailings Cell 1 to prevent groundwater quality conditions in any nearby monitoring well from exceeding any Ground Water Compliance Limit established in Table 2 of this Permit.

   b) Tailings Cells 2 and 3 - including the following performance criteria:

      1) Slimes Drain Maximum Allowable Head - the Permittee shall at all times maintain the average wastewater recovery head in the slimes drain access pipe to be as low as reasonably achievable (ALARA) in each tailings disposal cell, in accordance with the currently approved DMT Monitoring Plan.

      2) Quarterly Slimes Drain Recovery Test - effective July 11, 2011, the Permittee shall conduct a quarterly slimes drain recovery test at each tailings cell slimes drain that meets the following minimum requirements:

         i. Includes a duration of at least 90-hours, as measured from the time that pumping ceases, and

         ii. Achieves a stable water level at the end of the test, as measured by three consecutive hourly water level depth measurements, with no change in water level, as measured to the nearest 0.01 foot.

      3) Annual Slimes Drain Compliance – The Permittee shall submit an annual report on or before March 1 following the reporting year which includes but is not limited to; 1) Monthly volumes of fluid pumped from the slimes drain for each applicable tailings disposal cell; 2) The results of all quarterly slimes drain recovery tests; 3) A calculation of average annual wastewater recovery elevation in the slimes drain access pipe, and; 4) The annual report shall include an assessment and verification that the maximum fluid volume which could practicably be extracted from the slimes drain in accordance with the systems in place was removed.

   c) Maximum Tailings Waste Solids Elevation - upon closure of any tailings cell, the Permittee shall ensure that the maximum elevation of the tailings waste solids does not exceed the top of the FML liner.

   d) DMT Monitoring Wells - at all times the Permittee shall operate and maintain Tailings Cells 2 and 3 to prevent groundwater quality conditions in any nearby monitoring well from exceeding any Ground Water Compliance Limit established in Table 2 of this Permit.

   e) Feedstock Storage Area - open-air or bulk storage of all feedstock materials at the facility awaiting mill processing shall be limited to the eastern portion of the mill site area described in Table 4, below. Storage of feedstock materials at the facility outside this area, shall meet the

requirements in Part I.D.11. At the time of mill site closure, the Permittee shall reclaim and decommission the Feedstock Storage Area in compliance with an approved Reclamation Plan. The Permittee shall maintain a minimum 4-foot wide buffer zone on the inside margin of the Feedstock Storage Area between the storage area fence and the Feedstock which shall be absent of feed material in order to assure that materials do not encroach on the boundary of the storage area.

Table 4. Feedstock Storage Area Coordinates (1)

Corner	Northing (ft)	Easting (ft)
Northeast	323,595	2,580,925
Southeast	322,140	2,580,920
Southwest	322,140	2,580,420
West 1	322,815	2,580,410
West 2	323,040	2,580,085
West 3	323,120	2,580,085
West 4	323,315	2,580,285
West 5	323,415	2,579,990
Northwest	323,600	2,579,990

Footnote:
1) Approximate State Plane Coordinates beginning from the extreme northeast corner and progressing clockwise around the feedstock area (from 6/22/01 DUSA Response, Attachment K, Site Topographic Map, Revised June, 2001.)

f) Mill Site Chemical Reagent Storage - for all chemical reagents stored at existing storage facilities and held for use in the milling process, the Permittee shall provide secondary containment to capture and contain all volumes of reagent(s) that might be released at any individual storage area. Response to spills, cleanup thereof, and required reporting shall comply with the provisions of the approved Emergency Response Plan as found in the currently approved Stormwater Best Management Practices Plan. For any new construction of reagent storage facilities, said secondary containment and control shall prevent any contact of the spilled or otherwise released reagent or product with the ground surface.

4. Best Available Technology Requirements for New Construction - any construction, modification, or operation of new waste or wastewater disposal, treatment, or storage facilities shall require submittal of engineering design plans and specifications, and prior Director review and approval. All engineering plans or specifications submitted shall demonstrate compliance with all Best Available Technology (BAT) requirements stipulated by the Utah Ground Water Quality Protection Regulations (UAC R317-6). Upon Director approval this Permit may be re-opened and modified to include any necessary requirements.

5. BAT Design Standards for Tailings Cell 4A - the BAT design standard for Tailings Cell 4A shall be defined by and construction conform to the requirements of the June 25, 2007 Director design approval letter for the relining of former existing Tailings Cell No. 4A, and as summarized by the engineering drawings, specifications, and description in Table 5, below:

Table 5. Approved Tailings Cell 4A Engineering Design and Specifications

Engineering Drawings			
Name	Date	Revision No.	Title
Sheet 1 of 7	June, 2007		Title Sheet
Sheet 2 of 7	June 15, 2007	Rev. 1	Site Plan
Sheet 3 of 7	June 15, 2007	Rev. 1	Base Grading Plan
Sheet 4 of 7	June 15, 2007	Rev. 1	Pipe Layout Plan
Sheet 5 of 7	June 15, 2007	Rev. 1	Lining System Details I
Sheet 6 of 7	June 15, 2007	Rev. 1	Lining System Details II
Sheet 7 of 7	June 15, 2007	Rev. 1	Lining System Details III

Figure 1	August, 2008	-	Spillway Splash Pad Anchor

Engineering Specifications		
Date	Document Title	Prepared by
June, 2007	Revised Technical Specifications for the Construction of Cell 4A Lining System	Geosyntec Consultants
June, 2007	Revised Construction Quality Assurance Plan for the Construction of Cell 4A Lining System	Geosyntec Consultants
March 27, 2007	Revised Geosynthetic Clay Liner Hydration Demonstration Work Plan (1)	Geosyntec Consultants
November 27, 2006	Cell Seismic Study (2)	MFG Consulting Scientists and Engineers
October 6, 2006	Calculation of Action Leakage Rate Through the Leakage Detection System Underlying a Geomembrane Liner	Geosyntec Consultants
June 22, 2006	Slope Stability Analysis Cell 4A - Interim Conditions	Geosyntec Consultants
June 23, 2006	Settlement Evaluation of Berms (2)	Geosyntec Consultants
August 22, 2006	Pipe Strength Calculations	Geosyntec Consultants
September 27, 2007	DMC Cell 4A - GCL Hydration	Geosyntec Consultants

Footnotes:
1) As qualified by conditions found in May 2, 2007 Division of Radiation Control letter.
2) As clarified by February 8, 2007 Division of Radiation Control Round 6 Interrogatory.

Tailings Cell 4A Design and Construction - approved by the Director will consist of the following major elements:

a) Dikes - consisting of existing earthen embankments of compacted soil, constructed by the Permittee between 1989 and1990, and composed of four dikes, each including a 15-foot wide road at the top (minimum). On the north, east, and south margins these dikes have slopes of 3H to 1V. The west dike has an interior slope of 2H to 1V. Width of these dikes varies; each has a minimum crest width of at least 15 feet to support an access road. Base width also varies from 89-feet on the east dike (with no exterior embankment), to 211-feet at the west dike.

b) Foundation - including existing subgrade soils over bedrock materials. Foundation preparation included excavation and removal of contaminated soils, compaction of imported soils to a maximum dry density of 90%. Floor of Cell 4A has an average slope of 1% that grades from the northeast to the southwest corners.

c) Tailings Capacity - the floor and inside slopes of Cell 4A encompass about 40 acres and have a maximum capacity of about 1.6 million cubic yards of tailings material storage (as measured below the required 3-foot freeboard).

d) Liner and Leak Detection Systems - including the following layers, in descending order:

1) Primary Flexible Membrane Liner (FML) - consisting of impermeable 60 mil high density polyethylene (HDPE) membrane that extends across both the entire cell floor and the inside side-slopes, and is anchored in a trench at the top of the dikes on all four sides. The primary FML will be in direct physical contact with the tailings material over most of the Cell 4A floor area. In other locations, the primary FML will be in contact with the slimes drain collection system (discussed below).

2) Leak Detection System - includes a permeable HDPE geonet fabric that extends across the entire area under the primary FML in Cell 4A, and drains to a leak detection sump in the southwest corner. Access to the leak detection sump is via an 18-inch inside diameter (ID) PVC pipe placed down the inside slope, located between the primary and secondary FML liners. At its base this pipe will be surrounded with a gravel filter set in the leak detection

sump, having dimensions of 10 feet by 10 feet by 2 feet deep. In turn, the gravel filter layer will be enclosed in an envelope of geotextile fabric. The purpose of both the gravel and geotextile fabric is to serve as a filter.

3) Secondary FML - consisting of an impermeable 60-mil HDPE membrane found immediately below the leak detection geonet. Said FML also extends across the entire Cell 4A floor, up the inside side-slopes and is also anchored in a trench at the top of all four dikes.

4) Geosynthetic Clay Liner - consisting of a manufactured geosynthetic clay liner (GCL) composed of 0.2-inch of low permeability bentonite clay centered and stitched between two layers of geotextile. Prior to disposal of any wastewater in Cell 4A, the Permittee shall demonstrate that the GCL has achieved a moisture content of at least 50% by weight. This item is a revised requirement per DRC letter to DUSA dated September 28, 2007.

e) Slimes Drain Collection System - including a two-part system of strip drains and perforated collection pipes both installed immediately above the primary FML, as follows:

1) Horizontal Strip Drain System - is installed in a herringbone pattern across the floor of Cell 4A that drain to a "backbone" of perforated collection pipes. These strip drains are made of a prefabricated two-part geo-composite drain material (solid polymer drainage strip) core surrounded by an envelope of non-woven geotextile filter fabric. The strip drains are placed immediately over the primary FML on 50-foot centers, where they conduct fluids downgradient in a southwesterly direction to a physical and hydraulic connection to the perforated slimes drain collection pipe. A series of continuous sand bags, filled with filter sand cover the strip drains. The sand bags are composed of a woven polyester fabric filled with well graded filter sand to protect the drainage system from plugging.

2) Horizontal Slimes Drain Collection Pipe System - includes a "backbone" piping system of 4-inch ID Schedule 40 perforated PVC slimes drain collection (SDC) pipe found at the downgradient end of the strip drain lines. This pipe is in turn overlain by a berm of gravel that runs the entire diagonal length of the cell, surrounded by a geotextile fabric cushion in immediate contact with the primary FML. In turn, the gravel is overlain by a layer of non-woven geotextile to serve as an additional filter material. This perforated collection pipe serves as the "backbone" to the slimes drain system and runs from the far northeast corner downhill to the far southwest corner of Cell 4A where it joins the slimes drain access pipe.

3) Slimes Drain Access Pipe - consisting of an 18-inch ID Schedule 40 PVC pipe placed down the inside slope of Cell 4A at the southwest corner, above the primary FML. Said pipe then merges with another horizontal pipe of equivalent diameter and material, where it is enveloped by gravel and woven geotextile that serves as a cushion to protect the primary FML. A reducer connects the horizontal 18-inch pipe with the 4-inch SDC pipe. At some future time, a pump will be set in this 18-inch pipe and used to remove tailings wastewaters for purposes of de-watering the tailings cell.

f) Cell 4A North Dike Splash Pads - three 20-foot wide splash pads will be constructed on the north dike to protect the primary FML from abrasion and scouring by tailings slurry. These pads will consist of an extra layer of 60 mil HDPE membrane that will be installed in the anchor trench and placed down the inside slope of Cell 4A, from the top of the dike, under the inlet pipe, and down the inside slope to a point 5-feet beyond the toe of the slope.

g) Cell 4A Emergency Spillway - a concrete lined spillway will be constructed near the western corner of the north dike to allow emergency runoff from Cell 3 into Cell 4A. This spillway will be limited to a 6-inch reinforced concrete slab set directly over the primary FML in a 4-foot deep trapezoidal channel. No other spillway or overflow structure will be constructed at Cell 4A. All stormwater runoff and tailings wastewaters not retained in Cells 2 and 3, will be

managed and contained in Cell 4A, including the Probable Maximum Precipitation and flood event.

6. BAT Performance Standards for Tailings Cell 4A - the Permittee shall operate and maintain Tailings Cell 4A so as to prevent release of wastewater to groundwater and the environment in accordance with the currently approved Cell 4A BAT, Monitoring, Operations and Maintenance Plan. Any failure to achieve or maintain the required BAT performance standards shall constitute a violation of the Permit and shall be reported to the Director in accordance with Part I.G.3. Performance standards for Tailings Cell 4A shall include the following:

   a) Leak Detection System (LDS) Maximum Allowable Daily Head - the fluid head in the LDS shall not exceed 1 foot above the lowest point on the lower flexible membrane liner on the cell floor. For purposes of compliance this elevation will equate to a maximum distance of 2.28 feet above the LDS transducer. At all times the Permittee shall operate the LDS pump and transducer in a horizontal position at the lowest point of the LDS sump floor.

   b) LDS Maximum Allowable Daily Leak Rate - shall not exceed 24,160 gallons/day.

   c) Slimes Drain Annual Average Recovery Head Criteria - after the Permittee initiates pumping conditions in the slimes drain layer in Cell 4A, the Permittee will provide: 1) continuous declining fluid heads in the slimes drain layer, in a manner equivalent to the requirements found in Part I.D.3(b), and 2) a maximum head of 1.0 feet in the tailings (as measured from the lowest point of upper flexible membrane liner) in 6.4 years or less.

   d) Maximum Weekly Wastewater Level - under no circumstance shall the freeboard be less then 3-feet in Cell 4A, as measured from the top of the upper FML.

7. Definition of 11e.(2) Waste - for purposes of this Permit, 11e.(2) waste is defined as: "... tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content", as defined in Section 11e.(2) of the U.S. Atomic Energy Act of 1954, as amended; which includes other process related wastes and waste streams described by a March 7, 2003 NRC letter from Paul H. Lohaus to William J. Sinclair.

8. Closed Cell Performance Requirements - before reclamation and closure of any tailings disposal cell, the Permittee shall ensure that the final design, construction, and operation of the cover system at each tailings cell will comply with all requirements of an approved Reclamation Plan, and will for a period of not less than 200 years meet the following minimum performance requirements:

   a) Minimize infiltration of precipitation or other surface water into the tailings, including, but not limited to the radon barrier,

   b) Prevent the accumulation of leachate head within the tailings waste layer that could rise above or over-top the maximum FML liner elevation internal to any disposal cell, i.e. create a “bathtub” effect, and

   c) Ensure that groundwater quality at the compliance monitoring wells does not exceed the Ground Water Quality Standards or Ground Water Compliance Limits specified in Part I.C.1 and Table 2 of this Permit.

9. Facility Reclamation Requirements - upon commencement of decommissioning, the Permittee shall reclaim the mill site and all related facilities, stabilize the tailings cells, and construct a cover system over the tailings cells in compliance with all engineering design and specifications in an approved Reclamation Plan. The Director reserves the right to require modifications of the Reclamation Plan for purposes of compliance with the Utah Ground Water Quality Protection Regulations, including but not limited to containment and control of contaminants, or discharges, or potential discharges to Waters of the State.

10. Stormwater Management and Spill Control Requirements - the Permittee will manage all contact and non-contact stormwater and control contaminant spills at the facility in accordance with the currently approved Stormwater Best Management Practices Plan. Said plan includes the following minimum provisions:

    a) Protect groundwater quality or other waters of the state by design, construction, and/or active operational measures that meet the requirements of the Ground Water Quality Protection Regulations found in UAC R317-6-6.3(G) and R317-6-6.4(C),

    b) Prevent, control and contain spills of stored reagents or other chemicals at the mill site,

    c) Cleanup spills of stored reagents or other chemicals at the mill site immediately upon discovery, and

    d) Report reagent spills or other releases at the mill site to the Director in accordance with UAC 19-5-114.

    Reconstruction of stormwater management and/or chemical reagent storage facilities, existing at the time of original Permit issuance, may be required by the Director after occurrence of a major spill or catastrophic failure, pursuant to Part IV.N.3 of this Permit.

11. BAT Requirements for Feedstock Material Stored Outside the Feedstock Storage Area - the Permittee shall store and manage feedstock materials outside the ore storage pad in accordance with the following minimum performance requirements:

    a) Feedstock materials shall be stored at all times in water-tight containers or water-tight container overpacks, and aisle ways will be provided at all times to allow visual inspection of each and every feedstock container and container overpack, or

    b) Feedstock containers shall be stored on a hardened surface to prevent spillage onto subsurface soils, and that conforms with the following minimum physical requirements:

        1) A storage area composed of a hardened engineered surface of asphalt or concrete, and

        2) A storage area designed, constructed, and operated in accordance with engineering plans and specifications approved in advance by the Director. All such engineering plans or specifications submitted shall demonstrate compliance with Part I.D.4,

        3) A storage area that provides containment berms to control stormwater run-on and run-off, and

        4) Stormwater drainage works approved in advance by the Director, or

        5) Other storage facilities and means approved in advance by the Director.

12. BAT Design Standards for Tailings Cell 4B - the BAT design standard for Tailings Cell 4B shall be defined by and constructed in accordance with the requirements as summarized by the engineering drawings, specifications, and description in Table 6, below:

Table 6. Approved Tailings Cell 4B Engineering Design and Specifications

Engineering Drawings			
Name	Date	Revision No.	Title
Sheet 1 of 8	January 2009	Rev. 1	Cover Sheet
Sheet 2 of 8	January 2009	Rev. 1	Site Plan
Sheet 3 of 8	January 2009	Rev. 1	Base Grading Plan
Sheet 4 of 8	January 2009	Rev. 1	Pipe Layout and Details
Sheet 5 of 8	December 2007	Rev. 0	Lining System Details I
Sheet 6 of 8	January 2009	Rev. 1	Lining System Details II
Sheet 7 of 8	January 2009	Rev. 1	Lining System Details III
Sheet 8 of 8	January 2009	Rev. 1	Lining System Details IV

Figure 1	January 2009	-	Mill Site Drainage Basins (supporting reference)

Engineering Specifications		
Date	Document Title	Prepared by
January 2009	Slope Stability Analysis Calculation Package	Geosyntec Consultants
January 2009	Seismic Deformation Analysis Calculation Package	Geosyntec Consultants
January 2009	Revised Pipe Strength Analysis Calculation Package	Geosyntec Consultants
January 2009	Revised Comparison of Flow Though Compacted Clay Liner and Geosynthetic Clay Liner Calculation Package	Geosyntec Consultants
January 2009	Revised Action Leakage Rate Calculation Package	Geosyntec Consultants
August 2009	Blasting - Locations and Profiles, Attachment: Figures 1 and 2	Geosyntec Consultants
August 2009	(Revised) Technical Specifications, with the exception of Section 02200 (Earthwork)	Geosyntec Consultants
August 2009	Cell 4B Capacity Calculations	Geosyntec Consultants
August 2009	Revised Cushion Fabric Calculations	
August 2009	Construction Quality Assurance Plan for the Construction of Cell 4B Lining System	Geosyntec Consultants
September 2009	(Revised) Technical Specification Section 02200 (Earthwork)	Geosyntec Consultants
August 6, 2009	Blast Plan, KGL and Associates and Blast Plan Review, Geosyntec Consultants letter dated September 10, 2009	KGL and Associates and Geosyntec Consultants
September 2009	Probable Maximum Precipitation (PMP) Event Computation	Geosyntec Consultants
January 2009	Slope Stability Analysis Calculation Package	Geosyntec Consultants

Tailings Cell 4B Design and Construction - approved by the Director will consist of the following major elements:

a) Dikes - consisting of newly constructed dikes on the south and west side of the cell, each including a 20-foot wide road at the top (minimum) to support an access road. The grading plan for the Cell 4B excavation includes interior slopes of 2H to 1V. The exterior slopes of the southern and western dikes will have typical slopes of 3H to 1V. Limited portions of the Cell 4B interior sideslopes in the northwest corner and southeast corner of the cell, (where the slimes drain and leak detection sump will be located will also have a slope of 3H to 1V. The base width of the southern dikes varies from approximately 92 feet at the western end to approximately 190 feet at the eastern end of the dike, with no exterior embankment present on any other side of the cell.

b) Foundation - including existing subgrade soils over bedrock materials. Foundation preparation included excavation and removal of contaminated soils, compaction of imported soils to a maximum dry density of 90% at a moisture content between +3% and -3% of optimum moisture content, as determined by ASTM D-1557. The floor of Cell 4B has an average slope of 1% that grades from the northwest corner to the southeast corner.

c) Tailings Capacity - the floor and inside slopes of Cell 4B encompass about 44 acres, and the cell will have a water surface area of 40 acres and a maximum capacity of about 1.9 million cubic yards of tailings material storage (as measured below the required 3-foot freeboard).

d) Liner and Leak Detection Systems - including the following layers, in descending order:

1) Primary Flexible Membrane Liner (FML) - consisting of 60-mil high density polyethylene (HDPE) membrane that extends across both the entire cell floor and the inside side-slopes, and is anchored in a trench at the top of the dikes on all four sides. The primary FML will be in direct physical contact with the tailings material over most of the Cell 4B floor area. In other locations, the primary FML will be in contact with the slimes drain collection system (discussed below).

2) Leak Detection System - includes a permeable HDPE geonet that extends across the entire area under the primary FML in Cell 4B, and drains to a leak detection sump in the southeast corner. Access to the leak detection sump is via an 18-inch inside diameter (ID) PVC pipe placed down the inside slope, located between the primary and secondary FML liners. At its base this pipe will be surrounded with a gravel filter set in a sump having dimensions of 15 feet by 10 feet by 2 feet deep that contains a leak detection system sump area. In turn, the gravel filter layer will be enclosed in an envelope of geotextile fabric. The purpose of both the gravel and geotextile fabric is to serve as a filter.

3) Secondary FML - consisting of a 60-mil HDPE membrane found immediately below the leak detection geonet. Said FML also extends across the entire Cell 4B floor, up the inside side-slopes and is also anchored in a trench at the top of all four dikes.

4) Geosynthetic Clay Liner - consisting of a manufactured geosynthetic clay liner (GCL) composed of 0.2-inch of low permeability bentonite clay centered and stitched between two layers of geotextile. Prior to disposal of any wastewater in Cell 4B, the Permittee shall demonstrate that the GCL has achieved a moisture content of at least 50% by weight.

e) Slimes Drain Collection System - including a two-part system of strip drains and perforated collection pipes both installed immediately above the primary FML, as follows:

1) Horizontal Strip Drain System - is installed in a herringbone pattern across the floor of Cell 4B that drain to a “backbone” of perforated collection pipes. These strip drains are made of a prefabricated two-part geo-composite drain material (solid polymer drainage strip) core surrounded by an envelope of non-woven geotextile filter fabric. The strip drains are placed immediately over the primary FML on 50-foot centers, where they conduct fluids downgradient in a southwesterly direction to a physical and hydraulic connection to the perforated slimes drain collection pipe. A series of continuous sand bags, filled with filter sand cover the strip drains. The sand bags are composed of a woven polyester fabric filled with well graded filter sand to protect the drainage system from plugging.

2) Horizontal Slimes Drain Collection Pipe System - includes a “backbone” piping system of 4-inch ID Schedule 40 perforated PVC slimes drain collection (SDC) pipe found at the downgradient end of the strip drain lines. This pipe is in turn overlain by a berm of gravel that runs the entire diagonal length of the cell, surrounded by a geotextile fabric cushion in immediate contact with the primary FML. In turn, the gravel is overlain by a layer of non-woven geotextile to serve as an additional filter material. This perforated collection pipe serves as the “backbone” to the slimes drain system and runs from the far northwest corner downhill to the far southeast corner of Cell 4B where it joins the slimes drain access pipe.

3) Slimes Drain Access Pipe - consisting of an 18-inch ID Schedule 40 PVC pipe placed down the inside slope of Cell 4B at the southeast corner, above the primary FML. Said pipe then merges with another horizontal pipe of equivalent diameter and material, where it is enveloped by gravel and woven geotextile that serves as a cushion to protect the primary FML. A reducer connects the horizontal 18-inch pipe with the 4-inch SDC pipe. At some future time, a pump will be set in this 18-inch pipe and used to remove tailings wastewaters for purposes of de-watering the tailings cell.

f) Cell 4B North and East Dike Splash Pads - Nine 20-foot-wide splash pads will be constructed on the north and east dikes to protect the primary FML from abrasion and scouring by tailings slurry. These pads will consist of an extra layer of 60 mil HDPE membrane that will be installed in the anchor trench and placed down the inside slope of Cell 4B, from the top of the dike, under the inlet pipe, and down the inside slope to a point at least 5 feet onto the Cell 4B floor beyond the toe of the slope.

g) Cell 4B Emergency Spillway - a concrete lined spillway will be constructed near the southeastern corner of the east dike to allow emergency runoff from Cell 4A into Cell 4B. This spillway will be limited to a 6-inch reinforced concrete slab, with a welded wire fabric installed within it at its midsection, set atop a cushion geotextile placed directly over the primary FML in a 4-foot deep trapezoidal channel. A 100-foot wide, 60-mil HDPE membrane splash pad will be installed beneath the emergency spillway. No other spillway or overflow structure will be constructed at Cell 4B. All stormwater runoff and tailings wastewaters not retained in Cells 2 and 3, and 4A will be managed and contained in Cell 4B, including the Probable Maximum Precipitation and flood event.

13. BAT Performance Standards for Tailings Cell 4B - the Permittee shall operate and maintain Tailings Cell 4B so as to prevent release of wastewater to groundwater and the environment in accordance with the currently approved Cell 4B BAT, Monitoring, Operations and Maintenance Plan. Any failure to achieve or maintain the required BAT performance standards shall constitute a violation of the Permit and shall be reported to the Director in accordance with Part I.G.3. Performance standards for Tailings Cell 4B shall include the following:

    a) Leak Detection System (LDS) Maximum Allowable Daily Head - the fluid head in the LDS shall not exceed 1 foot above the lowest point on the lower flexible membrane liner on the cell floor. At all times the Permittee shall operate the LDS pump and transducer in a horizontal position at the lowest point of the LDS sump floor.

    b) LDS Maximum Allowable Daily Leak Rate - shall not exceed 26,145 gallons/day.

    c) Slimes Drain Annual Average Recovery Head Criteria - after the Permittee initiates pumping conditions in the slimes drain layer in Cell 4B, the Permittee will provide: 1) continuous declining fluid heads in the slimes drain layer, in a manner equivalent to the requirements found in Part I.D.3(b), and 2) a maximum head of 1.0 feet in the tailings (as measured from the lowest point of upper flexible membrane liner) in 5.5 years or less.

    d) Maximum Weekly Wastewater Level - under no circumstance shall the freeboard be less than 3-feet in Cell 4B, as measured from the top of the upper FML.

14. BAT Performance Standards for the New Decontamination Pad - the Permittee shall operate and maintain the New Decontamination Pad (NDP) to prevent release of wastewater to groundwater and the environment in accordance with the currently approved DMT Monitoring Plan. Any failure to achieve or maintain the required BAT performance standards shall constitute a violation of the Permit and shall be reported to the Director in accordance with Part I.G.3. Performance standards for the NDP shall include, but are not limited to, the following:

    a) NDP LDS Access Pipes - the water level shall not exceed 0.10 foot above the concrete floor in any LDS access pipe, at any time. Compliance will be defined as a depth to standing water present in any of the LDS access pipes of more than or equal to 6.2 feet as measured from the water measuring point (top of access pipe).

    b) Soil and debris will be removed from the wash pad of the NDP, in accordance with the currently approved DMT Monitoring Plan. Cracks in the wash pad greater than 1/8 inch (width) will be

repaired within five working days of discovery.

E. GROUND WATER COMPLIANCE AND TECHNOLOGY PERFORMANCE MONITORING - beginning with the effective date and lasting through the term of this Permit or as stated in an approved closure plan, the Permittee shall sample groundwater monitoring wells, tailing cell wastewaters, seeps and springs, monitor groundwater levels, monitor water levels of process solutions, and monitor and keep records of the operation of the facility, as follows:

1. Routine Groundwater Compliance Monitoring - the Permittee shall monitor upgradient, lateral gradient, and downgradient groundwater monitoring wells completed in the shallow aquifer in the vicinity of all potential discharge sources that could affect local groundwater conditions at the facility, as follows:

   a) Ground Water Monitoring Quality Assurance Plan - all groundwater monitoring and analysis performed under this Permit shall be conducted in accordance with a Quality Assurance Plan (QAP) currently approved by the Director. Any non-conformance with QAP requirements in a given quarterly groundwater monitoring period will be corrected and reported to the Director on or before submittal of the next quarterly groundwater monitoring report pursuant to Part I.F.1.

   b) Quarterly Monitoring - the Permittee shall monitor on a quarterly basis all monitoring wells listed in Table 2 of this Permit where local groundwater average linear velocity has been found by the Director to be equal to or greater than 10 feet/year. For purposes of this Permit, quarterly monitoring is required at the following wells:

      1) Upgradient Wells: none

      2) Lateral or Downgradient Wells: MW-11, MW-14, MW-25, MW-26 (formerly TW4-15), MW-30, MW-31, MW-36.

   c) Semi-annual Monitoring - the Permittee shall monitor on a semi-annual basis all monitoring wells listed in Table 2 of this Permit, where local groundwater average linear velocity has been found by the Director to be less than 10 feet/year, and all general monitoring wells. For purposes of this Permit, semi-annual monitoring is required at the following wells:

      1) Monitoring Wells Listed on Table 2:

         i. Upgradient Well: MW-27.

         ii. Lateral or Downgradient Wells: MW-2, MW-3A, MW-5, MW-12, MW-15, MW-17, MW-23, MW-24, MW-28, MW-29, and MW-32 (formerly TW4-17), MW-35, and MW-37.

      2) General Monitoring Wells:

         i. Upgradient Wells: MW-1, MW-18, and MW-19.

         ii. Lateral or Downgradient Wells: TW4-24, MW-20 and MW-22.

   d) Compliance Monitoring Parameters - all groundwater samples collected shall be analyzed for the following parameters:

      1) Field Parameters - depth to groundwater, pH, temperature, specific conductance, dissolved oxygen, and redox potential (Eh).

      2) Laboratory Parameters

         i. GWCL Parameters - all contaminants specified in Table 2.

         ii. General Inorganics - chloride, sulfate, carbonate, bicarbonate, sodium, potassium, magnesium, calcium, and total anions and cations.

e) Special Provisions for Groundwater Monitoring - the Permittee shall ensure that all groundwater monitoring conducted and reported complies with the following requirements:

1) Depth to Groundwater Measurements - shall always be made to the nearest 0.01 foot.

2) Minimum Detection Limits - all groundwater quality analyses reported shall have a minimum detection limit or reporting limit that is less than its respective Ground Water Compliance Limit concentration defined in Table 2.

3) Gross Alpha Counting Variance - all gross alpha analysis shall be reported with an error term. All gross alpha analysis reported with an activity equal to or greater than the GWCL, shall have a counting variance that is equal to or less than 20% of the reported activity concentration. An error term may be greater than 20% of the reported activity concentration when the sum of the activity concentration and error term is less than or equal to the GWCL.

4) All equipment used for purging and sampling of groundwater shall be made of inert materials.

2. Groundwater Monitoring: General Monitoring Wells - Upgradient wells MW-1, MW-18, and MW-19; Lateral Monitoring Well TW4-24; and Downgradient wells MW-20 and MW-22. The Permittee shall monitor wells MW-1, MW-18, MW-19, TW4-24, MW-20 and MW-22 on a semi-annual basis. Said sampling shall comply with the following Permit requirements, but shall not be considered compliance monitoring for the purposes of Part G:

a) Routine groundwater compliance monitoring requirements of Part I.E.1.

b) Groundwater head monitoring requirements of Part I.E.3

c) Well monitoring procedure requirements of Part I.E.5.

3. Groundwater Head Monitoring - on a quarterly basis and at the same frequency as groundwater monitoring required by Part I.E.1, the Permittee shall measure depth to groundwater in the following wells and/or piezometers:

a) Point of Compliance Wells - identified in Table 2 and Part I.E.1 of this Permit.

b) Piezometers - P-1, P-2, P-3, P-4, and P-5.

c) Head Monitoring Well - MW-34.

d) General Monitoring Wells - Upgradient wells MW-1, MW-18, and MW-19; Lateral well TW4-24; and Downgradient wells MW-20 and MW-22.

e) Contaminant Investigation Wells - any well required by the Director as a part of a contaminant investigation or groundwater corrective action.

f) Any other wells or piezometers required by the Director.

4. Groundwater Monitoring Well Design and Construction Criteria - all new groundwater monitoring wells installed at the facility shall comply with the following design and construction criteria:

a) Located as close as practical to the contamination source, tailings cell, or other potential origin of groundwater pollution.

b) Screened and completed in the shallow aquifer.

c) Designed and constructed in compliance with UAC R317-6-6.3(I)(6), including the EPA RCRA Ground Water Monitoring Technical Enforcement Guidance Document, 1986, OSWER-9950.1.

d) Aquifer tested to determine local hydraulic properties, including but not limited to hydraulic conductivity.

5. Monitoring Procedures for Wells - beginning with the date of Permit issuance, all monitoring shall be conducted by the Permittee in conformance with the following procedures:

   a) Sampling - grab samples shall be taken of the groundwater, only after adequate removal or purging of standing water within the well casing has been performed.

   b) Sampling Plan - all sampling shall be conducted to ensure collection of representative samples, and reliability and validity of groundwater monitoring data.

   c) Laboratory Approval - all analyses shall be performed by a laboratory certified by the State of Utah to perform the tests required.

   d) Damage to Monitoring Wells - if any monitor well is damaged or is otherwise rendered inadequate for its intended purpose, the Permittee shall notify the Director in writing within five calendar days of discovery.

   e) Field Monitoring Equipment Calibration and Records - immediately prior to each monitoring event, the Permittee shall calibrate all field monitoring equipment in accordance with the respective manufacturer's procedures and guidelines. The Permittee shall make and preserve on-site written records of such equipment calibration in accordance with Part II.G and H of this Permit. Said records shall identify the manufacturer's and model number of each piece of field equipment used and calibration.

6. White Mesa Seeps and Springs Monitoring - the Permittee shall conduct annual monitoring of all seeps and springs identified in the currently approved Sampling Plan for Seeps and Springs in the Vicinity of the White Mesa Uranium Mill. Said monitoring shall include, but is not limited to:

   a) Field Measurements - including: pH, temperature, and specific conductivity.

   b) Water Quality Sampling and Analysis - the Permittee shall collect grab samples and perform laboratory analysis of all water quality parameters identified in Table 2 of this Permit.

   c) Certified Laboratory Analysis - all laboratory analysis will be conducted by a Utah certified laboratory.

   d) Analytical Methods - all laboratory analysis shall be conducted using analytical methods listed in the currently approved QAP pursuant to Part I.E.1 of this Permit.

   e) Minimum Detection Limits - all seeps or springs water quality analyses reported shall have a minimum detection limit or reporting limit that is less than or equal to the respective:

      1) Ground Water Quality Standards concentrations defined in Table 2 of this Permit, and

      2) For TDS, Sulfate, and Chloride, the Minimum Detection Limit for those constituents for seeps and springs monitoring will be as follows: 10 mg/L, 1 mg/L, and 1 mg/L, respectively.

   f) Quality Control Samples - the Permittee will conduct quality control (QC) sampling and analysis as a part of all seeps and springs sampling, in accordance with the requirements of Section 4.3 of the currently approved QAP; pursuant to Part I.E.1 of this Permit. Said QC samples shall include, but are not limited to: trip blanks, duplicate samples, and equipment rinse blanks.

   g) Prior Notification - at least 15 calendar days before any fieldwork or water quality sample collection, the Permittee shall provide written notice to allow the Director to observe or split sample any or all seeps or springs.

7. DMT Performance Standards Monitoring - the Permittee shall perform technology performance monitoring in accordance with the currently approved DMT Monitoring Plan to determine if DMT is effective in minimizing and controlling the release of contaminants pursuant to the provisions of Parts I.D.1 and I.D.3 of this Permit, including, but not limited to the following activities:

   a) Weekly Tailings Wastewater Pool Elevation Monitoring: Cells 1 and 3 - the Permittee shall monitor and record weekly the elevation of wastewater in Tailings Cells 1 and 3 to ensure compliance with the maximum wastewater elevation criteria mandated by Condition 10.3 of the License. Said measurements shall be made from a wastewater level gauge or elevation survey to the nearest 0.01 foot.

   b) Quarterly Slimes Drain Water Level Monitoring: Cells 2 and 3 - the Permittee shall monitor and record quarterly the depth to wastewater in the slimes drain access pipes as described in Part I.D.3 of this Permit and the currently approved DMT Monitoring Plan at Tailings Cells 2 and 3 to determine the recovery head. For purposes of said monitoring, the Permittee shall at each tailings cell:

      1) Perform at least 1 separate slimes drain recovery test at each disposal cell in each quarterly period of each calendar year that meets the requirements of Part I.D.3,

      2) Designate, operate, maintain, and preserve one water level measuring point at the centerline of the slimes drain access pipe that has been surveyed and certified by a Utah licensed engineer or land surveyor,

      3) Make all slimes drain recovery head test (depth to fluid) measurements from the same designated water level measuring point, and

      4) Record and report all fluid depth measurements to the nearest 0.01 foot.

      5) For Cell 3 these requirements shall apply upon initiation of tailings de-watering operations.

   c) Weekly Feedstock Storage Area Inspection - the Permittee shall conduct weekly inspections of all feedstock storage to: 1) Confirm the bulk feedstock materials are maintained within the approved Feedstock Storage Area defined by Table 4, and 2) Verify that all alternate feedstock materials located outside the Feedstock Area defined in Table 4, are stored in accordance with the requirements found in Part I.D.11.

   d) Feedstock Material Stored Outside the Feedstock Storage Area Inspections

      a) Weekly Inspection - the Permittee will conduct weekly inspections to verify that each feed material container complies with the requirements of Part I.D.11.

      b) Hardened Surface Storage Area - in the event the Permittee constructs a hardened surface storage area for feed materials, pursuant to Part I.D.11, prior Director approval will be secured for the following:

         i. Engineering Design and Specifications - in accordance with the requirements of Part I.D.4, and

         ii. Operation and Maintenance Plan.

   e) Inspections of Tailing Cell and Pond Liner Systems - the Permittee shall inspect the liner system at Tailing Cells 1, 2, and 3 on a daily basis pursuant to the requirements of Sections 2.1 and 2.2 of the currently approved DMT Monitoring Plan. In the event that any liner defect or damage is identified during a liner system inspection, the Permittee shall: 1) report and repair said defect or damage pursuant to Part I.G.3 by implementation of the currently approved Liner Maintenance Provisions, and 2) report all repairs made pursuant to Part I.F.2.

f) Weekly New Decontamination Pad Inspection - the Permittee shall conduct weekly inspections of the New Decontamination Pad as described in Part I.D.14 of this Permit and the currently approved DMT Monitoring Plan.

8. Cell 4A BAT Performance Standards Monitoring and Maintenance - in accordance with the currently approved Cell 4A BAT, Monitoring, Operations and Maintenance Plan, the Permittee shall immediately implement all monitoring and recordkeeping requirements therein. The Cell 4A BAT monitoring includes the following:

   a) Weekly Leak Detection System (LDS) Monitoring - including:

      1) Leak Detection System Pumping and Monitoring Equipment - the Permittee shall provide continuous operation of the leak detection system pumping and monitoring equipment, including, but not limited to, the submersible pump, pump controller, head monitoring, and flow meter equipment approved by the Director. Failure of any LDS pumping or monitoring equipment not repaired and made fully operational within 24-hours of discovery shall constitute failure of BAT, and a violation of this Permit.

      2) Maximum Allowable Head - the Permittee shall measure the fluid head above the lowest point on the secondary flexible membrane by the use of procedures and equipment approved by the Director. Under no circumstance shall fluid head in the leak detection system sump exceed a 1-foot level above the lowest point in the lower flexible membrane liner on the cell floor. For purposes of compliance monitoring this 1-foot distance shall equate to 2.28 feet above the leak detection system transducer.

      3) Maximum Allowable Daily LDS Flow Rates - the Permittee shall measure the volume of all fluids pumped from the LDS. Under no circumstances shall the average daily LDS flow volume exceed 24,160 gallons/day.

      4) 3-foot Minimum Vertical Freeboard Criteria - the Permittee shall operate and maintain wastewater levels to provide a 3-foot Minimum of vertical freeboard in Tailings Cell 4A. Said measurements shall be made to the nearest 0.1 foot.

   b) Quarterly Slimes Drain Recovery Head Monitoring - immediately after the Permittee initiates pumping conditions in the Tailings Cell 4A slimes drain system, quarterly recovery head tests and fluid level measurements will be made in accordance with the requirements of Parts I.D.3 and I.E.7(b) of this Permit and the currently approved Cell 4A BAT, Monitoring, Operations and Maintenance Plan.

   c) Liner Maintenance and Repair - all repairs to the liner shall be completed in accordance with Section 9.4 of the approved June 2007 Geosyntec Consultants Cell 4A Construction Quality Assurance Plan (CQA/QC Plan) as found in Table 5 of this Permit. Repairs shall be performed by qualified liner repair personnel and shall be reported in a Liner Repair Report, certified by a Utah licensed Professional Engineer. The Liner Repair Report shall be submitted to for Director approval in accordance with Part I.F.3 of the Permit. Any leak, hole, or other damage to the liner will be reported to the Director pursuant to the requirements found in Part I.G.3.

9. On-site Chemicals Inventory - the Permittee shall monitor and maintain a current inventory of all chemicals used at the facility at rates equal to or greater than 100 kg/yr. Said inventory shall be maintained on-site, and shall include, but is not limited to:

   a) Identification of chemicals used in the milling process and the on-site laboratory, and

   b) Determination of volume and mass of each raw chemical currently held in storage at the facility.

10. Tailings Cell Wastewater Quality Monitoring - on an annual basis, the Permittee shall collect wastewater quality samples from each wastewater source at each tailings cell at the facility, including, but not limited to:

a) One surface impounded wastewater location at each of Tailings Cells 1, 3, 4A, and 4B.

b) One slimes drain wastewater access pipe at each of Tailings Cells 2, 3, 4A, and 4B. For Cells 3, 4A, and 4B, this requirement shall apply immediately after initiation of de-watering operations at these cells, and

c) One leak detection wastewater access pipe at Tailings Cells 4A and 4B.

d) All such sampling shall be conducted in August of each calendar year in compliance with the currently approved White Mesa Uranium Mill Tailing and Slimes Drain Sampling Program. Said annual monitoring shall include, but is not limited to:

1) Water Quality Sampling and Analysis - the Permittee shall collect grab samples and perform laboratory analysis of all:

i. Water quality parameters identified in Table 2 of this Permit, and

ii. Semi-volatile compounds identified in EPA Method 8270D.

2) Certified Laboratory Analysis - all laboratory analysis will be conducted by a Utah certified laboratory.

3) Analytical Methods - all laboratory analysis shall be conducted using analytical methods listed in the currently approved QAP pursuant to Part I.E.1 of this Permit.

4) Minimum Detection Limits - all water quality analyses reported shall have a minimum detection limit or reporting limit that is less than or equal to the respective:

i. Ground Water Quality Standards concentrations defined in Table 2 of this Permit,

ii. For TDS, Sulfate, and Chloride, the Minimum Detection Limit for those constituents for Tailing Cell wastewater monitoring will be as follows: 1,000 mg/L, 1,000 mg/L, and 1 mg/L, respectively, and

iii. Lower limits of quantitation for groundwater for semi-volatile organic compounds listed in Table 2 of EPA Method 8270D, Revision 4, dated February, 2007.

5) Quality Control Samples - the Permittee will conduct quality control (QC) sampling and analysis as a part of all tailings wastewater sampling, in accordance with the requirements of Section 4.3 of the currently approved QAP; pursuant to Part I.E.1 of this Permit. Said QC samples shall include, but are not limited to: trip blanks, duplicate samples, and equipment rinse blanks.

6) Prior Notification - at least 30 calendar days before any water quality sample collection, the Permittee shall provide written notice to allow the Director to observe or split sample any tailings cell, slimes drain, or leak detection wastewaters.

7) Sample Omission - in the course of each annual sampling event, the Permittee shall sample and analyze all tailings cell, slimes drain, and leak detection wastewater sources identified in the currently approved Tailings and Slimes Drain Sampling Program (pp. 1-3), or as required by this Permit, whichever is greater. The Permittee shall not omit sampling of any of tailings cell wastewater source during said annual event, without prior written approval from the Director.

11. Groundwater Monitoring Modifications - before any modification of groundwater monitoring or analysis procedures, methods, or equipment, the Permittee must obtain prior written approval from the Director.

12. Cell 4B BAT Performance Standards Monitoring and Maintenance - immediately following Director approval of the Cell 4B BAT, Monitoring, Operations and Maintenance Plan, the Permittee shall immediately implement all monitoring and recordkeeping requirements therein.

The Cell 4B BAT monitoring shall include the following: Weekly Leak Detection System (LDS) Monitoring - including:

1) Leak Detection System Pumping and Monitoring Equipment - the Permittee shall provide continuous operation of the leak detection system pumping and monitoring equipment, including, but not limited to, the submersible pump, pump controller, head monitoring, and flow meter equipment approved by the Director. Failure of any LDS pumping or related monitoring equipment not repaired and made fully operational within 24-hours of discovery shall constitute failure of BAT, and a violation of this Permit.

2) Maximum Allowable Head - the Permittee shall measure the fluid head above the lowest point on the secondary flexible membrane by the use of procedures and equipment approved by the Director. Under no circumstance shall fluid head in the leak detection system (LDS) sump exceed a 1-foot level above the lowest point in the lower flexible membrane liner on the cell floor. Any occurrence of leak detection system fluids above this 1-foot limit shall constitute failure of BAT, and a violation of this Permit.

3) Maximum Allowable Daily LDS Flow Rates - the Permittee shall measure the volume of all fluids pumped from the LDS. Under no circumstances shall the average daily LDS flow volume exceed 26,145 gallons/day.

4) 3-foot Minimum Vertical Freeboard Criteria - the Permittee shall operate and maintain wastewater levels to provide a 3-foot Minimum of vertical freeboard in Tailings Cell 4B. Said measurements shall be made to the nearest 0.1 foot.

b) Quarterly Slimes Drain Recovery Head Monitoring - immediately after the Permittee initiates pumping conditions in the Tailings Cell 4B slimes drain system, quarterly recovery head tests and fluid level measurements will be made in accordance with the requirements of Parts I.D.3 and I.E.7(b) of this Permit and the currently approved Cell 4B BAT, Monitoring, Operations and Maintenance Plan.

c) Liner Maintenance and Repairs - all repairs to the liner shall be completed in accordance with Section 10.4 of the approved August 2009 Geosyntec Consultants Cell 4B Construction Quality Assurance Plan (CQA/QC Plan) as found in Table 6 of this Permit. Repairs shall be performed by qualified liner repair personnel and shall be reported in a Liner Repair Report, certified by a Utah licensed Professional Engineer. The Liner Repair Report shall be submitted for Director approval in accordance with Part I.F.3 of the Permit. Any leak, hole, or other damage to the liner will be reported pursuant to the requirements found in Part I.G.3.

F. REPORTING REQUIREMENTS - The following reporting procedures for routine and compliance reports must be met.

1. Routine Groundwater Monitoring Reports - the Permittee shall submit quarterly monitoring reports of field and laboratory analyses of all well monitoring and samples described in Parts I.E.1, I.E.2, I.E.3, and I.E.5 of this Permit for Director review and approval. Reports shall be submitted according to the following schedule:

Table 7. Groundwater Monitoring Reporting Schedule

Quarter	Period	Due Date
First	January - March	June 1
Second	April - June	September 1
Third	July - September	December 1
Fourth	October - December	March 1

Failure to submit the reports by the due date shall be deemed as noncompliance with this Permit. Said monitoring reports shall include, but are not limited to, the following minimum information:

a) Field Data Sheets - or copies thereof that provide the following: well name, date and time of well purging, date and time of well sampling, type and condition of well pump, depth to groundwater before purging and sampling, calculated well casing volume, volume of water purged before sampling, volume of water collected for analysis, types of sample containers and preservatives.

b) Laboratory Results - or copies thereof that provide the following: date and time sampled, date received by laboratory, and for each parameter analyzed, the following information: laboratory result or concentration, units of measurement, minimum detection limit or reporting limit, analytical method, date of analysis, counting error for radiological analyses, total cations and anions for inorganic analysis.

c) Water Table Contour Map - which provides the location and identity of all wells sampled that quarter, the measured groundwater elevation at each well measured in feet above mean sea level, and isocontour lines to delineate groundwater flow directions observed during the quarterly sampling event.

d) Quality Assurance Evaluation and Data Validation - including a written description and findings of all quality assurance and data validation efforts conducted by the Permittee in compliance with the currently approved Groundwater Monitoring Quality Assurance Plan. Said report shall verify the accuracy and reliability of the groundwater quality compliance data, after evaluation of sample collection techniques and equipment, sample handling and preservation, analytical methods used, etc

e) Non-conformance disclosure - with each quarterly groundwater monitoring report the Permittee shall fully and completely disclose all non-conformance with requirements of the currently approved QAP, mandated by Part I.E.1(a).

f) Electronic Data Files and Format - in addition to written results required for every sampling report, the Permittee shall provide an electronic copy of all laboratory results for groundwater quality monitoring conducted. Said electronic files shall consist of Comma Separated Values (CSV) format, or as otherwise approved by the Director.

g) Time Concentration Plots - with each quarterly groundwater monitoring report the Permittee shall submit time concentration plots for each monitoring well for the following constituents: chloride, fluoride, sulfate, and uranium.

2. Routine DMT Performance Standards Monitoring Report - the Permittee shall provide quarterly monitoring reports of all DMT performance standards monitoring required by Parts I.D.3 and I.E.7 of this Permit. DMT monitoring shall be conducted in compliance with this Permit and the currently approved DMT Monitoring Plan. When a liner repair is performed at any DMT impoundment, a Repair Report is required by the Liner Maintenance Provisions. This Repair Report shall be included with the next quarterly DMT Report. Said monitoring reports and results shall be submitted for Director approval on the schedule provided in Table 7, above.

3. Routine Cell 4A and 4B BAT Performance Standards Monitoring Reports - the Permittee shall provide quarterly monitoring reports of all BAT performance standards monitoring required by Parts I E.8 and I.E.12 of this Permit. BAT Monitoring at Cells 4A and 4B shall be conducted in compliance with the currently approved BAT Monitoring, Operations and Maintenance Plan. When a liner repair is performed at Tailings Cell 4A or 4B, a Repair Report is required by Parts I.E.8(c) and I.E.12(c) of the Permit. This Repair Report shall be included with the next quarterly BAT Report. Said monitoring report and results shall be submitted for Director approval on the schedule provided in Table 7 above. At a minimum, reporting of BAT monitoring for Cells 4A and 4B will include:

   a) LDS Monitoring - including:

      1) Report on the operational status of the LDS pumping and monitoring equipment during the quarter, including identification of any intervals of non-operational status and repairs.

      2) Measurement of the weekly fluid head at the lowest point of the secondary membrane.

      3) Measurement of the volume of all fluids pumped from the LDS.

   b) Measurement of the weekly wastewater fluids elevation in the Cells 4A and 4B to determine freeboard.

   c) Slimes Drain Recovery Head Monitoring as per the requirements of Parts I.D.6 and I.E.8(b).

4. DMT and BAT Performance Upset Reports - the Permittee shall report any non-compliance with the DMT or BAT performance criteria of Part I.D in accordance with the requirements of Part I.G.3 of this Permit.

5. Other Information - when the Permittee becomes aware of a failure to submit any relevant facts in the permit application or submittal of incorrect information in a permit application or in any report to the Director, the Permittee shall submit such facts or information within 10 calendar days of discovery.

6. Groundwater Monitoring Well As-Built Reports - as-built reports for new groundwater monitoring wells shall be submitted for Director approval within 60 calendar days of well completion, and at a minimum will include the following information:

   a) Geologic Logs - that detail all soil and rock lithologies and physical properties of all subsurface materials encountered during drilling. Said logs shall be prepared by a Professional Geologist licensed by the State of Utah, or otherwise approved beforehand by the Director.

b) Well Completion Diagram - that detail all physical attributes of the well construction, including:

1) Total depth and diameters of boring,

2) Depth, type, diameter, and physical properties of well casing and screen, including well screen slot size,

3) Depth intervals, type and physical properties of annular filterpack and seal materials used,

4) Design, type, diameter, and construction of protective surface casing, and

5) Survey coordinates prepared by a State of Utah licensed engineer or land surveyor, including horizontal coordinates and elevation of water level measuring point, as measured to the nearest 0.01 foot.

c) Aquifer Permeability Data - including field data, data analysis, and interpretation of slug test, aquifer pump test or other hydraulic analysis to determine local aquifer hydraulic conductivity in each well.

7. White Mesa Seeps and Springs Monitoring Reports - a seeps and springs monitoring report shall be submitted for Director review and approval with the 4th Quarter Routine Groundwater Monitoring Report due on March 1, of each calendar year. Said report shall include, but is not limited to:

a) Field Measurement Results and Worksheets - for each sample collected that comply with the requirements of Part I.F.1(a) of this Permit,

b) Laboratory Results - for each sample collected that comply with the requirements of Part I.F.1(b) of this Permit,

c) Water Table Contour Map - that includes groundwater elevations for each well at the facility and the elevations of the phreatic surfaces observed at each of the seeps and springs sampled. The contour map will include all water level data measurements from seeps, springs, and monitoring wells at the site from the 3rd Quarter Routine Groundwater Monitoring event of each year. The contour map shall be at a map scale, such that, all seeps and springs listed in the approved Sampling Plan for Seeps and Springs in the Vicinity of the White Mesa Uranium Mill and the monitoring wells on site may be seen on one map,

d) Data Evaluation - and interpretation of all groundwater quality data collected,

e) Quality Assurance Evaluation and Data Validation - for the seeps and springs water quality data that meets the requirements of Part I.F.1(d),

f) Electronic Data Files and Format - that meet the requirements of Part I.F.1(e) of this Permit, and

g) Survey data for the seeps and springs shall be based on an elevation survey, conducted under the direction of and certified by a Utah licensed professional engineer or land surveyor. The survey will include State Plan Coordinates (northings and eastings) and vertical elevations. The surveyed coordinates and elevations of the seeps and springs shall be within 1 foot of the highest point of the saturated seepage face on the day of the survey. This survey data must be obtained before any samples are collected.

8. Chemicals Inventory Report - at the time of submittal of an application for Permit renewal the Permittee shall submit a report to update the facilities chemical inventory report. Said report shall include:

a) Identification of all chemicals used in the milling and milling related processes at the White Mesa Mill, and

b) Provide all inventory information gathered pursuant to Part I.E.9,

c) Determination of the total volumes currently in use and historically used, as data is available.

9. Tailings Cell Wastewater Quality Reports - all annual wastewater quality sampling and analysis required by Part I.E.10 shall be reported to the Director with the 3rd Quarter groundwater quality report due on December 1, of each calendar year. Said report shall include:

   a) Data evaluation and interpretation of all wastewater quality samples collected,

   b) All information required by Part I.F.1(a), (b), (d), and (e) of this Permit, and

   c) For slimes drain samples, the Permittee shall report depth to wastewater measurements from the water level measurement point. Said wastewater level shall be measured immediately before sample collection.

10. Revised Hydrogeologic Report - pursuant to Part IV.D of this Permit, and at least 180 calendar days prior to Permit expiration, the Permittee shall submit for Director approval a revised hydrogeologic report for the facility and surrounding area. Said report shall provide a comprehensive update and evaluation of:

    a) Local hydrogeologic conditions in the shallow aquifer, including, but not limited to: local geologic conditions; time relationships and distribution of shallow aquifer head measurements from facility wells and piezometers; local groundwater flow directions; and distribution of aquifer permeability and average linear groundwater velocity across the site, and

    b) Well specific groundwater quality conditions measured at facility monitoring wells for all groundwater monitoring parameters required by this Permit, including, but not limited to: temporal contaminant concentrations and trends from each monitoring well; statistical tests for normality of each contaminant and well, including univariate or equivalent tests; calculation of the mean concentration and standard deviation for each well and contaminant.

11. Annual Slimes Drain Recovery Head Report - on or before March 1 of each year the Permittee shall submit for Director approval an annual slimes drain recovery head report for Tailings Cells 2 and 3. Said report shall conform to the requirements of Part I.D.3(b), I.E.7(b), and II.G of this Permit, and:

    a) Provide the individual slimes drain recovery head monitoring data for the previous calendar year, including, but not limited to: date and time for the start and end of recovery test, initial water level, final depth to stable water level and equivalent recovery water level elevation.

    b) Calculate the average slimes drain recovery head for the previous calendar year.

    c) Include a time series chart to show trends of the recovery water level elevations at each slimes drain.

    d) Include the results of a quality assurance evaluation and data validation. Said examination shall provide written descriptions and findings that:

       1) Evaluate all data collected, data collection methods, and all related calculations required by this Permit, and

       2) Verify the accuracy and reliability of both the data and calculations reported.

    e) Demonstrate compliance status with the requirements of Part I.D.3(b) and I.E.7(b) of this Permit.

12. Decontamination Pads Annual Inspection Report - the New Decontamination Pad and Existing Decontamination Pad will be taken out of service and inspected annually during the second quarter of each year, to ensure integrity of the concrete wash pad surfaces. If physical defects in the wash

pad as defined by Part I.D.14 of the Permit are identified during the inspection, repairs shall be made prior to resuming the use of the facility. Said defects include, but are not limited to concrete deterioration, cracking, subsidence, etc. The results of the annual inspection and all repairs will be documented on inspection forms in accordance with the currently approved DMT Monitoring Plan. The inspection forms and documentation of all repairs completed shall be included in the 2nd Quarter DMT Monitoring Report due September 1, of each calendar year.

G. OUT OF COMPLIANCE STATUS

1. Accelerated Monitoring Status - is required if the concentration of a pollutant in any compliance monitoring sample exceeds a GWCL in Table 2 of the Permit; the facility shall then:

   a) Notify the Director in writing (the Exceedance Notice) within 30 calendar days of receipt of the last analytical data report for samples collected within a quarter, including quarterly and monthly samples, but no later than 60 days after the end of the quarter, and

   b) Initiate accelerated sampling of the pollutant as follows:

      1) Quarterly Baseline Monitoring Wells - for wells defined by Part I.E.1(b) the Permittee shall initiate monthly monitoring. Monthly monitoring shall begin the month following the month in which the Exceedance Notice is provided to the Director.

      2) Semi-annual Baseline Monitoring Wells - for wells defined by Part I.E.1(c) the Permittee shall initiate quarterly monitoring. Quarterly monitoring shall begin the quarter following the quarter in which the Exceedance Notice is provided to the Director.

      3) Said accelerated monitoring shall continue at the frequencies defined above until the compliance status of the facility can be determined by the Director.

2. Violation of Permit Limits - out-of-compliance status exists when the concentration of a pollutant in two consecutive samples from a compliance monitoring point exceeds a GWCL in Table 2 of this Permit.

3. Failure to Maintain DMT or BAT Required by Permit

   a) Permittee to Provide Information - in the event that the Permittee fails to maintain DMT or BAT or otherwise fails to meet DMT or BAT standards as required by the Permit, the Permittee shall submit to the Director a notification and description of the failure according to R317-6-6.16(C)(1). Notification shall be given orally within 24- hours of the Permittee's discovery of the failure of DMT or BAT, and shall be followed up by written notification, including the information necessary to make a determination under R317-6-6.16(C)(2), within five calendar days of the Permittee's discovery of the failure of best available technology.

   b) The Director shall use the information provided under R317-6-6.16.C(1) and any additional information provided by the Permittee to determine whether to initiate a compliance action against the Permittee for violation of Permit conditions. A compliance action shall not be initiated, if the Director determines that the Permittee has met the standards for an affirmative defense, as specified in R317-6-6.16(C)(3)(c).

   c) Affirmative Defense - in the event a compliance action is initiated against the Permittee for violation of Permit conditions relating to best available technology or DMT, the Permittee may affirmatively defend against that action by demonstrating the following:

      1) The Permittee submitted notification according to R317-6-6.13,

      2) The failure was not intentional or caused by the Permittee's negligence, either in action or in failure to act,

      3) The Permittee has taken adequate measures to meet Permit conditions in a timely manner or has submitted to the Director, for the Director's approval, an adequate plan and schedule for meeting Permit conditions, and

      4) The provisions of UCA 19-5-107 have not been violated.

4. Facility Out of Compliance Status - if the facility is out of compliance, the following is required:

   a) The Permittee shall notify the Director of the out of compliance status within 24-hours after detection of that status, followed by a written notice within 5 calendar days of the detection.

b) The Permittee shall continue accelerated sampling pursuant to Part I.G.1, unless the Director determines that other periodic sampling is appropriate, until the facility is brought into compliance.

c) The Permittee shall prepare and submit to the Director within 30 calendar days following the date the Exceedance Notice is submitted to the Director, a plan and a time schedule for assessment of the sources, extent and potential dispersion of the contamination, and an evaluation of potential remedial action to restore and maintain groundwater quality to insure that Permit limits will not be exceeded at the compliance monitoring point and that DMT or BAT will be reestablished.

d) The Director may require immediate implementation of the currently approved contingency plan in order to regain and maintain compliance with the Permit limit standards at the compliance monitoring point or to reestablish DMT or BAT as defined in the Permit.

e) Where it is infeasible to reestablish DMT or BAT as defined in the Permit, the Permittee may propose an alternative DMT or BAT for approval by the Director.

H. COMPLIANCE SCHEDULE REQUIREMENTS. The Permittee will comply with the schedules as described and summarized below:

1. Background Groundwater Quality Report for Wells MW-38, MW-39, MW-40 - within 30 calendar days of Director approval of the new monitoring well As-built Report, required by Part I.H.2, above, the Permittee shall commence a quarterly groundwater sampling program that will comply with the following Permit requirements:

    a) Routine groundwater compliance monitoring requirements of Part I.E.1.

    b) Well monitoring procedure requirements of Part I.E.5.

    c) After completion of eight consecutive quarters of groundwater sampling and analysis of wells MW-38, MW-39, MW-40 , the Permittee shall submit a Background Report for Director approval, that will include:

        1) Data preparation and statistical analysis of groundwater quality data, including, but not limited to, evaluation of data characteristics and internal data consistency, treatment of non-detectable values, and statistical methods used. These statistics shall be calculated using the Decision Tree/Flowchart used for the previous Background Reports that was conditionally approved by the DRC on August 24, 2007.

        2) Shallow aquifer average linear groundwater velocity calculated for the new wells, based on well specific hydraulic conductivity, hydraulic gradient, and effective aquifer porosity.

    d) If after review of the report, and the Director determines that additional information is required, the Permittee shall provide all requested information, resolve all issues identified, and re-submit the report for Director review and approval within a timeframe approved by the Director. After approval of this report, the Director will re-open this Permit and establish an appropriate monitoring frequency with the criteria found in Part I.E.1(b). Designation of these wells as “compliance” or “general” monitoring wells will be determined after analysis of the Background Quality Groundwater Report. If the new wells are determined to be compliance wells, the Director will establish Groundwater Compliance Limits in Table 2 for wells MW-38, MW-39, MW-40.

2. Background Groundwater Quality Report for Well MW-24A - within 30 calendar days of Director approval of the new monitoring well As-built Report, the Permittee shall commence a quarterly groundwater sampling program that will comply with the following Permit requirements:

    a) Routine groundwater compliance monitoring requirements of Part I.E.1.

    b) Well monitoring procedure requirements of Part I.E.5.

    c) After completion of eight consecutive quarters of groundwater sampling and analysis of well MW-24A, the Permittee shall submit a Background Report for Director approval, that will include:

        1) Data preparation and statistical analysis of groundwater quality data, including, but not limited to, evaluation of data characteristics and internal data consistency,

treatment of non-detectable values, and statistical methods used. These statistics shall be calculated using the Decision Tree/Flowchart used for the previous Background Report that was conditionally approved by the DRC on August 24, 2007.

2) Shallow aquifer average linear groundwater velocity calculated for the new well, based on well specific hydraulic conductivity, hydraulic gradient, and effective aquifer porosity.

d) If after review of the report, the Director determines that additional information is required, the Permittee shall provide all requested information, resolve all issues identified, and re-submit the report for Director review and approval within a time frame approved by the Director. After approval of this report, the Director will re-open this Permit and establish Groundwater Compliance Limits in Table 2 for wells MW-24A.

PART II. REPORTING REQUIREMENTS

A. REPRESENTATIVE SAMPLING. Samples taken in compliance with the monitoring requirements established under Part I shall be representative of the monitored activity.

B. ANALYTICAL PROCEDURES. Water sample analysis must be conducted according to test procedures specified under UAC R317-6-6.3.12 unless other test procedures have been specified in this Permit.

C. PENALTIES FOR TAMPERING. The Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this Permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

D. REPORTING OF MONITORING RESULTS. Monitoring results obtained during reporting periods specified in the Permit, shall be submitted to the Director at the following address, no later than the date specified following the completed reporting period:

Division of Waste Management and Radiation Control
Utah Department of Environmental Quality
195 North 1950 West
P.O. Box 144880
Salt Lake City, Utah 84114-4880

The quarterly due dates for reporting are: June 1, September 1, December 1, and March 1.

E. COMPLIANCE SCHEDULES. Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any Compliance Schedule of this Permit shall be submitted no later than 14 calendar days following each schedule date.

F. ADDITIONAL MONITORING BY THE PERMITTEE. If the Permittee monitors any pollutant more frequently than required by this Permit, using approved test procedures as specified in this Permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted. Such increased frequency shall also be indicated.

G. RECORDS CONTENTS.

1. Records of monitoring information shall include:
   a) The date, exact place, and time of sampling, observations, or measurements:
   b) The individual(s) who performed the sampling, observations, or measurements;
   c) The date(s) and time(s) analyses were performed;
   d) The name of the certified laboratory which performed the analyses;
   e) The analytical techniques or methods used; and,
   f) The results of such analyses.

H. RETENTION OF RECORDS. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and copies of all reports required by this Permit, and records of all data used to complete the application for this Permit, for a period of at least five years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

I. NOTICE OF NONCOMPLIANCE REPORTING.

1. The Permittee shall verbally report any noncompliance which may endanger public health or the environment as soon as possible, but no later than 24-hours from the time the Permittee first became aware of the circumstances. The report shall be made to the Utah Department of Environmental Quality 24-hour number, (801) 538-6333, or to the Division of Water Quality, Ground Water Protection Section at (801) 538-6146, during normal business hours (8:00 am - 5:00 pm Mountain Time).

2. A written submission shall also be provided to the Director within five calendar days of the time that the Permittee becomes aware of the circumstances. The written submission shall contain:

   a) A description of the noncompliance and its cause;

   b) The period of noncompliance, including exact dates and times;

   c) The estimated time noncompliance is expected to continue if it has not been corrected; and,

   d) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

3. Reports shall be submitted to the addresses in Part II.D, Reporting of Monitoring Results.

J. OTHER NONCOMPLIANCE REPORTING. Instances of noncompliance not required to be reported within 5 calendar days, shall be reported at the time that monitoring reports for Part II.D are submitted.

K. INSPECTION AND ENTRY. The Permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the Permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and,

4. Sample or monitor at reasonable times, for the purpose of assuring Permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

PART III. COMPLIANCE RESPONSIBILITIES

A. DUTY TO COMPLY. The Permittee must comply with all conditions of this Permit. Any Permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and re-issuance, or modification; or for denial of a permit renewal application. The Permittee shall give advance notice to the Director of the Division of Water Quality of any planned changes in the permitted facility or activity which may result in noncompliance with Permit requirements.

B. PENALTIES FOR VIOLATIONS OF PERMIT CONDITIONS. The Act provides that any person who violates a Permit condition implementing provisions of the Act is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates Permit conditions is subject to a fine not exceeding $25,000 per day of violation. Any person convicted under Section 19-5-115 of the Act a second time shall be punished by a fine not exceeding $50,000 per day. Nothing in this Permit shall be construed to relieve the Permittee of the civil or criminal penalties for noncompliance.

C. NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE. It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Permit.

D. DUTY TO MITIGATE. The Permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this Permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. PROPER OPERATION AND MAINTENANCE. The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of the Permit.

PART IV. GENERAL REQUIREMENTS

A. PLANNED CHANGES. The Permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required when the alteration or addition could significantly change the nature of the facility or increase the quantity of pollutants discharged.

B. ANTICIPATED NONCOMPLIANCE. The Permittee shall give advance notice of any planned changes in the permitted facility or activity which may result in noncompliance with Permit requirements.

C. PERMIT ACTIONS. This Permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and re-issuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

D. DUTY TO REAPPLY. If the Permittee wishes to continue an activity regulated by this Permit after the expiration date of this Permit, the Permittee must apply for and obtain a new permit. The application should be submitted at least 180 calendar days before the expiration date of this Permit.

E. DUTY TO PROVIDE INFORMATION. The Permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this Permit.

F. OTHER INFORMATION. When the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Director, it shall promptly submit such facts or information.

G. SIGNATORY REQUIREMENTS. All applications, reports or information submitted to the Director shall be signed and certified.

1. All permit applications shall be signed as follows:
   a) For a corporation: by a responsible corporate officer;
   b) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.
   c) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

2. All reports required by the Permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
   a) The authorization is made in writing by a person described above and submitted to the Director, and,
   b) The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).

3. Changes to Authorization. If an authorization under Part IV.G.2. is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part IV.G.2 must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. PENALTIES FOR FALSIFICATION OF REPORTS. The Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this Permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

I. AVAILABILITY OF REPORTS. Except for data determined to be confidential by the Permittee, all reports prepared in accordance with the terms of this Permit shall be available for public inspection at the offices of the Director. As required by the Act, permit applications, permits, effluent data, and groundwater quality data shall not be considered confidential.

J. PROPERTY RIGHTS. The issuance of this Permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

K. SEVERABILITY. The provisions of this Permit are severable, and if any provision of this Permit, or the application of any provision of this Permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Permit, shall not be affected thereby.

L. TRANSFERS. This Permit may be automatically transferred to a new Permittee if:

1. The current Permittee notifies the Director at least 30 calendar days in advance of the proposed transfer date;

2. The notice includes a written agreement between the existing and new Permittee containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,

3. The Director does not notify the existing Permittee and the proposed new Permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.

M. STATE LAWS. Nothing in this Permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, penalties established pursuant to any applicable state law or regulation under authority preserved by Section 19-5-115 of the Act.

N. REOPENER PROVISIONS. This Permit may be reopened and modified (following proper administrative procedures) to include the appropriate limitations and compliance schedule, if necessary, if one or more

of the following events occurs:

1. If new ground water standards are adopted by the Board, the Permit may be reopened and modified to extend the terms of the Permit or to include pollutants covered by new standards. The Permittee may apply for a variance under the conditions outlined in R317-6-6.4(D).

2. Changes have been determined in background groundwater quality.

3. The Director determines permit modification is necessary to protect human health or the environment.