

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 ancestral 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." R313-22-34(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 shallow 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. R313-24-3 governs “Environmental Analysis” of major amendments for uranium mills:

(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 reclamation 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 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 the impacts 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 OF DECOMMISSIONING, URANIUM RECOVERY, AND WASTE PROGRAMS INTERIM STAFF GUIDANCE DUWP-ISG-01 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 mill 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

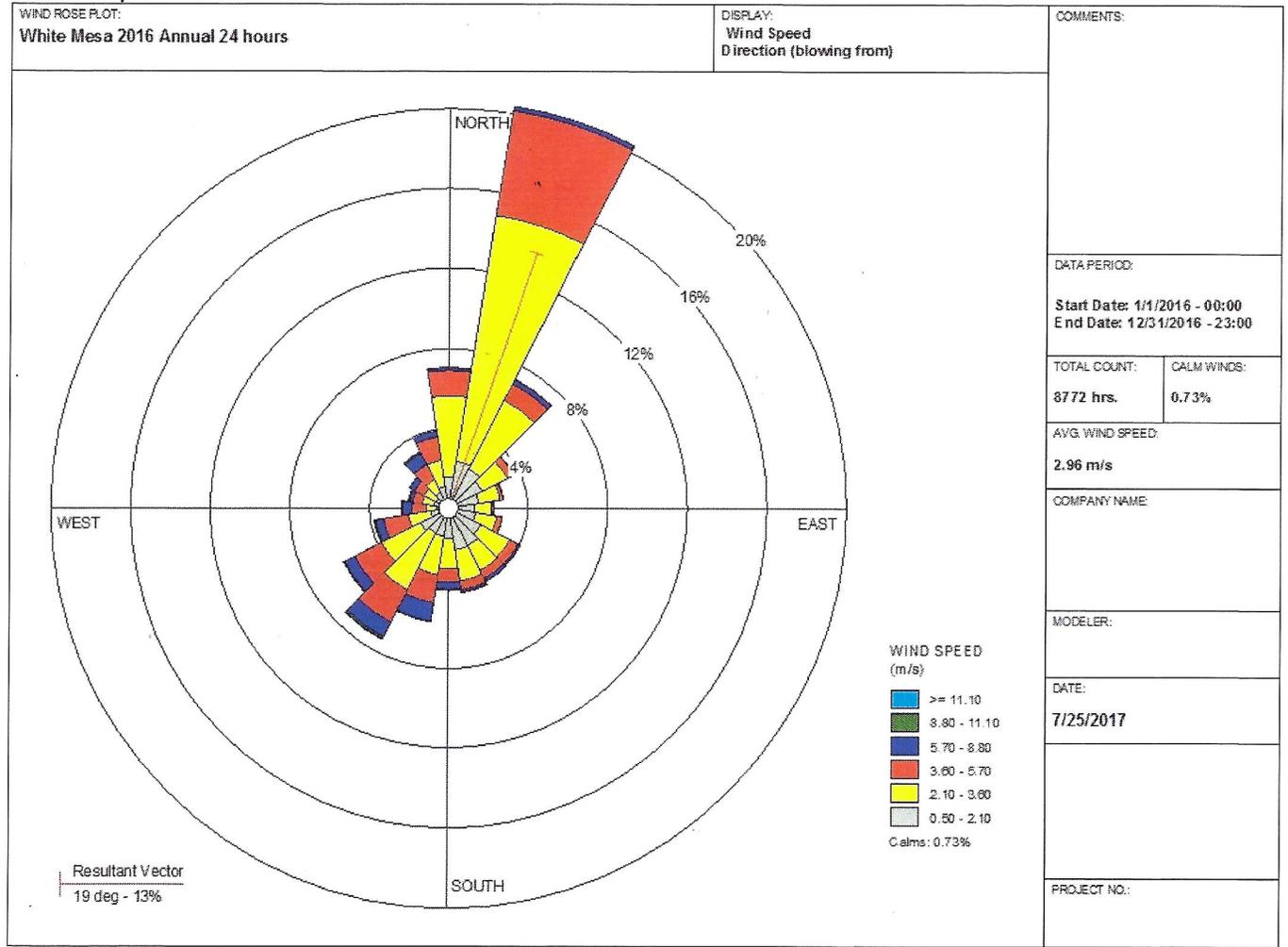


Figure 2

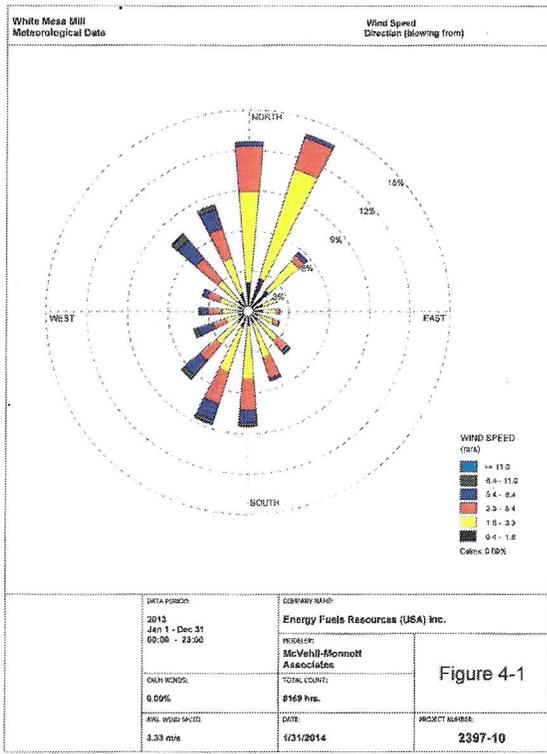


Figure 4-1 January – December 2013 Wind Rose

Figure 3

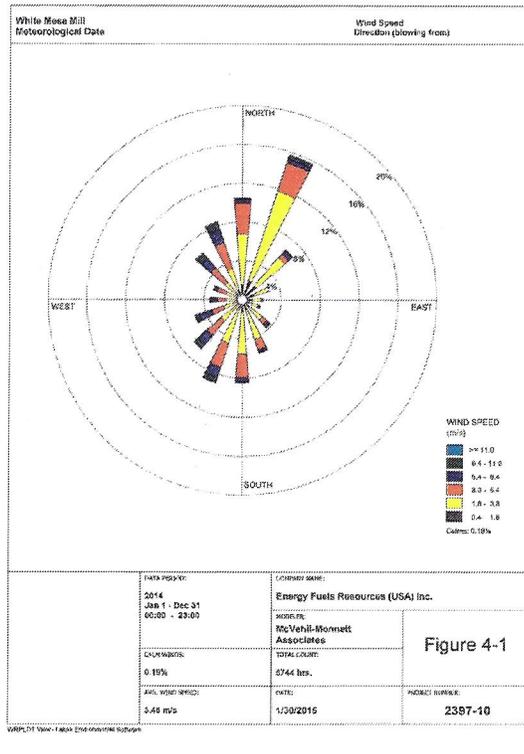


Figure 4-1 January – December 2014 Wind Rose

Figure 4

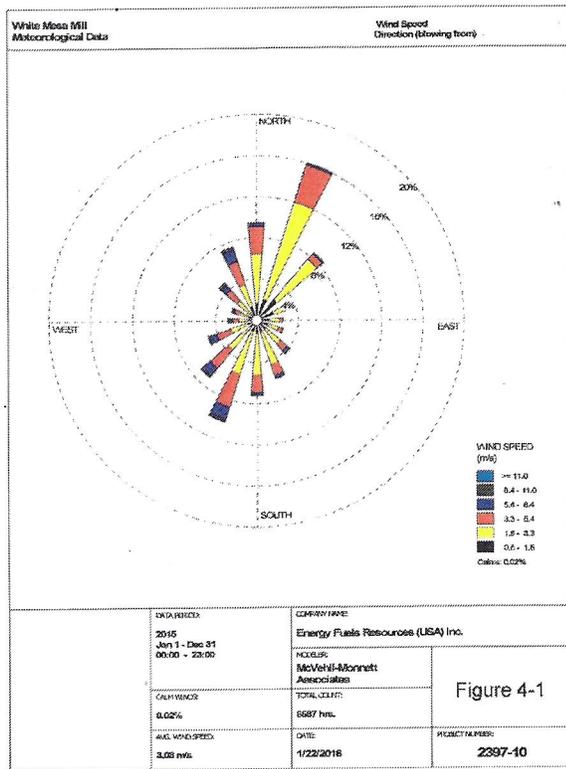


Figure 4-1 January – December 2015 Wind Rose

Figure 5

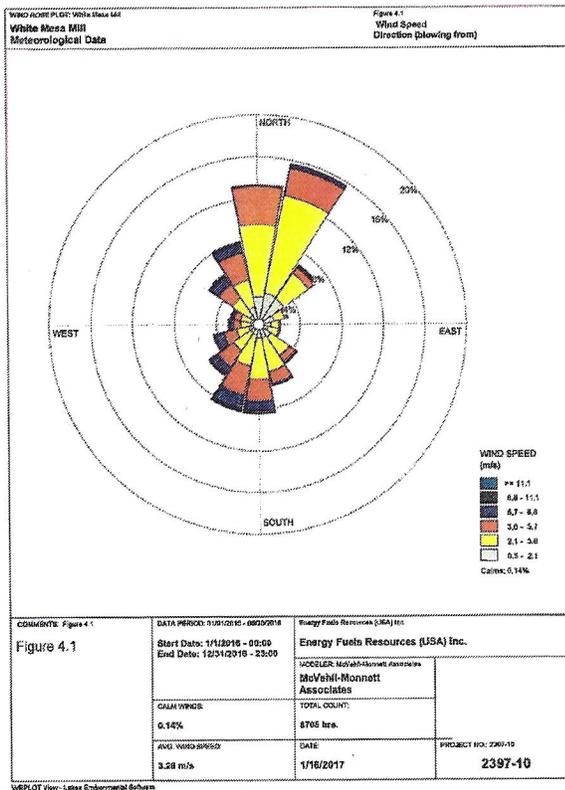


Figure 4-1 January – December 2016 Wind Rose

Figure 6

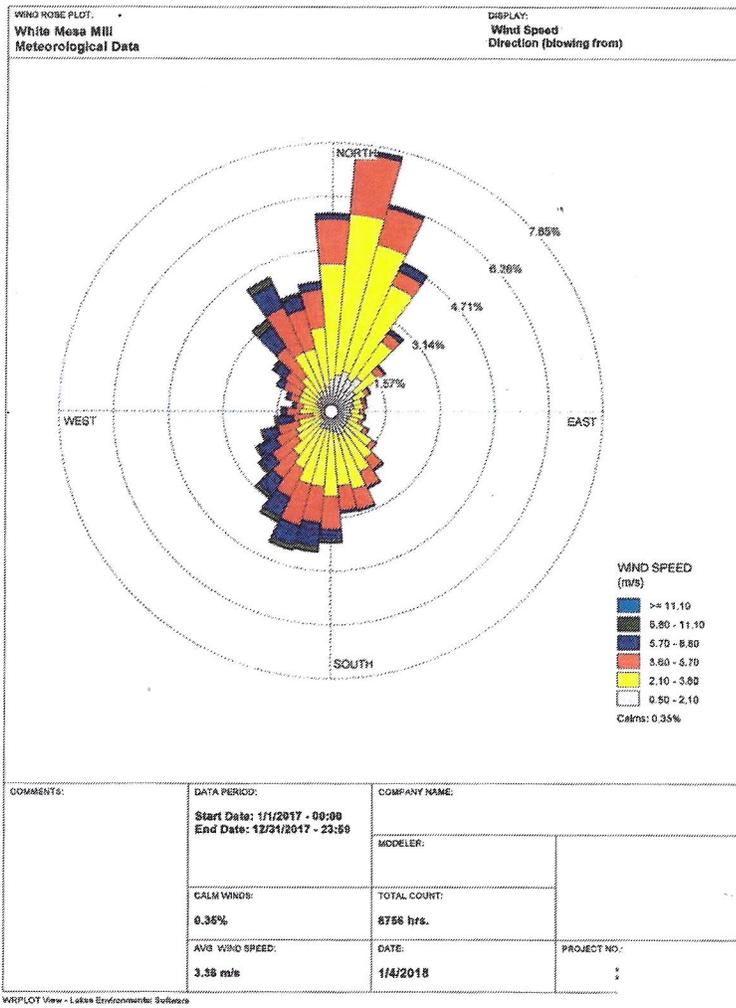


Figure 4-1 January – December 2017 Wind Rose

(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 Mill’s environmental monitoring stations and reported to the Division in the semi-annual environmental reports confirm this study’s conclusions. Therefore, processing the Silmet uranium bearing 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 mill 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 2.6 miles, instead of the 9.4 mile minimum originally stated by NRC in its Environmental Statement for the White Mesa Mill).”

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. P17, 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.

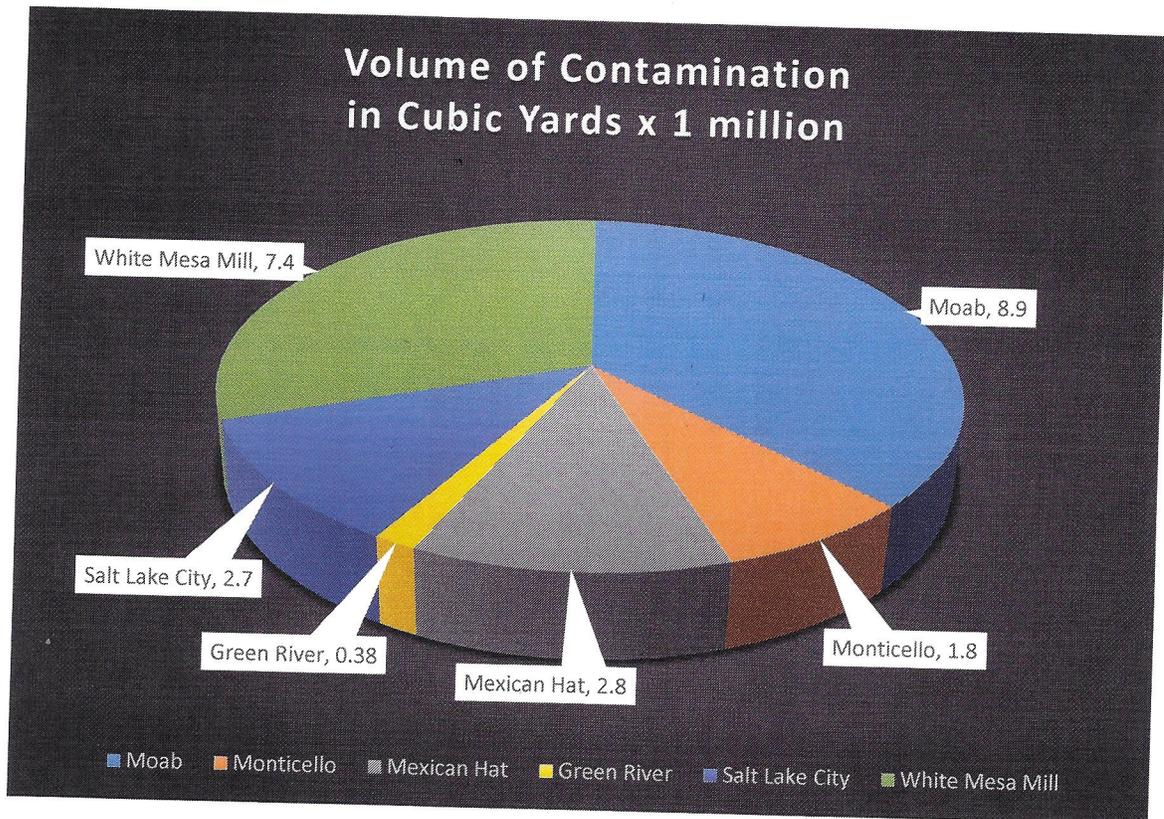
20. According to the original EA of 1978 and historical practices, the White Mesa Mill should have already entered closure and ceased accepting any more material. The Tribe has commented over the past years on the Alternate feed materials being processed at a Mill (originally stated in the Environmental 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	
<i>White Mesa Mill</i>	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 post-closure 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 to 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 Ia_ 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 1c, II and Class III groundwater.

Class 1a 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 1c 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 III 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.

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.

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.

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.

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.

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 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. 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.

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.

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).

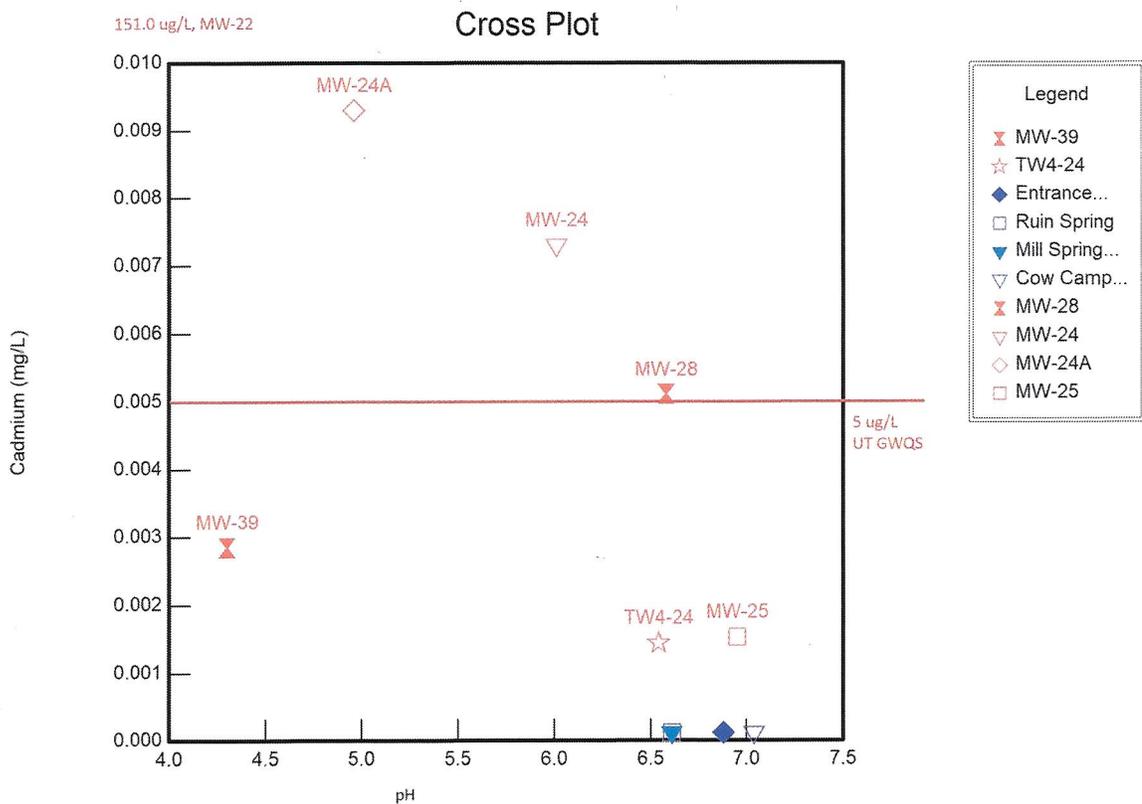
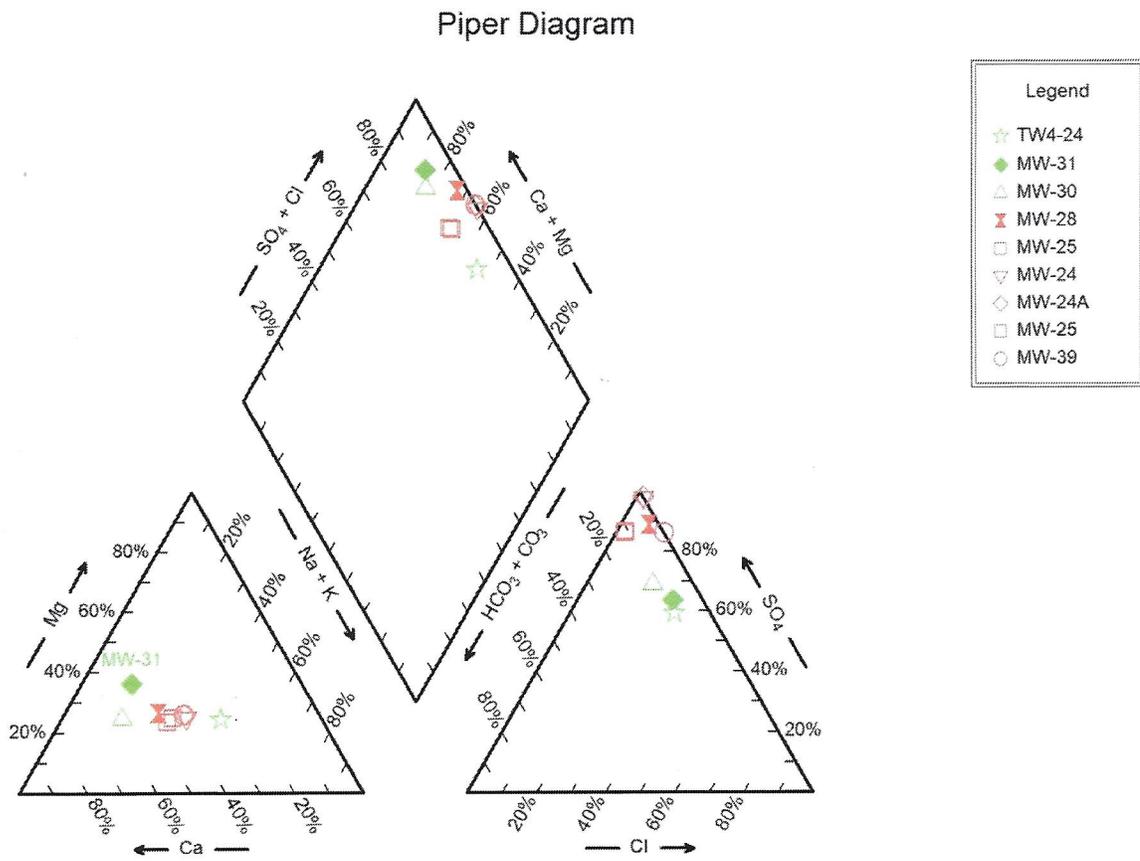


Figure 8: Cadmium/pH cross plot data for wells is from the 1st Quarter 2020 Quarterly monitoring report

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 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

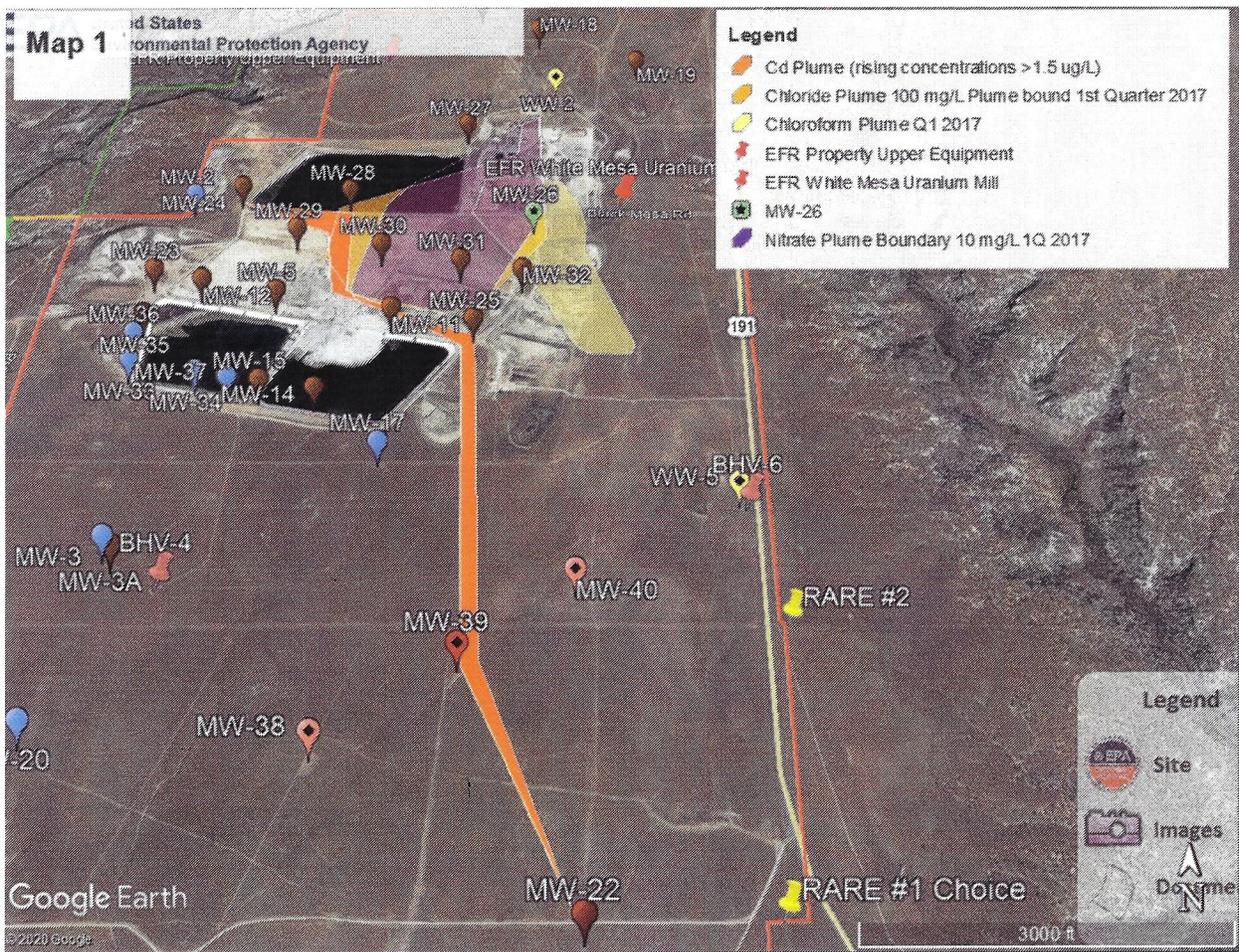


28.c. In addition to the ion and cadmium signature, the presence of rising concentrations of Cobalt and nickel in MW-24/MW-24A, MW-28, MW-39 and MW-22 distinguish this group of wells as impacted by the mill facility and are two constituents that can be expected to show up at MW-25 in the near future 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



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.

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 1st 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 site-wide 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 (1st 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

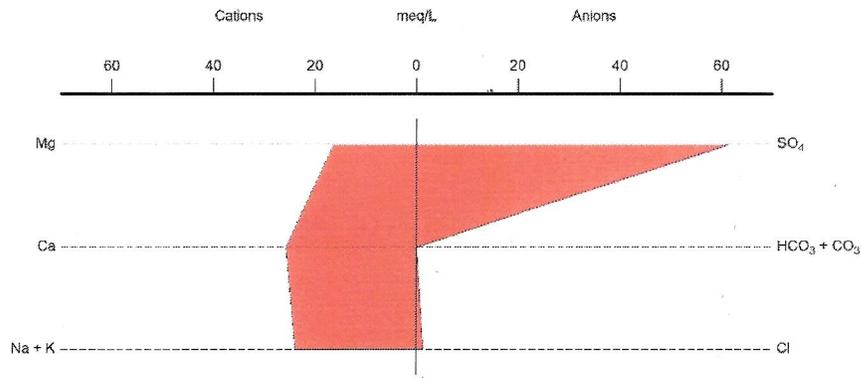


Figure 11:

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

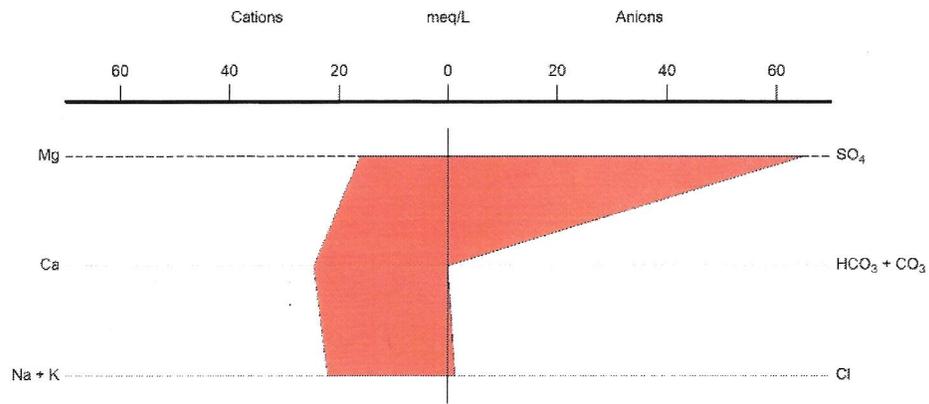


Figure 12:

Piper Diagram

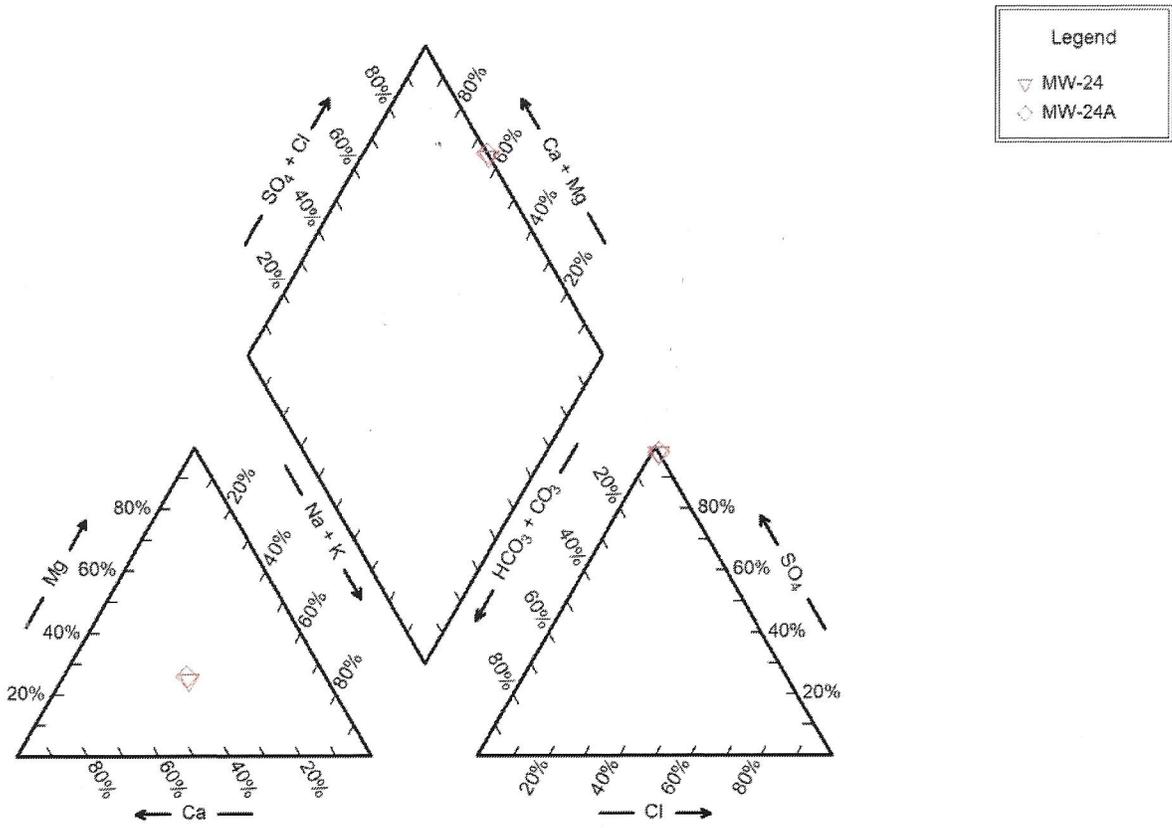


Table 2: MW-24 and MW24A Data Comparison

Name	Unit	MW-24	MW-24A
Sample ID		MW-24	MW-24A
Date		1/22/2020	1/22/2020
Calcium	mg/L	515	492
Magnesium	mg/L	199	196
Sodium	mg/L	542	498
Potassium	mg/L	13.1	12.7
Bicarbonate	mg/L	10	5.2
Sulfate	mg/L	2960	3130
Chloride	mg/L	47.8	47.5
Dissolved Solids	mg/L	4160	4420
pH		6.01	4.96
Fluoride	mg/L	0.808	1.41
Ammonia	mg/L	0.118	0.174
Nitrate	mg/L	0.332	0.189
Beryllium	mg/L	0.00207	0.00396
Cadmium	mg/L	0.0073	0.0093
Chromium	mg/L	0.01	0.01
Cobalt	mg/L	0.115	0.138
Copper	mg/L	0.01	0.0122
Iron	mg/L	0.0698	0.001
Lead	mg/L	0.0016	0.001
Manganese	mg/L	7.01	7.43
Molybdenum	mg/L	0.01	0.01
Nickel	mg/L	0.0681	0.065
Selenium	mg/L	0.00816	500E-6
Thallium	mg/L	0.00192	0.00125
Uranium	mg/L	0.00489	0.00543
Vanadium	mg/L	0.015	0.015
Zinc	mg/L	0.143	0.125
Conductivity	µmho/cm	4400	4298
Eh	mV	693	619

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

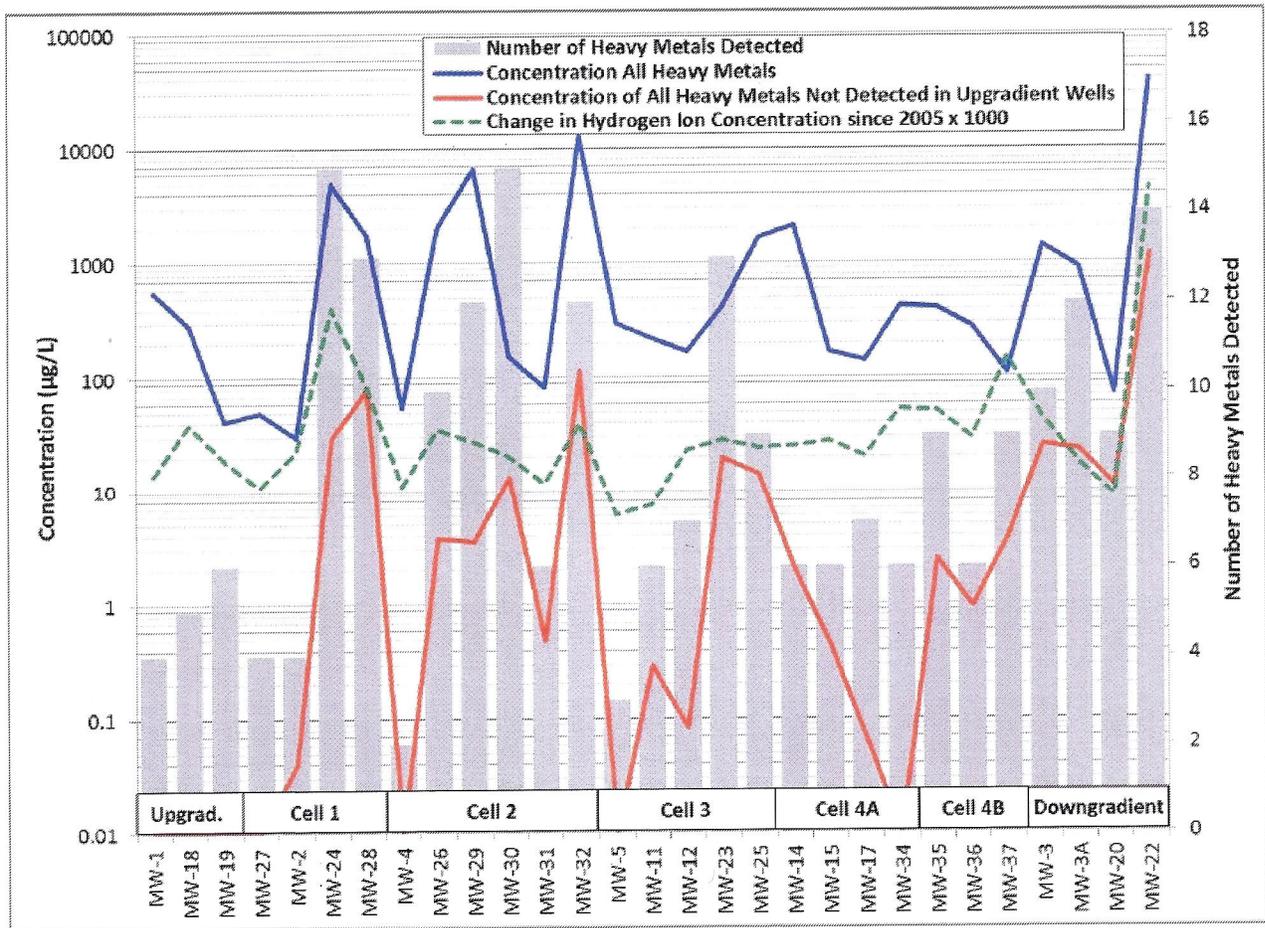


FIGURE 27 - HEAVY METALS IN MONITORING WELLS

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 UT1900479 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

Simonis 2016, White Mesa Mill Cultural Resources Monitoring Plan 2016

Advisory Council on Historic Preservation, 1985. Cultural Resource Easement Agreement, 1985 Amendment to Memorandum of Agreement

U.S.EPA, 2018. Report on CERCLA Offsite Rule Inspection May, 2017. Linda Jacobson, EPA Inspector, to David Frydenlund, EFRI, February 15, 2018

Avery, Charles. 1986. State of Utah Department of Natural Resources Technical Publication No. 68, "Bedrock Aquifers of Eastern San Juan County, Utah (1986)

UDWMRC, 2020. 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

Geologic, 2017. Updated Data Review and Evaluation of Groundwater Monitoring. White Mesa Uranium Mill, Blanding, Utah. July, 2017.

Kirby, Stefan. 2008. Utah Geological Survey Special Study 123, "Geologic and Hydrologic Characterization of the Dakota-Burro Canyon Aquifer near Blanding, San Juan County, Utah" (2008)

Hydro Geo Chem, Inc. March 30, 2018. Chloroform Corrective Action Comprehensive Monitoring and Evaluation (CACME) Report, White Mesa Uranium Mill near Blanding Utah. Prepared for Energy Fuels Resources (USA) Inc.

Energy Fuels Resources (USA) Inc, 2020. White Mesa Uranium Mill Groundwater Monitoring Report. State of Utah Groundwater Discharge Permit No. UGW370004 1st Quarter (January through March) 2020. May 5, 2020.

EFRI, 2018. *Reclamation Plan, White Mesa Mill, Blanding, Utah*, Radioactive Materials License No. UT1900479, Rev. 5.1B (DRC-2018-001449), 2018

RRD, International Corp, 2011. Correspondence to Ms. Celene Hawkins, Associate General Counsel UMUT, RE: Review of Containment and Closure Issues, Denison USA / White Mesa Uranium Mill, Relicensing Application, Revision 5.0, Sept 2011, 1 December 2011

U.S. Nuclear Regulatory Commission (NRC), 1979. *Final Environmental Statement related to operation of White Mesa Uranium Project San Juan County, Utah*, Office of Nuclear Material Safety and Safeguards, NUREG-0556, 1979