Cell 4A BAT Monitoring, Operations and Maintenance Plan.

Introduction

Construction of Cell 4A was authorized by the Utah Department of Environmental Quality, Division of Radiation Control ("DRC) on June 25, 2007. The construction authorization provided that Cell 4A shall not be in operation until after a BAT Monitoring, Operations and Maintenance Plan is submitted for Executive Secretary review and approval. The Plan shall include requirements in Part F.3 of the Groundwater Discharge Permit No. UGW370004 ("GWDP") and full fill the requirements of Parts I.D.6, I.E.8, and I.F.8 of the GWDP.

Cell Design

Tailings Cell 4A consists of the following major elements:

a) Dikes – consisting of earthen embankments of compacted soil, constructed between 1989-1990, 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 a 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 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) Dike Splash Pads – A minimum of eight (8) 10-foot wide splash pads are installed on the interior dike slopes 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 placed down the inside slope of Cell 4A, from the top of the dike and down the inside slope. The pads on the north side of the Cell will extend to a point 5-feet beyond the toe of the slope to protect the liner bottom during initial startup of the Cell. The exact location of the splash pads is detailed on the As-Built Plans and Specifications.

g) Emergency Spillway – a concrete lined spillway 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.

Cell Operation

Solution Discharge

Cell 4A will initially be used for storage and evaporation of process solutions from the Mill operations. These process solutions will be from the uranium/vanadium solvent extraction circuit, or transferred from Cell 1 evaporation pond or the free water surface from Cell 3. The solution will be pumped to Cell 4A through 6 inch or 8 inch diameter HDPE pipelines. The initial solution discharge will be in the southwest corner of the Cell. The discharge pipe will be routed down the Splash Pad provided in the corner of the Cell to protect the pipeline running from the solution reclaim barge. The solution will be discharged in the bottom of the Cell, away from any sand bags or other installation on the top of the FML. Building the solution pool from the low end of the Cell will allow the solution pool to gradually rise around the slimes drain strips, eliminating any damage to the strip drains or the sand bag cover due to solution flowing past the drainage strips. The solution will eventually be discharged along the dike between Cell 3 and Cell 4A, utilizing the Splash Pads described above. The subsequent discharge of process solutions will be near the floor of the pond, through a discharge header designed to discharge through multiple points, thereby reducing the potential to damage the Splash Pads or the Slimes Drain system. At no time will the solution be discharged into less than 2 feet of solution. As the cell begin to fill with solution the discharge point will be pull back up the Splash Pad and allowed to continue discharging at or near the solution level.

Initial Solids Discharge

Once Cell 4A is needed for storage for tailings solids the slurry discharge from No. 8 CCD thickener will be pumped to the cell through 6 inch or 8 inch diameter HDPE pipelines. The pipelines will be routed along the dike between Cell 3 and Cell 4A, with discharge valves and drop pipes extending down the Splash Pads to the solution level. One or all of the discharge points can be used depending on operational considerations. Solids will settle into a cone, or mound, of material under the solution level, with the courser fraction settling out closer to the discharge point. The initial discharge locations are shown on Figure 1. Figure 2 illustrates the general location of the solution and slurry discharge pipelines and control valve locations. The valves are 6” or 8” stainless steel knife-gate valves. The initial discharge of slurry will be at or near the toe of the Cell slope and then gradually moved up the slope, continuing to discharge at or near the water surface. This is illustrated in Section A-A on Figure 2. Because of the depth of Cell 4A, each of the discharge points will be utilized for an extended period of time before the cone of material is above the maximum level of the solution. The discharge location will then moved further to the interior of the cell allowing for additional volume of solids to be placed under the solution level. The solution level in the cell will vary depending on the operating schedule of the Mill and the seasonal evaporation rates. The tailings slurry will not be allowed to discharge directly on to the Splash Pads, in order to further protect the FML. The tailings slurry will discharge directly in to the solution contained in the Cell, onto an additional protective sheet, or on to previously deposited tailings sand.

Equipment Access

Access will be restricted to the interior portion of the cell due to the potential to damage the flexible membrane liner. Only rubber tired all terrain vehicles or foot traffic will be allowed on the flexible membrane liner. Personnel are also cautioned on the potential damage to the flexible membrane liner through the use and handling of hand tools and maintenance materials.

<u>Reclaim Water System</u>

A pump barge and solution recovery system will be installed in the southwest corner of the cell to pump solution from the cell for water balance purposes or for re-use in the Mill process. Figure 3 illustrates the routing of the solution return pipeline and the location of the pump barge. The pump barge will be constructed and maintained to ensure that the flexible membrane liner is not damaged during the initial filling of the cell or subsequent operation and maintenance activities. The condition of the pump barge and access walkway will be noted during the weekly Cell inspections.

<u>Interim Solids Discharge</u>

Figure 4 illustrates the progression of the slurry discharge points around the east side of Cell 4A. Once the tailings solids have been deposited along the north and east sides of the Cell, the discharges points will subsequently be moved to the sand beaches, which will eliminate any potential for damage to the liner system.

<u>Liner Maintenance and QA/QC</u>

Any construction defects or operational damage discovered during observation of the flexible membrane liner will be repaired, tested and documented according to the procedures detailed in the approved **Revised construction Quality Assurance Plan for the Construction of the Cell 4A Lining System, May 2007, by GeoSyntec Consultants.**

BAT Performance Standards for Tailings Cell 4A

DUSA will operate and maintain Tailings Cell 4A so as to prevent release of wastewater to groundwater and the environment in accordance with this BAT Monitoring Operations and Maintenance Plan, pursuant to Part I.H.19 of the GWDP. These performance standards shall include:

1) Leak Detection System Pumping and Monitoring Equipment – the leak detection system pumping and monitoring equipment, includes a submersible pump, pump controller, water level indicator (head monitoring), and flow meter with volume totalizer. The pump controller is set to maintain the maximum level in the leak detection system at no more than 1 foot above the lowest level of the secondary flexible menbrane. A second leak detection pump with pressure transducer, flow meter, and manufacturer recommended spare parts for the pump controller and water level data collector is maintained in the Mill warehouse to ensure that the pump and controller can be replaced and operational within 24 hours of detection of a failure of the pumping system. The root cause

of the equipment failure will be documented in a report to Mill management with recommendations for prevention of a re-occurrence.

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 specified in the **White Mesa Mill Tailings Management System and Discharge Minimization Technology (DMT) monitoring Plan, 3/07 Revision: Denison-3,** or the currently approved DMT Plan. 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.

3) Maximum Allowable Daily LDS Flow Rates - the Permittee shall measure the volume of all fluids pumped from the LDS on a weekly basis, and use that information to calculate an average volume pumped per day. Under no circumstances shall the daily LDS flow volume exceed 24,160 gallons/day. The maximum daily LDS flow volume will be compared against the measured cell solution levels detailed on the attached Table 1 to determine the maximum daily allowable LDS flow volume for varying head conditions in the cell. .

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.

5) Slimes Drain Recovery Head Monitoring – immediately after the Permittee initiates pumping conditions in the Tailings Cell 4A slimes drain system, monthly recovery head tests and fluid level measurements will be made in accordance with a plan approved by the DRC Executive Secretary. The slimes drain system will pumping and monitoring equipment, includes a submersible pump, pump controller, water level indicator (head monitoring), and flow meter with volume totalizer.

Routine Maintenance and Monitoring

Trained personnel inspect the White Mesa tailings system on a once per day basis. Any abnormal occurrences or changes in the system will be immediately reported to Mill management and maintenance personnel. The inspectors are trained to look for events involving the routine placement of tailings material as well as events that could affect the integrity of the tailings cell dikes or lining systems. The daily inspection reports are summarized on a monthly basis and reviewed and signed by the Mill Manager.

Solution Elevation

Measurements in Cell 4A are to be taken by survey on a weekly basis as follows:

(i) The survey will be performed by the Mill's Radiation Safety Officer or designee (the "Surveyor") with the assistance of another Mill worker (the "Assistant");

(ii) The survey will be performed using a survey instrument (the "Survey Instrument") accurate to 0.01 feet, such as a Sokkai No. B21, or equivalent, together with a survey rod (the "Survey Rod") having a visible scale in 0.01 foot increments;

(iii) The reference Points (the "Reference Points") for Cells 4A are known points established by Registered Land Surveyor. For Cell 4A, the Reference Point is a piece of metal rebar located on the dike between Cell 3 and Cell 4A. The elevation at the top of this piece of rebar (the Reference Point Elevation for Cell 4A is at 5,607.83 feet above mean sea level ("amsl");

(iv) The Surveyor will set up the Survey Instrument in a location where both the applicable Reference Point and pond surface are visible. For Cell 4A, this is typically on the road between Cell 3 and Cell4A, approximately 100 feet east of the Cell 4A Reference Point;

(v) Once in location, the Surveyor will ensure that the Survey Instrument is level by centering the bubble in the level gauge on the Survey Instrument;

(vi) The Assistant will place the Survey Rod vertically on the Cell 4A Reference Point. The Assistant will ensure that the Survey Rod is vertical by gently rocking the rod back and forth until the Surveyor has established a level reading;

(vii) The Surveyor will focus the cross hairs of the Survey Instrument on the scale on the Survey Rod, and record the number (the "Reference Point Reading"), which represents the number of feet the Survey Instrument is reading above the Reference Point;
The Assistant will then move to a designated location where the Survey Rod can be placed on the surface of the main solution pond in Cell 4A. The designated location for Cell 4A is in the northeast corner of the Cell where the side slope allows for safe access to the solution surface.

The approximate coordinate locations for the measuring points for Cell 4A is 2,579,360 east, and 320,300 north. These coordinate locations may vary somewhat depending on solution elevations in the Cell.

The Assistant will hold the Survey Rod vertically with one end of the Survey Rod just touching the pond surface. The Assistant will ensure that the Survey Rod is vertical by gently rocking the rod back and forth until the Surveyor has established a level reading;

(viii) The Surveyor will focus the cross hairs of the Survey Instrument on the scale on the Survey Rod, and record the number (the "Pond Surface

Reading”), which represents the number of feet the Survey Instrument is reading above the pond surface level.

The Surveyor will calculate the elevation of the pond surface in feet amsl by adding the Reference Point Reading for the Cell and subtracting the Pond Surface Reading for the Cell, and will record the number accurate to 0.01 feet.

Leak Detection System

The Leak detection system is monitored on a continuous basis by use of a pressure transducer that feeds water level information to an electronic data collector. The water levels are measured every hour and the information is stored for later retrieval. The water levels are measured to the nearest 0.10 inch. The data collector is currently programmed to store 7 days of water level information. The number of days of stored data can be increased beyond 7 days if needed. The water level data is downloaded to a laptop computer on a weekly basis and incorporated into the Mill’s environmental monitoring data base, and into the files for weekly inspection reports of the tailings cell leak detection systems. Within 24 hours after collection of the weekly water level data, the information will be evaluated to ensure that: 1) the water level in the leak detection sump did not exceed the allowable level (5556.14 feet amsl), and 2) the average daily flow rate from the LDS did not exceed the maximum daily allowable flow rate at any time during the reporting period. For Cell 4A, 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. To determine the Maximum Allowable Daily LDS Flow Rates in the Cell 4A leak detection system, the total volume of all fluids pumped from the LDS on a weekly basis shall be recovered from the data collector, and that information will be used to calculate an average volume pumped per day. Under no circumstances shall the daily LDS flow volume exceed 24,160 gallons/day. The maximum daily LDS flow volume will be compared against the measured cell solution levels detailed on the attached Table 1, to determine the maximum daily allowable LDS flow volume for varying head conditions in Cell 4A. Any abnormal or out of compliance water levels must be immediately reported to Mill management. The data collector is also equipped with an audible alarm that sounds if the water level in the leak detection sump exceeds the allowable level (5556.14 feet amsl). The current water level is displayed at all times on the data collector and available for recording on the daily inspection form. The leak detection system is also equipped with a leak detection pump, EPS Model # 25S05-3 stainless steel, or equal. The pump is capable of pumping in excess of 25 gallons per minute at a total dynamic head of 50 feet. The pump has a 1.5 inch diameter discharge, and operates on 460 volt 3 phase power. The pump is equipped with a pressure sensing transducer to start the pump once the level of solution in the leak detection sump is approximately 2.25 feet (elevation 5555.89) above the lowest level of the leak detection sump (9 inches above the lowest point on the lower flexible membrane liner, to ensure the allowable 1.0 foot (5556.14 feet amsl) above the lowest point on the lower flexible membrane liner is not exceeded). The attached Figure 6, Leak Detection Sump Operating Elevations, illustrates the relationship between the sump elevation, the lowest point on the lower flexible membrane liner and the pump-on solution elevation for the leak detection pump. The pump also has manual start and stop controls. The pump will operate until the solution is drawn down to the lowest level possible, expected to be approximately 4 inches above the lowest level of the sump (approximate elevation 5554.0). The pump discharge is equipped with a 1.5 inch flow meter, EPS Paddle Wheel Flowsensor, or equal, that reads the pump discharge in gallons per minute, and records total gallons pumped. The flow rate and total gallons is recorded by the Inspector on the weekly inspection form. The leak detection pump is installed in the horizontal section of the 18 inch, horizontal, perforated section of the PVC collection pipe. The distance from the top flange face, at the collection pipe invert, to the centerline of the 22.5 degree elbow is 133.4 feet, and the vertical height is approximately 45 feet. The pump is installed at least 2 feet beyond the centerline of the elbow. The bottom of the pump will be installed in the leak detection sump at least 135.4 feet or more from the top of the flange invert. A pressure transducer installed with the pump continuously measures the solution head and is programmed to start and stop the pump within the ranges specified above. The attached Figure 5 illustrates the general configuration of the pump installation.

A second leak detection pump with pressure transducer, flow meter, and manufacturer recommended spare parts for the pump controller and water level data collector will be maintained in the Mill warehouse to ensure that the pump and controller can be replaced and operational within 24 hours of detection of a failure of the pumping system. The root cause of the equipment failure will be documented in a report to Mill management with recommendations for prevention of a re-occurrence.

<u>Slimes Drain System</u>

(i) A pump, Tsurumi Model # KTZ23.7-62 stainless steel, or equal, will be placed inside of the slimes drain access riser pipe and a near as possible to the bottom of the slimes drain sump. The bottom of the slimes drain sump is 38 feet below a water level measuring point at the centerline of the slimes drain access pipe, near the ground surface level. The pump discharge will be equipped with a 2 inch flow meter, E/H Model #33, or equal, that reads the pump discharge in gallons per minute, and records total gallons pumped. The flow rate and total gallons will be recorded by the Inspector on the weekly inspection form.

(ii) The slimes drain pump will be on adjustable probes that allows the pump to be set to start and stop on intervals determined by Mill management.

(iii) The Cell 4A slimes drain pump will be checked weekly to observe that it is operating and that the level probes are set properly, which is noted on the Weekly Tailings Inspection Form. If at any time the pump is observed to be not working properly, it will be repaired or replaced within 15 days;

(iv) Depth to wastewater in the Cell 4A slimes drain access riser pipe shall be monitored and recorded weekly to determine maximum and minimum fluid head before and after a pumping cycle, respectively. All head measurements must be made from the same measuring point, to the nearest 0.01 foot. The results will be recorded as depth-in-pipe measurements on the Weekly Tailings Inspection Form;

(v) On a monthly basis, the slimes drain pump will be turned off and the wastewater in the slimes drain access pipe will be allowed to stabilize for at least 90 hours. Once the water level has stabilized (based on no change in water level for three (3) successive readings taken no less than one (1) hour apart) the water level of the wastewater will be measured and recorded as a depth-in-pipe measurement on the Monthly Inspection Data form, by measuring the depth to water below the water level measuring point on the slimes drain access pipe;

The slimes drain pump will not be operated until Mill management has determined that no additional process solutions will be discharged to Cell 4A, and the Cell has been partially covered with the first phase of the reclamation cap. The long term effectiveness and performance of the slimes drain dewatering will be evaluated on the same basis as the currently operating slimes drain system for Cell 2.

Tailings Emergencies

Inspectors will notify the Radiation Safety Officer and/or Mill management immediately if, during their inspection, they discover that an abnormal condition exists or an event has occurred that could cause a tailings emergency. Until relieved by the Environmental or Radiation Technician or Radiation Safety Officer, inspectors will have the authority to direct resources during tailings emergencies.

Any major catastrophic events or conditions pertaining to the tailings area should be reported immediately to the Mill Manager or the Radiation Safety Officer, one of whom will notify Corporate Management. If dam failure occurs, notify your supervisor and the Mill Manager immediately. The Mill Manager will then notify Corporate Management, MSHA (303-231-5465), and the State of Utah, Division of Dam Safety (801-538-7200).

Cell 4A Solution Freeboard Calculation

The maximum tailings cell pond wastewater levels in Cells 1-I, Cell 2, Cell 3 and Cell 4A are regulated by condition 10.3 of the White Mesa Mill 11e.(2) Materials License.

Condition 10.3 states that "**Freeboard limits for Cells 1-1, and 3, shall be set periodically in accordance with the procedures set out in Section 3.0 to Appendix E of the previously approved NRC license application, including the October 13, 1999 revisions made to the January 10, 1990 Drainage Report. The freeboard limit for Cell 3 shall be recalculated annually in accordance with the procedures set in the October 13, 1999 revision to the Drainage Report.**" The 1990 Drainage Report uses the Local 6-hour Probable Maximum Precipitation (PMP) event for calculating the freeboard requirements for each of the tailings cells. The PMP for the White Mesa site is 10 inches.

Based on the PMP storm event, the freeboard requirement for Cell 1 is a maximum operating water level of 5615.4 feet above mean sea level (amsl). The Cell 1 freeboard limit is not affected by operations or conditions in Cells 2, 3 or 4A.

Cell 2 has no freeboard limit because the Cell is 99% full of tailings solids and all precipitation falling on Cell 2 and the adjacent drainage area must be contained in Cell 3. The flood volume from the PMP event over the Cell 2 and Cell 3 pond areas, plus the adjacent drainage areas, is 123.4 acre-feet of water. According to the freeboard calculation procedures, this volume currently must be contained in the existing 24-acre pool area in Cell 3. This results in a maximum operating water level in Cell 3 of 5601.6 feet amsl.

The Cell 4A design includes a concrete spillway between Cell 3 and Cell 4A with the invert elevation 4 feet below the top of the Cell 3 dike, at an elevation of 5604.5 feet amsl. Once Cell 4A is placed in operation, the cell would be available for emergency overflows from Cell 3, but as long as the freeboard limit in Cell 3 is maintained at 5601.6 it is extremely unlikely that Cell 4A would see any overflow water from Cell 3 unless the full PMP event were to occur. Should Cell 3 receive the full PMP volume of 123.4 acre feet of water, approximately 62 acre feet of that volume would flow through the spillway into Cell 4A.

The flood volume from the PMP event over the Cell 4A area is 36 acre-feet of water (40 acres, plus the adjacent drainage area of 3.25 acres, times the PMP of 10 inches). This would result in a total flood volume of 98 acre-feet, including the 62 acre-feet of solution from Cell 3. The freeboard depth required for Cell 4A from the PMP event would be 2.44 feet, plus a wave run-up depth of 0.77 feet (from the 1990 Drainage Report), for a total freeboard requirement of 3.2 feet. This calculation is illustrated on Attachment 4. The Groundwater Quality Discharge Permit, No. UGW370004, for the White Mesa Mill requires that the minimum freeboard be no less than 3.0 feet for any of the existing Cell construction, but based on the above calculation the freeboard would be set 3.2 feet below the top of liner. The freeboard for Cell 4A would therefore be 5595.3 amsl (top of liner 5598.5 – 3.2 feet). Figure 7, Hydraulic Profile Schematic, shows the relationship between the Cells, and the relative elevations of the solution pools and the spillway elevations.

If Cell 4A were required to store the entire PMP event for Cell 2, Cell 3 and Cell 4A, the required storage volume would be approximately 160 acre-feet of solution. This would increase the necessary freeboard to 4.77 feet.

The required freeboard for Cell 4A will be recalculated annually along with the re-calculation of the Cell 3 freeboard requirement. A calculation of the current freeboard calculation for both Cells is attached to this Plan.

Attachments

1) Figure 1, Initial Filling Plan, GeoSyntec Consultants

2) Figure 2, Initial Filling Plan, Details and Sections, GeoSyntec Consultants

3) Figure 3, Initial Filling Plan, Solution and Slurry Pipeline Routes, GeoSyntec Consultants

4) Figure 4, Interim Filling Plan, GeoSyntec Consultants

5) Figure 5, Leak Detection System Sump, GeoSyntec Consultants

6) Figure 6, Leak Detection Sump Operating Elevations

7) Figure 7, Hydraulic Profile Schematic

8) Cell 3 and Cell 4A Freeboard Calculation

9) Table 1, Calculated Action leakage Rates for Various Head Conditions, Cell 4A, White Mesa Mill, Blanding, Utah, GeoSyntec Consultants

10) White Mesa Mill Tailings Management System and Discharge Minimization Technology (DMT) Monitoring Plan, 3/07 Revision: DUSA-2, 32 pages, or currently approved version of the DMT