COLORADO DIVISION OF RECLAMATION, MINING AND SAFETY
MINERALS PROGRAM INSPECTION REPORT
PHONE: (303) 866-3567

The Division of Reclamation, Mining and Safety has conducted an inspection of the mining operation noted below. This report documents observations concerning compliance with the terms of the permit and applicable rules and regulations of the Mined Land Reclamation Board.

MINE NAME: San Luis Project	**MINE/PROSPECTING ID#:** M-1988-112	**MINERAL:** Gold and silver	**COUNTY:** Costilla
INSPECTION TYPE: Multi Person Inspection	**INSPECTOR(S):** Wallace H. Erickson, G. Russell Means	**INSP. DATE:** May 13, 2013	**INSP. TIME:** 10:00
OPERATOR: Battle Mountain Resources, Inc.	**OPERATOR REPRESENTATIVE:** Julio Madrid, Steve Carino, Jim Witweir	**TYPE OF OPERATION:** 112d-3 - Designated Mining Operation	
REASON FOR INSPECTION: Citizen Complaint	**BOND CALCULATION TYPE:** Partial Bond	**BOND AMOUNT:** $7,400,000.00	
DATE OF COMPLAINT: NA	**POST INSP. CONTACTS:** Complainant, OSE Dam Safety	**JOINT INSP. AGENCY:** OSE, DWR, Dam Safety, Mark Perry, PE	
WEATHER: Cloudy	**INSPECTOR'S SIGNATURE:** Wallace H. Erickson	**SIGNATURE DATE:** September 11, 2013	

GENERAL INSPECTION TOPICS

This list identifies the environmental and permit parameters inspected and gives a categorical evaluation of each. No problems or possible violations were noted during the inspection. The mine operation was found to be in full compliance with Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials and/or for Hard Rock, Metal and Designated Mining Operations. Any person engaged in any mining operation shall notify the office of any failure or imminent failure, as soon as reasonably practicable after such person has knowledge of such condition or of any impoundment, embankment, or slope that poses a reasonable potential for danger to any persons or property or to the environment; or any environmental protection facility designed to contain or control chemicals or waste which are acid or toxic-forming, as identified in the permit.

(AR) RECORDS----------	N	(FN) FINANCIAL WARRANTY----------	Y	(RD) ROADS----------	Y
(HB) HYDROLOGIC BALANCE----------	Y	(BG) BACKFILL & GRADING----------	Y	(EX) EXPLOSIVES----------	N
(PW) PROCESSING WASTE/TAILING----------	Y	(SF) PROCESSING FACILITIES----------	N	(TS) TOPSOIL----------	N
(MP) GENL MINE PLAN COMPLIANCE---------	Y	(FW) FISH & WILDLIFE----------	Y	(RV) REVEGETATION---------	Y
(SM) SIGNS AND MARKERS----------	N	(SP) STORM WATER MGT PLAN----------	N	(SB) COMPLETE INSP---------	N
(ES) OVERBURDEN/DEV. WASTE----------	Y	(SC) EROSION/SEDIMENTATION----------	Y	(RS) RECL PLAN/COMP------	Y
(AT) ACID OR TOXIC MATERIALS----------	Y	(OD) OFF-SITE DAMAGE----------	Y	(ST) STIPULATIONS----------	N

Y = Inspected and found in compliance / N = Not inspected / NA = Not applicable to this operation / PB = Problem cited / PV = Possible violation cited

OBSERVATIONS

This inspection was the second occurring in response to a complaint submitted by McClure & Eggleston, LLC, on behalf of the Costilla County Commissioners and the Costilla County Conservancy District. The complaint was received electronically on February 26, 2013, and February 28, 2013, and included approximately 428 pages. The first response inspection occurred on March 18, 2013, and employed a broad focus on the various components of the tailings repository. The focus of this second response inspection was narrowed to the main embankment of the tailings pond. Mark Perry, P.E., with the Dam Safety Branch of the Office of the State Engineer, Division of Water Resources, participated in the inspection. This inspection report is accompanied by six photographs taken by DRMS during the inspection and a copy of the Engineer's Inspection Report generated by Mr. Perry, signed June 3, 2013.

The San Luis Project is a 112d-3 operation permitted for the extraction and milling of precious metals ore. The permit area encompasses approximately 1,801 acres, within which boundaries the Operator (Battle Mountain Resources, Inc., or BMRI) is approved to affect 641 acres. Of the 641 acres the operation has affected approximately 509 acres. Affected lands will be reclaimed to support a variety of post-mining land uses including rangeland, wildlife habitat and industrial/commercial. The Division holds $7.4 million financial warranty.

Mining and milling activities ceased on or about November 9, 1996, and the Operator commenced final reclamation. Since that time the Operator has conducted maintenance and/or reclamation activities for all affected lands and has completed reclamation for significant portions of the affected lands. According to information submitted by the Operator with the annual reports, the Operator has completed reclamation for approximately 422 acres. Portions of these reclaimed areas may be sufficiently stable to be released from reclamation liability. Requests for release of reclaimed lands should be submitted in accordance with the requirements of Rules 4.17, 7.2.10 and 7.2.11.

Perpetual Water Treatment and/or Perpetual Water Management

The operation includes a water treatment plant designed and operated to reduce concentrations of manganese, fluoride and sulfate from the ground water pumped from the backfilled West Pit and the capture wells located in the Rito Seco alluvium, prior to discharge to Rito Seco. Discharge from the water treatment plant is permitted through Colorado Discharge Permit System (CDPS) CO-0045675.

Management of the West Pit ground water is addressed through a series of Technical Revisions, commencing with TR-26 and terminating with TR-32. As approved by the Division, sludge and brine from the water treatment plant are disposed at the tailings pond. Additionally, untreated ground water pumped from the West Pit and the Rito Seco alluvial wells may also be disposed at the tailings pond. Division records indicate the quality of the West Pit ground water has chemically equilibrated at or better than pre-mining ground water quality. Regardless, given the current receiving stream standards the management of the West Pit ground water, including the pumping and treatment prior to discharge to Rito Seco, as well as the disposal of sludge, brine and untreated water at the tailings pond, appears to be a perpetual activity which may persist beyond the life of the mine (Rule 1.1(26)).

Observations Specific to the Main Embankment of the Tailing Pond

During the time of this inspection the Division encountered Allen Jewell, a geotechnical engineer with Miller Geotechnical Consultants, Inc., who was conducting a stability and safety evaluation of the tailings repository. Mr. Jewell indicated he had been retained by the Operator. Pursuant to the conditions of TR-33, approved May 15, 2013, the Operator is required to conduct a comprehensive tailing dam safety inspection and reporting program, which includes the following:

- an initial detailed inspection and report of the tailings repository, to be performed by a registered professional engineer who is experienced in the construction and maintenance of embankments and tailings dams;
- annual inspection and report of the tailings repository, to be performed each year by a qualified dam safety professional engineer; and
- quarterly inspection and report of the tailings repository, to be performed every three months by qualified BMRI personnel.

As shown in DRMS Photo 1, the upstream slope of the main embankment of the tailing pond was well vegetated and appeared stable; evidence of slumping, settling or excessive erosion was not observed. The surface area of the tailings is approximately 192 acres, which includes an approximate 20-acre area for the free water pool. The Operator identified markers at approximately 200 feet upstream from the embankment, which delineate the setback distance for the free water pool from the embankment. During the time of this inspection the free water pool was visually estimated at greater than 500 feet distance from the main embankment. The Operator indicated the current depth of the free water pool to be approximately 2 feet. The free water pool contains drainage from precipitation, fluids pumped from the collection pond, and brine and untreated West Pit water pumped from the water treatment plant.

As noted in the enclosed Engineer's Inspection Report from Mr. Perry, a small excavation was observed in the upstream slope of the embankment at the location of the pump-back pipeline from the collection pond. As recommended by Mr. Perry, the excavation must be appropriately backfilled, compacted, and the vegetative cover re-established in accordance with the approved designs. Alternate designs for the pump-back pipeline may be recommended through the engineering inspection and reporting program of TR-33. However, any alteration to previously approved designs must be submitted for review and approval through the Technical Revision or Amendment process defined under Rules 1.9 and 1.10.

As noted by Mr. Perry, there is no spillway currently installed for the embankment. Spillway plans were approved in the reclamation plan but the reclamation plan did not anticipate a perpetual water management program. Please ensure the engineering report, to be submitted through TR-33, provides discussion and/or recommendations for a spillway, or other method whereby the stability of the embankment may be safeguarded during the protracted water management program. Additionally, as recommended by Mr. Perry, the initial engineering report for TR-33 shall verify whether the current storage capacity of the tailings repository is in accordance with the approved designs.

As shown in DRMS Photo 2, the Operator has recently completed routine maintenance and repair of minor erosion features on the downstream slope of the main embankment of the tailing pond. The area shown in photo 2 is located at the north end of the embankment, at the transition of the earthen embankment with the geosynthetic liner covering the native slope. The repairs included surface grading and reseeding, installation of new liner material to replace eroded liner, and excavation of a diversion ditch to intercept upland drainage

and thereby minimize potential for future erosion to the embankment. The recently disturbed area was visually estimated at 200 feet long by 50 feet wide, or approximately 0.23 acres. The downstream slope of the embankment was not steeper than 3H:1V, as indicated in the approved plans and as-built certifications for the embankment. The downstream slope of the embankment appeared well vegetated and stable; evidence of slumping, settling or excessive erosion was not observed.

As shown in DRMS Photos 3 and 4, there is a seep associated with the outlet of the drainage blanket for the tailing pond. Flow rate from the outlet was estimated at 30 gpm and consistent with monthly flow reports recorded by the Operator. Although the outlet appeared to have sufficient capacity to function in accordance with the approved designs, routine maintenance to the outlet, to include sediment clean-out and stabilization of the slope immediately above the outlet, is required to ensure its continued function.

The drainage blanket for the tailing pond and its associated outlet through the embankment are essential components of the tailings repository. As recommended in the enclosed Engineer's Inspection Report from Mr. Perry, the configuration of the existing drain-pipe upstream of the outlet, and the origin of the seep shown in photo 3, must be verified. Such investigations shall occur through the inspection and reporting program approved through TR-33. Any alteration to previously approved designs must be submitted for review and approval through the Technical Revision or Amendment process defined under Rules 1.9 and 1.10.

As shown in DRMS Photos 5 and 6, all portions of the south diversion ditch proximal to the embankment of the tailing pond appeared stable; evidence of erosion/sedimentation was not observed. However, as shown in photo 5, the inlet for the drop structure was not protected by a debris screen. As recommended by Mr. Perry, a properly designed debris screen appears essential to ensure the continued function of the drop structure. Please ensure the initial engineer inspection and report, required through TR-33, addresses the issue. If the engineer inspection and report recommends a debris screen, such plans must be submitted for review and approval through either the Technical Revision or Amendment process, described under Rules 1.9 and 1.10, prior to construction.

Please ensure the initial detailed engineering report for TR-33 discuss and/or address all recommendations of the Office of the State Engineer, Division of Water Resources, Dam Safety Branch as provided in the Engineer's Inspection Report from Mr. Perry, signed June 3, 2013.

Response to this inspection report should be addressed to Wally Erickson at the Division's office in Durango at 691 County Road 233, Suite A-2, Durango, Colorado 81301, phone (970) 247-5469, fax (970) 247-5104, or email at wally.erickson@state.co.us.

Inspection Contact Address
Lawrence Fiske
Battle Mountain Resources, Inc.
P.O. Box 310
San Luis, CO 81152

Attachment: Certificate of Service

Enclosures: 6 DRMS photographs and Engineer's Inspection Report from OSE, DWR, signed June 3, 2013

Certificate of Service

I, Wallace H. Erickson, hereby certify that on this 11th day of September, 2013, placed a true copy of the foregoing inspection report generated from the inspection of the San Luis Project, Permit No. M-1988-112, occurring on May 13, 2013, and signed September 11, 2013, with enclosures, in the US Mail, postage affixed, addressed to the following three individuals:

Lawrence Fiske
Battle Mountain Resources, Inc.
P.O. Box 310
San Luis, CO 81152

John C. McClure, Esq.
McClure & Eggleston, LLC
1401 17th Street, Suite 660
Denver, CO 80202-1244

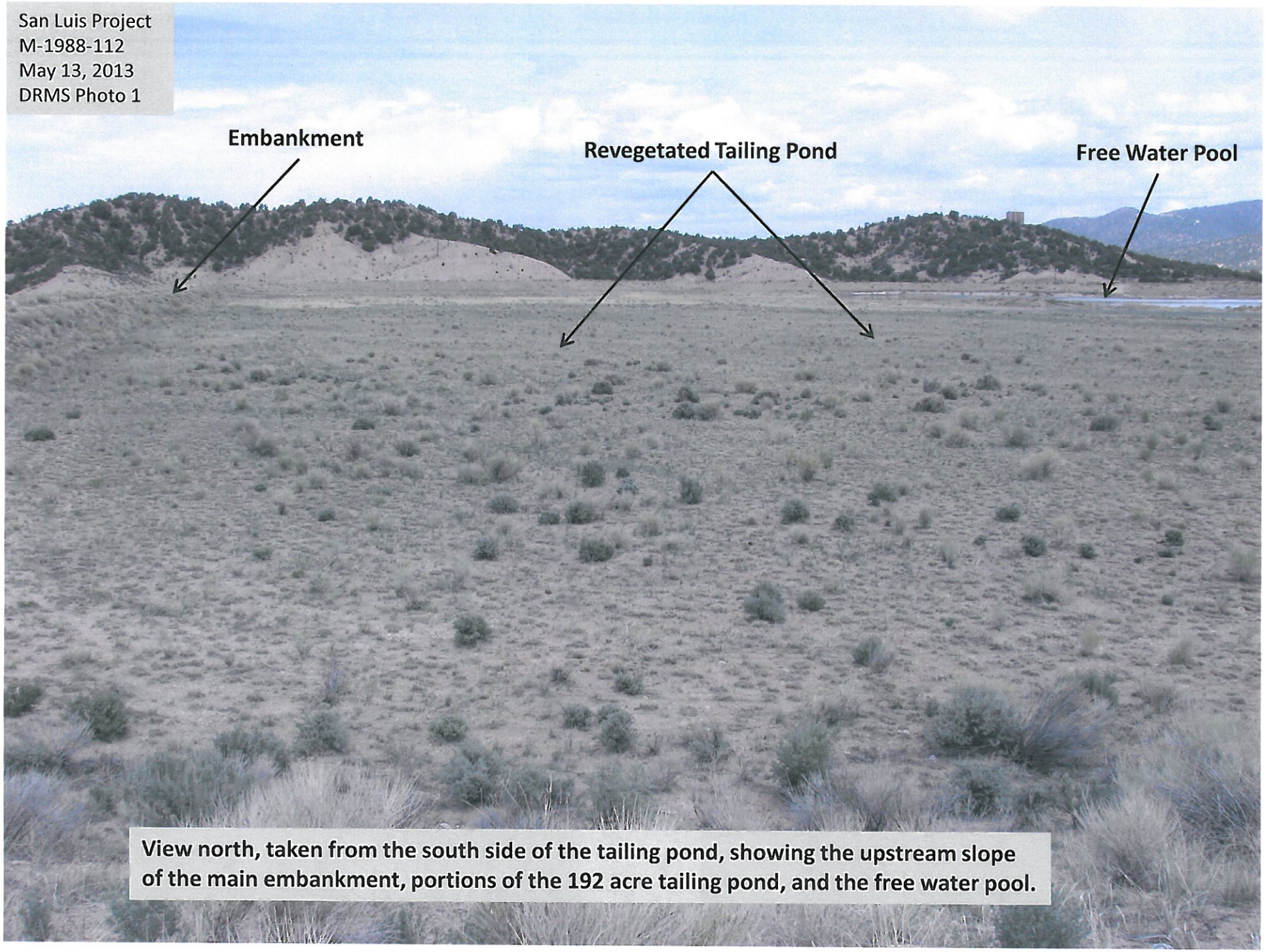
Edwin J. Lobato, Esq.
P.O. Box 1302
224 San Juan Avenue
Alamosa, CO 81101

And an electronic copy of the same inspection report with enclosures sent by email to the following:

John Stulp, Special Policy Advisor to the Governor, john.stulp@state.co.us
John McClure, Esq., McClure & Eggleston, LLC, jmcclure@melawllc.com
Ed Lobato, Esq., ejlobo2003@yahoo.com
Lawrence Fiske, Battle Mountain Resources, Inc., larry.fiske@newmont.com
Julio Madrid, Battle Mountain Resources, Inc., Julio.madrid@newmont.com
Mark Perry, OSE, DWR, Dam Safety Branch, mark.perry@state.co.us
Tony Waldron, DRMS Minerals Program Supervisor, tony.waldron@state.co.us
Russ Means, DRMS Senior Environmental Protection Specialist, russ.means@state.co.us
Jeff Fugate, Esq., AGO for DRMS, jeff.fugate@state.co.us

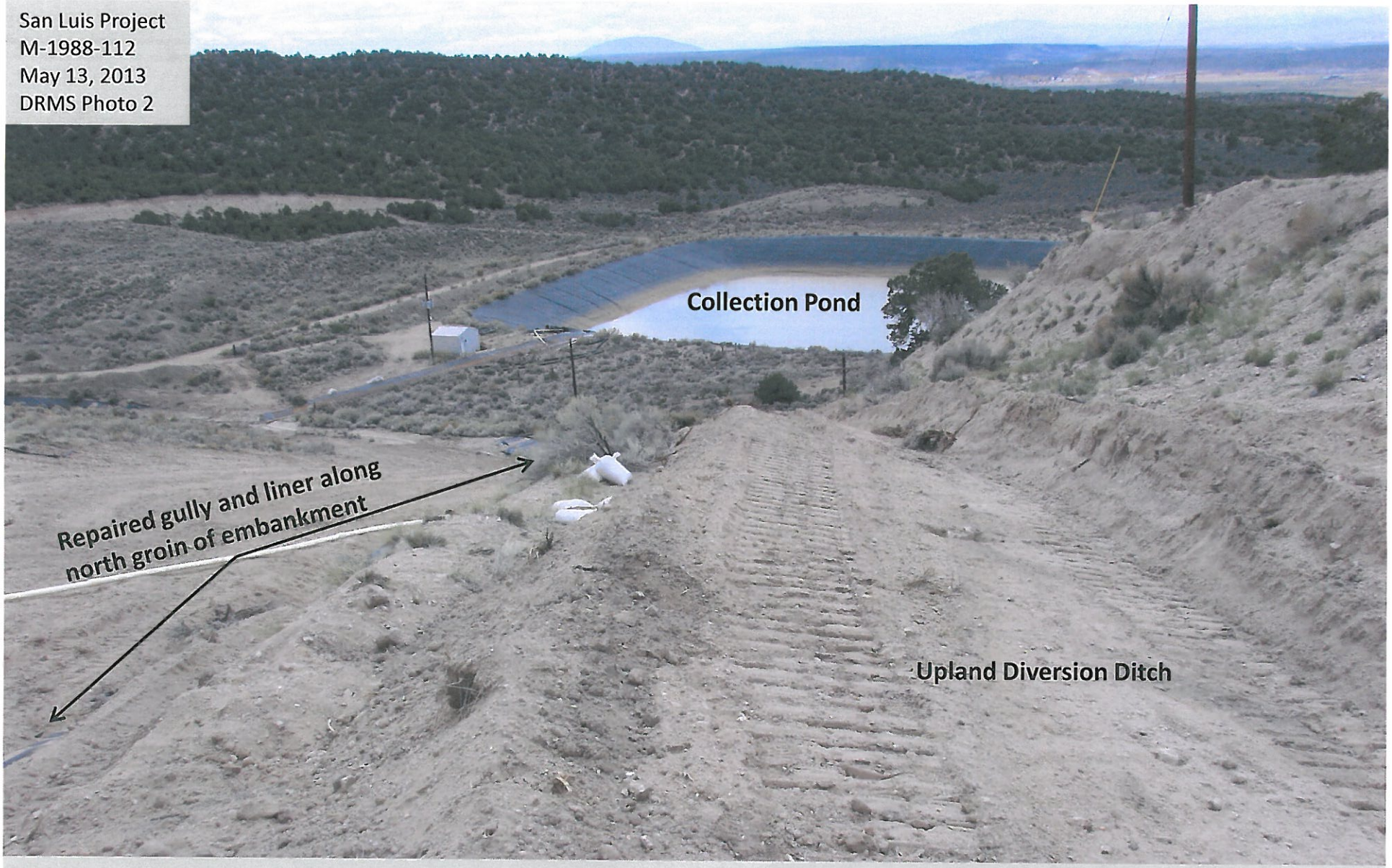
Wallace H. Erickson 9/11/13
Signature and Date

San Luis Project
M-1988-112
May 13, 2013
DRMS Photo 1



View north, taken from the south side of the tailing pond, showing the upstream slope of the main embankment, portions of the 192 acre tailing pond, and the free water pool.

San Luis Project
M-1988-112
May 13, 2013
DRMS Photo 2



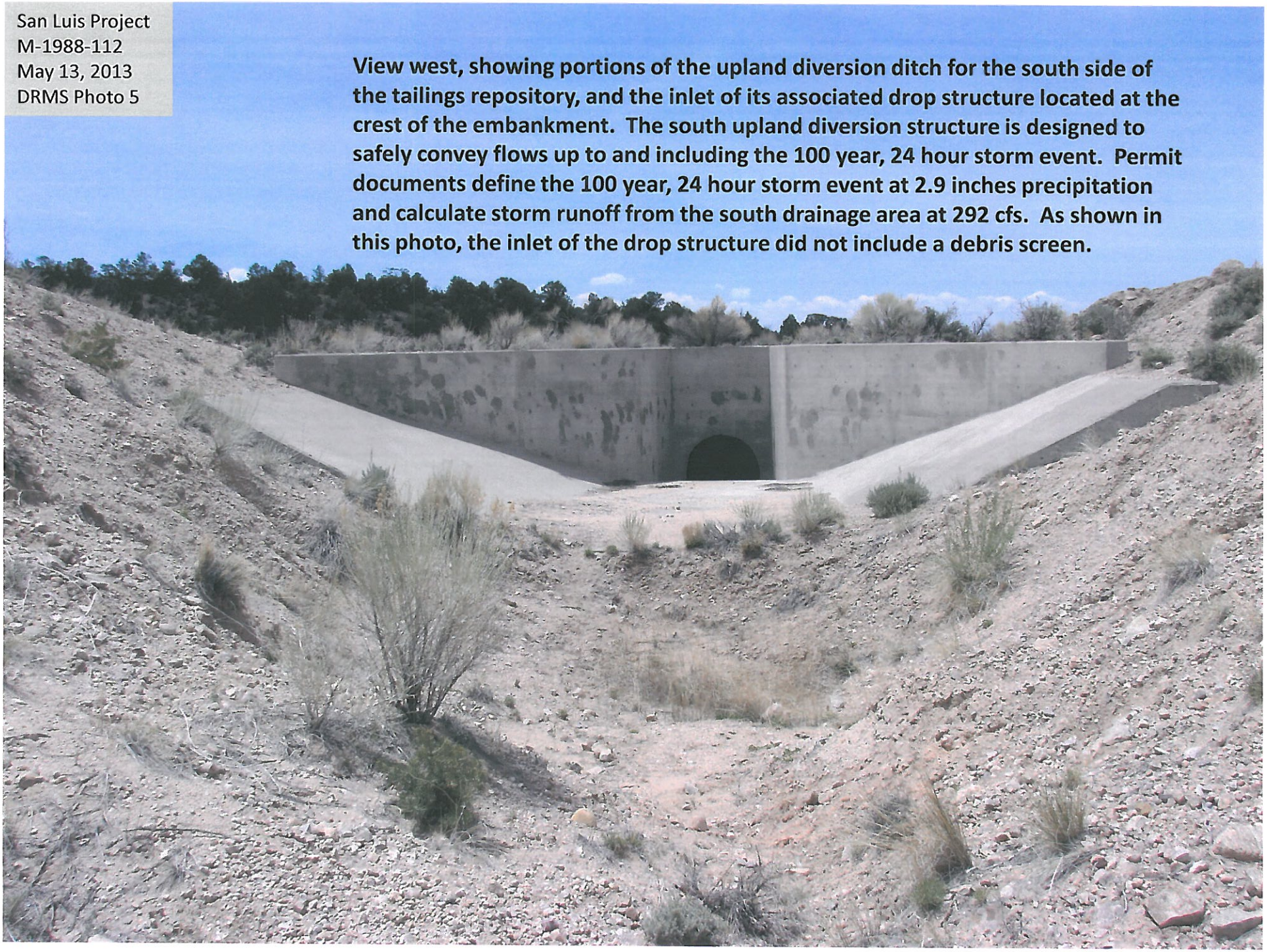
View west, taken nearby the crest and north end of the main embankment of the tailing pond, showing portions of the downstream slope of the embankment and the collection pond of the tailings repository. The Operator had recently conducted routine maintenance to control erosion. Erosion control methods employed by the Operator included surface grading along the transition of the earthen embankment with the liner, replacement of eroded sections of the liner, and installed a diversion ditch to intercept upland drainage and minimize potential for future erosion to the embankment.

View east, taken at the downstream toe of the main embankment for the tailing pond, showing the outlet of the drainage blanket and a seep associated with the outlet. The origin of the seep, current condition of the drain pipe through the base of the embankment, and any necessary repairs to the outlet must be addressed in the initial engineering report required through TR-33.

San Luis Project
M-1988-112
May 13, 2013
DRMS Photo 4

Detail photo of the drainage blanket outlet, shown in photo 3. Discharge from the outlet is contained at the collection pond and recycled to the free water pool for disposal by evaporation. Flow rate was estimated at 30 gpm. Routine maintenance to the outlet, to include sediment removal from the culverts and stabilization of the slope immediately above the culverts, appears necessary to ensure the outlet continues to function in accordance with approved designs.

San Luis Project
M-1988-112
May 13, 2013
DRMS Photo 5



View west, showing portions of the upland diversion ditch for the south side of the tailings repository, and the inlet of its associated drop structure located at the crest of the embankment. The south upland diversion structure is designed to safely convey flows up to and including the 100 year, 24 hour storm event. Permit documents define the 100 year, 24 hour storm event at 2.9 inches precipitation and calculate storm runoff from the south drainage area at 292 cfs. As shown in this photo, the inlet of the drop structure did not include a debris screen.

View west, taken nearby the crest and south end of the main embankment of the tailing pond, showing the drop structure outlet for the south diversion ditch. The Operator had recently conducted routine maintenance to control erosion. Erosion control methods employed by the Operator included surface grading, placement of riprap armoring, installation of rock check dam, and placement of energy dissipating boulders at the drop structure outlet. The outlet of the south diversion ditch appeared well maintained and stable; evidence of excessive erosion was not observed.

ENGINEER'S INSPECTION REPORT

INSPECTOR: MP3

OFFICE OF THE STATE ENGINEER - DIVISION OF WATER RESOURCES - DAM SAFETY BRANCH 1313 SHERMAN STREET, ROOM 818, DENVER, CO 80203. (303) 866-3581

DAM NAME:	BATTLE MOUNTAIN SAN LUIS TAILINGS	T: 0	R: 0	S:	COUNTY:	COSTILLA		DATE OF INSPECTION:	5/13/2013
DAM ID:	240109	YRCompl:	1991	DAM HEIGHT(FT):	140.0	SPILLWAY WIDTH(FT):	4.0	PREVIOUS INSPECTION:	
CLASS:	N hazard			DAM LENGTH(FT):	1640.0	SPILLWAY CAPACITY(CFS):	170.0	NORMAL STORAGE (AF):	750.0
DIV:	3	WD:	24	CRESTWIDTH(FT):	30.0	FREEBOARD (FT):	10.0	SURFACE AREA(AC):	150.0
EAP:	Not Required			CRESTELEV(FT):	8620.0	DRAINAGE AREA (AC.):	896.0	OUTLET INSPECTED:	

CURRENT RESTRICTION: -- NONE --

OWNER:	BATTLE MOUNTAIN RESOURCES INC.	OWNER REP.:	JULIO MARDRID
ADDRESS:	P.O. BOX 310	CONTACT NAME:	JULIO MARDRID
	SAN LUIS CO 81152-	CONTACT PHONE:	(719) 379-0059X

INSPECTION PARTY :	Wally Erickson, Russ Means	Julio Madrid	Mark Perry
REPRESENTING :	DNR, Division of Reclamation, Mining & S	Battle Mountain Resources Inc.	State Engineers Office, Dam Safety Branc

FIELD CONDITIONS OBSERVED

WATER LEVEL: BELOW DAM CREST ~10-12 FT. Above Spillway FT. GAGE ROD READING None

GROUND MOISTURE CONDITION: ☑ DRY ☐ WET ☐ SNOWCOVER OTHER

DIRECTIONS: MARK AN X FOR CONDITIONS FOUND AND UNDERLINE WORDS THAT APPLY

UPSTREAM SLOPE

PROBLEMS NOTED: ☐ (0)NONE ☑ (1)RIPRAP - MISSING, SPARSE, DISPLACED, WEATHERED ☐ (2) WAVE EROSION - WITH SCARPS

☐ (3) CRACKS WITH DISPLACEMENT ☐ (4) SINKHOLE ☐ (5) APPEARS TOO STEEP ☐ (6) DEPRESSIONS OR BULGES ☐ (7) SLIDES

☐ (8) CONCRETE FACING - HOLES, CRACKS, DISPLACED, UNDERMINED ☑ (9) OTHER excavation into slope (see below)

•There is not riprap protection on the upstream slope, but no erosion damage was observed. During normal operations the facility's water surface is several hundred feet (horz.) away from the crest; the only potential for slope erosion would be from a large flood event
•The upstream slope was excavated at the location of the old seepage recovery pipeline. The excavation should be backfilled with compacted fill to match the adjacent upstream slope.
•No signs of instability were observed.

NOTE: This dam is Exempt from State Engineers Office Dam Safety Rules and Regulations, and is regulated by the DNR Division of Reclamation, Mining & Safety. Where Good, Acceptable, or Poor conditions are assigned herein (see below), these ratings are solely intended to provide technical support to DRMS subject to the limitations discussed in the "Overall Conditions" Section of this report.

CONDITIONS OBSERVED: ☐ Good ☒ Acceptable ☐ Poor

CREST

PROBLEMS NOTED: ☐ (10) NONE ☐ (11 RUTS OR PUDDLES ☐ (12) EROSION ☐ (13) CRACKS - WITH DISPLACEMENT ☐ (14) SINKHOLES

☐ (15) NOT WIDE ENOUGH ☐ (16) LOW AREA ☐ (17) MISALIGNMENT ☑ (18) IMPROPER SURFACE DRAINAGE ☑ (19) OTHER See below

•No signs of distress were observed
•The owner recently had a stage capacity and dam crest survey performed. As part of the TR-33 inspection report, we recommend that the dam owner's engineer should verify that the dam crest elevation is maintained for the original design criteria (ex. for PMF storage) around the facility. We specifically discussed that the dam crest profile of the embankment along the 100-YR diversion ditch should be checked.
•Maintenance grading has resulted in a windrow of soil along the upstream shoulder, which could inhibit proper surface drainage. We recommend that the crest be graded to drain freely toward the upstream slope to prevent water from ponding on the embankment.
•There is a high area on the crest near the right dam abutment where the old seepage recovery pipeline crosses the dam crest. Soil was reportedly added here to provide pipe cover.

CONDITIONS OBSERVED: ☐ Good ☒ Acceptable ☐ Poor

DOWNSTREAM SLOPE

PROBLEMS NOTED: ☐ (20) NONE ☐ (21) LIVESTOCK DAMAGE ☐ (22) EROSION OR GULLIES ☐ (23) CRACKS - WITH DISPLACEMENT ☐ (24) SINKHOLE

☐ (25) APPEARS TOO STEEP ☐ (26) DEPRESSIONS OR BULGES ☐ (27) SLIDE ☐ (28) SOFT AREAS ☑ (29) OTHER See below.

•The Phase I as-built plans show a 3H:1V downstream slope. The existing slope appears to be that or flatter. There are also 2 benches (~10-ft wide each) on top half of the slope.
•Vegetation cover is typically sage brush, which is typical for the San Luis Valley climate. No significant surface erosion was observed on the slope. Spot repairs of erosion damage have been made at the right and left groins (see below).
•Recent repairs to erosion damage and the liner were made at the right groin on the downstream slope (surface area of repair ~200' x 50'). A small diversion ditch was added on the right abutment to attempt to keep surface water off of the groin and liner. A similar repair was made at the left groin.

CONDITIONS OBSERVED: ☐ Good ☒ Acceptable ☐ Poor

ENGINEER'S INSPECTION REPORT DATE. 5/13/2013

DAM NAME: BATTLE MOUNTAIN SAN LUIS TAILIN DAM I.D.: 240109

SEEPAGE

PROBLEMS NOTED: ☐ (30) NONE ☐ (31) SATURATED EMBANKMENT AREA ☑ (32) SEEPAGE EXITS ON EMBANKMENT

☑ (33) SEEPAGE EXITS AT POINT SOURCE ☐ (34) SEEPAGE AREA AT TOE ☐ (35) FLOW ADJACENT TO OUTLET ☐ (36) SEEPAGE INCREASED / MUDDY

DRAIN OUTFALLS SEEN ☐ No ☑ Yes Show location of drains on sketch and indicate amount and quality of discharge. ☐ (37) FLOW INCREASED / MUDDY ☐ (38) DRAIN DRY / OBSTRUCTED

☑ (39) OTHER See below. We recommend additional investigations

•There is reportedly a drainage pipe system under the embankment, above the geosynthetic liner. The Phase I as-built plans show a 3-ft thick "Drainage Blanket" under the Type 1 material, above the liner, in the upstream shell of the embankment; however, we do not find details for an underdrain pipe system.
•Three 12" diameter HDPE pipes outfall at the downstream toe of the main embankment into an open channel to the seepage collection pond. The owner reports that the three pipes may be short extensions of what they believe is a larger (36"-48" dia.) HPDE seepage collection pipe under the main embankment. Again, no details of the collection pipe system were found by us on the Phase I as-built plans.
•Uncontrolled seepage was observed exiting ~6-ft above the 12" HDPE drain outfalls on the downstream slope of the main embankment.
•Based on the above observations, we recommend:
(1) research to determine the design of the seepage collection pipe system under the embankment, and (2) after determining the design of the pipe collection system, determine if it is feasible to video inspect the pipes. The SEO recommends that internal outlet conduit video inspections be performed at least every 10 years for SEO-regulated High and Significant Hazard dams.

•According to the Phase I as-built plans, the Seepage Collection Pond, located at the downstream toe of the main tailings dam, has an embankment with a structural height of ~15-ft. We recommend that the Seepage Collection Pond dam should be inspected annually as part of the TR-33 dam safety inspections.

CONDITIONS OBSERVED: ☐ Good ☒ Acceptable ☐ Poor

OUTLET

PROBLEMS NOTED: ☐ (40) NONE ☐ (41) NO OUTLET FOUND ☐ (42) POOR OPERATING ACCESS ☐ (43) INOPERABLE

☐ (44) UPSTREAM OR DOWNSTREAM STRUCTURE DETERIORATED (45) OUTLET OPERATED DURING INSPECTION ☐ YES ☐ NO

INTERIOR INSPECTED ☐ (120) NO ☐ (121) YES ☐ (46) CONDUIT DETERIORATED OR COLLAPSED ☐ (47) JOINTS DISPLACED ☐ (48) VALVE LEAKAGE

☑ (49) OTHER see below

•There is no controllable outlet works. During the normal operations the facility holds only a small amount of surface water. NOTE: There is reportedly a seepage collection pipe system through the embankment; see Seepage section of the report for more information. NOT RATED.

CONDITIONS OBSERVED: ☐ Good ☐ Acceptable ☐ Poor

SPILLWAY

PROBLEMS NOTED: ☐ (50) NONE ☐ (51) NO EMERGENCY SPILLWAY FOUND ☐ (52) EROSION WITH BACKCUTTING ☐ (53) CRACK - WITH DISPLACEMENT

☐ (54) APPEARS TO BE STRUCTURALLY INADEQUATE ☐ (55) APPEARS TOO SMALL ☐ (56) INADEQUATE FREEBOARD ☐ (57) FLOW OBSTRUCTED

☐ (58) CONCRETE DETERIORATED / UNDERMINED ☑ (59) OTHER See below.

•The facility is reportedly designed to contain the full Probable Maximum Flood (PMF), along with a diversion ditch to bypass surface runoff from the south drainage area around the tailings facility and through a 48-inch diameter CMP culvert drop structure. The Phase I construction plans indicate that the diversion ditch is designed to carry 100-YR frequency flows, which agrees with the owner and DRMS comments during the inspection. It is not clear to us how the ditch and adjacent tailings embankment would perform in larger floods, up to the PMF. In other words, could the drop structure overtop, fail and lead to head-cutting erosion on the south side of the facility? We believe this question should be addressed during the Potential Failure Modes portion of the TR-33 process.
•We observed that there is no trash rack on the drop structure intake. The SEO typically recommends a self-cleaning type trash rack for the intake of a closed conduit spillway in order to prevent clogging.
•We recommend performing an internal inspection (possibly remote video due to steep grade) of the drop structure's 48" diameter CMP.
•We discussed how the maximum normal reservoir level is controlled. It was reported that there is an operational restriction. We discussed that the State Engineer's Office typically requires a passive level control spillway at the design maximum normal water level to ensure that the reservoir is not accidently overfilled or overtopped. We recommend that this aspect of the project be reviewed as part of the TR-33 process. We note that the same comment appears to apply to the Seepage Collection Pond below the main tailings dam.

CONDITIONS OBSERVED: ☐ Good ☒ Acceptable ☐ Poor

MONITORING

EXISTING INSTRUMENTATION FOUND ☐ (110) NONE ☐ (111) GAGE ROD ☑ (112) PIEZOMETERS ☑ (113) SEEPAGE WEIRS / FLUMES

☐ (114) SURVEY MONUMENTS ☐ (115) OTHER

MONITORING OF INSTRUMENTATION ☐ (116) NO ☑ (117) YES PERIODIC INSPECTIONS BY: ☑ (118) OWNER ☑ (119) ENGINEER

•The owner has full time staff on-site. They perform regular monitoring. Specifically, the owner monitors piezometers and seepage flows and submits data to DRMS. Traditionally the monitoring has been directed towards water quality more than dam safety, but the TR-33 process may be able to utilize some of the same data to help evaluate the safety of the dam.

CONDITIONS OBSERVED: ☐ Good ☒ Acceptable ☐ Poor

MAINTENANCE AND REPAIRS

PROBLEMS NOTED: ☐ (60 NONE ☐ (61) ACCESS ROAD NEEDS MAINTENANCE ☐ (62) LIVESTOCK DAMAGE
☐ (63) BRUSH ON UPSTREAM SLOPE, CREST, DOWNSTREAM SLOPE, TOE ☐ (64) TREES ON UPSTREAM SLOPE, CREST, DOWNSTREAM SLOPE, TOE
☐ (65) RODENT ACTIVITY ON UPSTREAM SLOPE, CREST, DOWNSTREAM SLOPE, TOE ☐ (66) DETERIORATED CONCRETE - FACING, OUTLET, SPILLWAY
☐ (67) GATE AND OPERATING MECHANISM NEED MAINTENANCE ☑ (68) OTHER See below

•The dam owner performs routine maintenance. We observed where they completed recent repairs of erosion damage along the right and left groins of the downstream slope and at the south diversion drop structure outfall.

•We recommend the following additional maintenance:
- the excavation into the upstream slope at the old seepage recovery pipeline should be rebuilt with compacted fill.
- The crest should be graded to promote positive drainage off of the embankment and toward the upstream slope. Remove the windrow along the upstream shoulder.
- Control large brush on the embankment in order to allow good routine visual inspection of the slopes

CONDITIONS OBSERVED: ☐ Good ☒ Acceptable ☐ Poor

Go to next page for Overall Conditions and Items Requiring Actions

OVERALL CONDITIONS

The Battle Mountain San Luis Project Tailings Dam is regulated by the DNR Division of Reclamation, Mining & Safety (DRMS) and is a State Engineer's Office (SEO) Exempt structure in accordance with Rule 17.2 of the State of Colorado's Rules and Regulations for Dam Safety and Dam Construction. Rule 17.2 exempts Mine Tailings impoundments permitted under the State Mined Land Reclamation Act. In addition, the Seepage Collection Pond dam at the toe of the main tailings dam is considered to be an SEO Exempt structure in accordance with the same Rule, which also exempts solution process impoundments that are permitted under the State Mined Land Reclamation Act.

The SEO performed the current dam safety inspection solely to provide technical assistance to DRMS as part of their Technical Revision (TR) 33 regarding a dam safety inspection program for the facility.

The SEO does not have expertise or experience specific to tailings dams. Our recommendations and observations are provided based on Dam Safety experience with dams and associated facilities designed to impound water. Subject to this limitation, we did not observe signs of distress or patent problems with the design that would lead us to believe the facility is unsafe. We do have several recommendations for improving the safety of the structure: The following Maintenance and Engineering Actions should be regarded as technical recommendations from the SEO to DRMS, the project regulator, and NOT as requirements from the SEO to the dam owner.

Because the facility is an Exempt Structure, the State Engineer has not assigned an Overall Condition rating.

Based on this Safety Inspection and recent file review, the overall condition is determined to be:

☐ (71) SATISFACTORY ☐ (72) CONDITIONALLY SATISFACTORY ☐ (73) UNSATISFACTORY

ITEMS REQUIRING ACTION BY OWNER TO IMPROVE THE SAFETY OF THE DAM

The State Engineer, by providing this dam safety inspection report, does not assume responsibility for any unsafe condition of the subject dam. The sole responsibility for the safety of this dam rests with the reservoir owner or operator, who should take every step necessary to prevent damages caused by leakage or overflow of waters from the reservoir or floods resulting from a failure of the dam.

MAINTENANCE - MINOR REPAIR - MONITORING

☐ (80) PROVIDE ADDITIONAL RIPRAP:

☐ (81) LUBRICATE AND OPERATE OUTLET GATES THROUGH FULL CYCLE

☑ (82) CLEAR TREES AND/OR BRUSH FROM: **Control height of brush to allow good routine visual inspection of the embankment slopes**

☐ (83) INITIATE RODENT CONTROL PROGRAM AND PROPERLY BACKFILL EXISTING HOLES:

☑ (84) GRADE CREST TO A UNIFORM ELEVATION WITH DRAINAGE TO THE UPSTREAM SLOPE: **AND remove windrow of soil on upstream shoulder**

☐ (85) PROVIDE SURFACE DRAINAGE FOR:

☐ (86) MONITOR:

☑ (87) DEVELOP AND SUBMIT AN EMERGENCY ACTION PLAN: **We provided an example SEO Emegency Action Plan to DRMS. DRMS will determine EAP requirements, if any, for the dam owner.**

☑ (88) OTHER **Repair upstream slope with compacted fill at the excavation along the old seepage recovery pipeline**

☑ (89) OTHER **We recommend inspecting the Seepage Collection Pond embankment as part of the TR-33 process.**

ENGINEERING - EMPLOY AN ENGINEER EXPERIENCED IN DESIGN AND CONSTRUCTION OF DAMS TO: (Plans and Specifications must be approved by State Engineer prior to construction.

☐ (90) PREPARE PLANS AND SPECIFICATIONS FOR REHABILITATION OF THE DAM:

☐ (91) PREPARE AS -BUILT DRAWINGS OF:

☐ (92) PERFORM A GEOTECHNICAL INVESTIGATION TO EVALUATE THE STABILITY OF THE DAM:

☐ (93) PERFORM A HYDROLOGIC STUDY TO DETERMINE REQUIRED SPILLWAY SIZE:

☐ (94) PREPARE PLANS AND SPECIFICATIONS FOR AN ADEQUATE SPILLWAY:

☐ (95) SET UP A MONITORING SYSTEM INCLUDING WORK SHEETS, REDUCED DATA AND GRAPHED RESULTS:

☑ (96) PERFORM AN INTERNAL INSPECTION OF THE OUTLET: **Determine the design of the seepage collection pipe system under the embankment. If possible video inspect the pipes. Determine source of uncontrolled seepage exiting on downstream slope above collection drain outfalls**

☑ (97) OTHER: **Consider installing a trash rack at the south diversion drop structure inlet.**

☑ (98) OTHER: **Perform an internal inspection of the south diversion drop structure conduit. ALSO we recommend evaluating how the Maximum Normal water level is controlled in both the main tailings dam and the seepage collection pond (See spillway sect. of this report).**

☑ (99) OTHER: **As part of TR-33 reporting, evaluate dam crest elevations around perimeter of the facility (see recent survey) against design criteria. ALSO evaluate whether performance of the south diversion during large flood events is a failure mode.**

SAFE STORAGE LEVEL: RECOMMENDED AS A RESULT OF THIS INSPECTION

☐ (101) FULL STORAGE

☐ (102) CONDITIONAL FULL STORAGE

☐ (103) RECOMMENDED RESTRICTION

☐ (104) CONTINUE EXISTING RESTRICTION

RESTRICTED LEVEL OFFICIAL ORDER TO FOLLOW →

FT. BELOW DAM CREST
FT. BELOW SPILLWAY CREST
FT. GAGE HEIGHT
NO STORAGE-MAINTAIN OUTLET FULLY OPEN

REASON FOR RESTRICTION

Safe storage level is NOT assigned by the SEO because the structure is Exempt per Rule 17.2 of the State of Colorado Rules and Regulations for Dam Safety and Dam Construction.

ACTIONS REQUIRED FOR CONDITIONAL FULL STORAGE OR CONTINUED STORAGE AT THE RESTRICTED LEVEL:

ENGINEER'S INSPECTION REPORT

DATE: 5/13/2013

DAM NAME: BATTLE MOUNTAIN SAN LUIS TAILIN

DAM I.D.: 240109

Engineer's Signature _____ INSPECTED BY

Mark A. Perry, P.E.

6/3/13

Owner's Signature _____ OWNER/OWNER'S REPRESENTATIVE

DATE: _____

GUIDELINES FOR DETERMINING CONDITIONS

CONDITIONS OBSERVED - APPLIES TO UPSTREAM SLOPE, CREST, DOWNSTREAM SLOPE, OUTLET, SPILLWAY

GOOD
In general, this part of the structure has a near new appearance, and conditions observed in this area do not appear to threaten the safety of the dam.

ACCEPTABLE
Although general cross-section is maintained, surfaces may be irregular, eroded, rutted, spalled, or otherwise not in new condition. Conditions in this area do not currently appear to threaten the safety of the dam.

POOR
Conditions observed in this area appear to threaten the safety of the dam.

CONDITIONS OBSERVED - APPLIES TO SEEPAGE

GOOD
No evidence of uncontrolled seepage. No unexplained increase in flows from designed drains. All seepage is clear. Seepage conditions do not appear to threaten the safety of the dam.

ACCEPTABLE
Some seepage exists at areas other than the drain outfalls, or other designed drains. No unexplained increase in seepage. All seepage is clear. Seepage conditions observed do not currently appear to threaten the safety of the dam.

POOR
Seepage conditions observed appear to threaten the safety of the dam. Examples:
1) Designed drain or seepage flows have increased without increase in reservoir level.
2) Drain or seepage flows contain sediment, i.e., muddy water or particles in jar samples.
3) Widespread seepage, concentrated seepage, or ponding appears to threaten the safety of the dam.

CONDITIONS OBSERVED - APPLIES TO MONITORING

GOOD
Monitoring includes movement surveys and leakage measurements for all dams, and piezometer readings for High hazard dams. Instrumentation is in reliable, working condition. A plan for monitoring the instrumentation and analyzing results by the owner's engineer is in effect. Periodic inspections by owner's engineer.

ACCEPTABLE
Monitoring includes movement surveys and leakage measurements for High and Significant hazard dams; leakage measurements for Low hazard dams. Instrumentation is in serviceable condition. A plan for monitoring instrumentation is in effect by owner. Periodic inspections by owner or representative. OR, NO MONITORING REQUIRED.

POOR
All instrumentation and monitoring described under "ACCEPTABLE" here for each class of dam, are not provided, or required periodic readings are not being made, or unexplained changes in readings are not reacted to by the owner.

CONDITIONS OBSERVED - APPLIES TO MAINTENANCE AND REPAIR

GOOD
Dam appears to receive effective on-going maintenance and repair, and only a few minor items may need to be addressed.

ACCEPTABLE
Dam appears to receive maintenance, but some maintenance items need to be addressed. No major repairs are requirecl

POOR
Dam does not appear to receive adequate maintenance. One or more items needing maintenance or repair has begun to threaten the safety of the dam.

OVERALL CONDITIONS

SATISFACTORY
The safety inspection indicates no conditions that appear to threaten the safety of the dam, and the dam is expected to perform satisfactorily under all design loading conditions. Most of the required monitoring is being performed.

CONDITIONALLY SATISFACTORY
The safety inspection indicates symptoms of structural distress (seepage, evidence of minor displacements, etc.), which, if conditions worsen, could lead to the failure of the dam. Essential monitoring, inspection, and maintenance must be performed as a requirement for continued full storage in the reservoir.

UNSATISFACTORY
The safety inspection indicates definite signs of structural distress (excessive seepage, cracks, slides, sinkholes, severe deterioration, etc.), which could lead to the failure of the dam if the reservoir is used to full capacity. The dam is judged unsafe for full storage of water.

SAFE STORAGE LEVEL

FULL STORAGE
Dam may be used to full capacity with no conditions attached.

CONDITIONAL FULL STORAGE
Dam may be used to full storage if certain monitoring, maintenance, or operational conditions are met.

RESTRICTION
Dam may not be used to full capacity, but must be operated at some reduced level in the interest of public safety.

HAZARD CLASSIFICATION OF DAMS

High hazard
Loss of human life is expected in the event of failure of the dam, while the reservoir is at the high water line.

Significant hazard
Significant damage to improved property is expected in the event of failure of the dam while the reservoir is at the high water line, but no loss of human life is expected.

Low hazard
Loss of human life is not expected, and damage to improved property is expected to be small, in the event of failure of the dam while the reservoir is at high water line.

NPH hazard - No loss of life or damage to improved property, or loss of downstream resource is expected in the event of failure of the dam while the reservoir is at the high water line.

STATE OF COLORADO

Battle Mountain San Luis Project Tailings Dam: 5/13/13 Dam Safety Inspection Report

Perry - DNR, Mark <mark.perry@state.co.us> Mon, Jun 3, 2013 at 2:10 PM
To: Wally Erickson - DNR <wally.erickson@state.co.us>
Cc: Russ Means - DNR <russ.means@state.co.us>, Bill McCormick - DNR <bill.mccormick@state.co.us>, Craig Cotten - DNR <craig.cotten@state.co.us>

Hi Wally,

Please see the attached SEO Engineer's Inspection Report (EIR) for the subject dam safety inspection. As we discussed previously, our office is providing the EIR solely for technical support of the Division of Reclamation, Mining & Safety. We have not assigned an overall rating or a safe storage level, as the dam is an Exempt Structure per SEO Rules & Regulations. The Required Actions at the end of the report should be taken as recommendations to DRMS for consideration as part of your TR-33 dam safety effort.

It was a pleasure to meet you and join you for the inspection. I hope our participation provided value to DRMS. Please do not hesitate to contact me with questions about the attached EIR or with any other dam safety questions for the Battle Mountain San Luis project.

Best Regards,
Mark

Mark A. Perry, P.E.
Dam Safety Engineer, Divisions 2/3
Colorado Division of Water Resources
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Battle Mountain San Luis Tailings Dam (DAMID 240109)_2013_05_13 DamSafetyInspectionReport.pdf
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Photo 1- Looking upstream at the tailings containment area from the left abutment of the main dam. During normal operations there is only a small pool of water.

Photo 2 – Dam crest looking right from the left abutment.

Photo 3 – Downstream slope looking right from the left abutment.

Photo 4 – Looking across one of two benches on the downstream slope.

Photo 5 – Foreground shows right groin where liner and erosion damage was recently repaired. Background: seepage collection pond at the downstream toe of the main dam.

Photo 6 – South diversion ditch and drop structure inlet located on the left side (south) of the main dam.

Photo 7 – Recent erosion repairs performed around the south diversion drop structure outfall.

Photo 8 – Seepage at toe of the main dam. Majority of seepage comes through collection drain, but some seepage appears to be uncontrolled (see Photo 9).

Photo 9 – Seepage drain outfall at the downstream toe (3x12" HDPE pipes). There is reportedly a large seepage collection pipe under the dam. NOTE: Uncontrolled seepage exiting higher on the slope above the drain outfalls (red arrow).