



COLORADO LEGACY LAND

November 16, 2017

Mr. Michael A. Cunningham
Environmental protection Specialist
Division of Reclamation, Mining and Safety
Colorado Department of Natural Resources
1313 Sherman Street, Room 215
Denver, CO 80203

RE: Response to Request for Additional Information (SO01)
Schwartzwalder Mine (M-1977-300), Jefferson County, Colorado

Dear Michael:

Colorado Legacy Land, LLC ("CLL") is providing this information for the Succession of Operators Application amendment to the Colorado Department of Natural Resources, Division of Reclamation, Mining and Safety ("DRMS") to seek its approval for the transfer of permits for the Schwartzwalder Mine (M-1977-300) and the Black Forest Mine (M-2001-036) located in Jefferson County, Colorado from Cotter Corporation (N.S.L.) ("Cotter") to Colorado Legacy Land, LLC ("CLL"). The information in this letter responds to your letter request dated November 9, 2017 ("Letter Request"). In the sections below, we state the information request from the Request Letter and then provide CLL's response.

DRMS Information Request No. 1

The costs associated with Reverse Osmosis (RO) water treatment system have been outlined in the Schwartzwalder DRMS Bond Calculation table provided with the Succession of Operators application. The ten year treatment period has been separated into years 1 -5 and years 6-10. According the cost estimate, the RO system will be operational half of the time and will be on standby status the other half of the time for the first five year term. Whereas, the RO system will be on standby status for the entire second five year term. Please provide clarification of what standby status entails and provide a justification for why the RO system will be on standby status for the second five year treatment period.

CLL Response No. 1

Standby status involves periodic operations and maintenance of the RO system to maintain it on a ready status. This includes costs for the following: (1) security of the plant and repair as necessary, (2) periodic operations of the pump in recirculation mode to assure that the plant can be turned on, (3) heating and lighting in the plant, (4) replacement of any reagents or materials that have sensitive holding times, and (5) any necessary monitoring activities. It also covers the cost of site personnel who are performing these tasks.

The reclamation plan includes removal of sources in the alluvium, additional in situ treatment, and then ongoing maintenance of in situ treatment for a 10-year period. CLL anticipates that the combined effectiveness of the in-situ treatment, and the source removal and natural removal processes that will be

in the revegetated alluvial fill areas will combine to provide protectiveness in Ralston Creek, such that BPL of less than 30 µg/L uranium is maintained. The maintaining of the RO system on standby is a prudent and redundant measure to provide dewatering of the mine pool if BPL is not consistently protected during this second five-year period. However, it is not anticipated that the RO system will be used at all during this period based on the treatment and reclamation performed in the first 5-year period.

DRMS Information Request No. 2

A Technical Memorandum addressing mine pool recharge rates was provided to the Division with the Succession of Operators application. The mine pool recharge rate was determined by evaluating the mine pool recharge during five different periods when the water treatment plant was shut down. The periods span from June 2017 to October 2017. The stated basis for evaluating this timeframe was because it was representative of recharge rates which will be experienced when the mine pool is maintained at or near 150 feet below the Steve Leve. To establish the amount of required financial warranty, it must be assumed that at the time of bond forfeiture the mine pool will have rebounded to a maximum post-mine water level elevation (6,590 feet). In addition, the recharge rates should be evaluated over a minimum of a one year period to account for seasonal fluctuation of recharge rates. Please provide an estimate of the mine pool recharge rates over a period of one year as well as the cost associated with dewatering the mine pool from 6,590 feet to 6,452 feet.

CLL Response No. 2

Recharge to the mine during June-October covers the period of time that the mine is experiencing the greatest recharge rate. During the several years of operation, recharge to sumps and to the mine pool is observed to be lower during the late fall, winter, and early spring during time periods of frozen soils and snow on the ground, which is common over the mine site during that period. Therefore, it is most conservative to estimate the flow to the mine to be approximately 60 gpm, as was shown in the technical memorandum, across the entire year, rather than to use estimates of lower recharge that would include the winter timeframe. When evaluating periods earlier in 2017, flows to the mine were lower than 60 gpm, but this was also when the mine was not as drawn down.

To establish the cost associated with dewatering the mine pool, the rate of mine dewatering while the plant is in operation was evaluated. As shown in the technical memorandum, mine dewatering rates of 1.23 ft/day, 2.31 ft/day, and 1.66 ft/day are observed. This variability is associated with the different amounts of mine area at the different levels of the mine. At an average dewatering rate of 1.5 ft/day, which has been typical average taking into account shut down periods due to power outages or maintenance issues, a mine dewatering period from 6,590 feet to 6,452 feet is estimated to be about 100 days, or just over 3 months. Please note that the costs for this are included in the normal 6 months of annual active operations (i.e., approximately \$140,000 per 6 months), as shown in the bond calculation. Said differently, costs to dewater the mine from the highest level to 150 below the Steve Level are included in the bonding calculation already provided and are not new costs in the estimate.

DRMS Information Request No. 3

Please specify the number of times the submersible pump in the mine pool has been replaced since dewatering activities were reinitiated in 2010.

CLL Response No. 3

A new mine pump was installed prior to the operation of the RO in 2013. A larger pump was installed in January-February 2017. The first installed pump still works and is used periodically during periods where one RO is in maintenance, and the larger pump is used when both ROs are operational. No replacement has yet been required.

DRMS Information Request No. 4

The costs associated with the Ion Exchange (IX) water treatment system have not been included in the Schwartzwalder DRMS Bond Calculation table. The IX system is currently a component of available water treatment options at the Schwartzwalder Mine. Therefore, the operation and maintenance costs associated with the IX system must be accounted for over a ten year treatment period. Please provide the Division with the costs associated with operation and maintenance of the IX system over a ten year period.

CLL Response No. 4

As was stated before in meetings between Cotter, CLL, and DRMS, the IX system is installed but is not used to treat water. It is an entirely redundant system to the in-situ treatment and the RO treatment systems. CLL could decommission the IX plant, but has decided to keep it in place as a prudent, conservative measure. Therefore, it is inappropriate to include IX system operation as a cost in the bonding calculation.

However, as requested in the Request Letter, we performed an analysis for assuming that the RO systems and in-situ treatment systems are producing water, as is currently being performed, and this pre-treated water is then routed through the IX systems. IX systems can load 0.05 lb uranium per lb resin. With an average concentration of uranium produced from the ROs of 15 µg/L, and with an average annual dewatering rate of 60 gallons per minute, the IX systems would receive 1.788×10^9 µg uranium per year. The IX systems have a capacity of 3.85×10^{11} ug uranium (i.e., about 850 lbs), or over 200 years before the resins are loaded to a level that would require a change of resins.

There is no additional cost for the flow through of water through the IX system as described above. All other costs associated with the IX systems are included in the RO operations, including an operator, pumping (pressure from the RO pumps feeds water through the IX vessels), and building costs to house the IX. Consequently, the 10-year operations cost to have the IX systems utilized are negligible and are not appropriately added to the mine dewatering and treatment systems bonding cost already provided.

DRMS Information Request No. 5

Please specify the total amount of spent resin from the IX water treatment system which can be stored under the Radioactive Materials License #CO-369-06. In addition, please provide the Division with the costs associated with disposing of the spent IX resin at a licensed disposal facility.

CLL Response No. 5

The amount of resin that can be stored on site is limited by the CDPHE RML #CO-369-06 to be no more than 2 Curie of natural uranium bound to sorptive media. The amount of resin stored will vary depending on the amount of uranium in loaded resin. However, at the rate of uranium loading as described in CLL Response No. 4 (above), and with a ratio of 0.67 pCi/ug, approximately 0.0012 Curies could be expected to be loaded to the resin per year.

Currently, Cotter has an agreement with Energy Fuels Resources (US), Inc. ("**Energy Fuels**") whereby Cotter ships the loaded resin to their White Mesa licensed uranium milling facility in Blanding, UT and it is then regenerated. Because of the value associated with the loaded resin, Energy Fuels covers the cost of shipping it to its facility and processing. It is only if Cotter wants the resin back that Cotter would pay the cost to ship the resin back to their facility.

Because of the Energy Fuels contract and the value associated with the loaded resin, the cost associated with disposition of loaded resin is negligible and is not be included in the bonding cost estimate.

DRMS Information Request No. 6

The financial warranty estimate submitted to the Division did not include costs for ground water or surface water sampling. The water monitoring program is intended to meet the requirements of Rule 3.1.6 and Rule 3.1.7 and must be accounted for in the financial warranty estimate. The Division assumes the water monitoring program will continue until such time as the site is released from further reclamation liability. Please provide the annual costs associated with the ground water and surface water sampling program.

CLL Response No. 6

The monitoring program has the following costs associated with analysis of water collected as required by permits. The manpower costs to collect the samples is already covered in the RO operator's time.

	#/Quarter	Spring	#/year	Unit \$	Annual Cost
Code 1	24	84	180	100	\$ 18,000
Code 2	36		144	25	\$ 3,600
Code 3	9	4	40	100	\$ 4,000
Code 4	12		48	25	\$ 1,200
Table 1	9	7	43	400	\$ 17,200
Table 2	27		108	150	\$ 16,200
Table 3	6		24	150	\$ 3,600
Table 4	6		24	150	\$ 3,600
Table 5	1		4	400	\$ 1,600
WET	1		4	1500	\$ 6,000
Rental	1		4	516	\$ 2,064
					\$ 77,064

CLL has added the cost of the groundwater monitoring to the bond calculation. We have added \$77,000 per year for the first 5 years, and then \$38,000 for the next 5 years as the post-remediation sampling is expected to be reduced. This results in an additional \$575,000 to the cost table.

DRMS Information Request No. 7

The financial warranty estimate submitted to the Division did not include costs for abandonment of ground water monitoring wells or alluvial sumps. Please provide costs associated with the abandonment of all ground water monitoring wells and alluvial sumps, including in-stream sump locations.

CLL Response No. 7

The cost for alluvial sump removal is already included in the alluvial removal project as the sumps are removed with the alluvium. The cost for groundwater well removal is not appropriate for a 10-year bonding period as we understand that monitoring may be continued well beyond this period. However, there are 13 wells, and to close these wells an estimate of \$2,000 per well yields a well abandonment cost of \$26,000 is estimated. Consequently, CLL has added an additional \$26,000 to the cost table.

DRMS Information Request No. 8

The revised Environmental Protection Plan, under Section 7 – Facilities Evaluation, indicates there is remaining reclamation to be performed at the Minnesota Level and at the CV/Charley/Intakes area. Please specify the remaining reclamation tasks associated with these areas of the mine and provide the Division with the associated costs for reclamation.

CLL Response No. 8

The only remaining reclamation tasks associated with these facilities is to install a permanent closure over these mine openings. The CV and Minnesota Levels are still open, and the Charley/Intakes area has already been closed. The cost for closing the CV and Minnesota has been estimated at \$7,500 for each adit, for a total of \$15,000. Consequently, CLL has added an additional \$15,000 to the cost table.

DRMS Information Request No. 9

The financial warranty estimate provided to the Division specifies the cost to excavate, haul and place the alluvial material is \$287,325.00. However, the cost associated with this reclamation task was determined to be \$650,760.00 under Technical Revision No. 23, Table 4-1. Please clarify this discrepancy.

CLL Response No. 9

TR 23 provided a cost estimate for a worst case 110,000 yd³ of alluvial materials to be removed and placed either in the underground mine or on waste dumps, but was not an engineered estimate for what is now actually planned. For instance, as originally presented in AM-04, the project had removal of materials and placement underground over a 4-5 year period. However, based on a refined evaluation of the excavation, an estimated volume of alluvium for removal is now calculated at 33,000 yd³, and this

work will all be done in one season. A construction quote has been obtained from Kessler Construction for this removal action at a total cost of \$287,325. This cost is reflected in the bonding calculation.

Please let us know if there are any additional questions. We look forward to hearing back from DRMS regarding the final evaluation of the SO packet for the Schwartzwalder and Black Forest Mines.

Sincerely,

COLORADO LEGACY LAND, LLC

A handwritten signature in blue ink, appearing to read "Paul Newman", is positioned above the printed name.

Paul Newman
Managing Director
303.808.8492

cc: Ken Mushinski – Cotter Corporation
Jim Harrington – Colorado Legacy Land
Eric Williams – Colorado Legacy Land

**Schwartzwalder Mine,
Jefferson County, CO**

Updated DRMS Bond Calculation - November 2017			
Source	Amount	Description	Notes
	\$ 780,526	Additional Scope Items (Total Cost)	
	\$ -	Pre-DMO bond for site reclamation	
TR-12	\$ 30,000	200 gpm water treatment plant	Demo of new water treatment plant building
TR-13	\$ -	50 gpm interim water treatment - Sump 1	Completed
TR-15	\$ -	Construction of Sump 5	Completed
TR-15	\$ -	Construction of Sump 9	Completed
TR-15	\$ -	Construction of Sump 8	Completed
TR-15	\$ -	Construction of Sump 10	Completed
TR-18	\$ 134,526	Cutoff Wall and 18" Creek bypass pipe line	Habitat restoration remaining
TR-19	\$ -	New monitor well installation	Completed
TR-19	\$ -	Additional monitor well in South Water Rock Pile	Completed
	\$ 575,000	Groundwater monitoring	\$77,000 for 5 years; \$38,000 for an additional 5 years
	\$ 15,000	Audit closure - Minnesota and CV/Charley/Intakes areas	Two mine openings @ \$7,500 each
	\$ 26,000	Groundwater well abandonment	Abandon 13 monitor wells @\$2,000 per well
AM-04	\$ 2,236,344	Mine Dewatering & InSitu Treatment (Total Cost)	
		<u>Mine Dewatering & InSitu Treatment (Direct Costs)</u>	
	\$ 350,000	Initial InSitu Treatment	Remaining treatment if needed
	\$ 515,000	Maintain InSitu Mine Pool Treatment	10 yrs. quarterly treatments for maintenance.
	\$ 773,180	RO System Operation - yr 1 to 5	Yr 1 to 5: RO system runs half-time (@ \$139,636/yr) and on standby half-time (@ \$15,000/yr); see attached detail
	\$ 150,000	RO system Standby - yr 6 to 10	Yr 6 to 10: RO system on standby status (@ \$30,000/yr).
	\$ -	WebMaster Remote Monitoring System	Included in cost of RO systems
	\$ 22,200	Mine Pool Sampling	10 yrs. mine pool sampling.
	\$ 1,810,380	Subtotal (Direct Costs)	
		<u>Mine Dewatering & InSitu Treatment (DRMS Indirect Costs)</u>	
	\$ 36,570	Liability Insurance	2.02% of Direct Costs
	\$ 19,009	Performance Bond	1.05% of Direct Costs
	\$ -	Job superintendent	Site personnel covered in RO system operation
	\$ 181,038	Profit	10% of Direct Costs
	\$ 236,617	Subtotal (Indirect Costs)	
		<u>Mine Dewatering & InSitu Treatment (Eng/Management)</u>	
	\$ 86,997	Engineering Word &/or Contract/Bid Prep	4.25% of Direct and Indirect Costs
	\$ 102,350	Reclamation management &/or Admin.	5% of Direct and Indirect Costs
	\$ 189,347	Subtotal (Eng/Management)	
AM-04	\$ 1,755,704	Alluvial Fill (Total Cost)	
		<u>Alluvial Fill (Direct Costs)</u>	
	\$ 6,300	Mobilization	Demob - all heavy equipment already on site
	\$ 246,400	Demo and Debris Removal	Kessler Quote per TR-23, includes old water treatment building and other site structures.
	\$ 287,325	Excavate, Haul and Place	Kessler Quote per TR-23, excavate, haul and place on waste rock piles, 1 construction season.
	\$ 10,000	Lab Analysis Soils	50 verification samples
	\$ 15,000	Lab Analysis Water	100 samples during excavation.
	\$ 48,000	Modify/Demo sumps	Pipes, pumps, electrical modifications.
	\$ 24,000	Modify monitor wells	Possible 3 new/relocated monitor wells @ \$8k ea - includes
	\$ 138,600	Purchase Inert Fill	Inert fill to come from site, no credit taken for discount
	\$ 214,500	Haul and Place Fill	Inert fill from site - haul charge reduced to essentially zero.
	\$ 50,750	Purchase Top Soil	Purchase 3,500 cy of top soil
	\$ 112,000	Haul and Place Top Soil	Haul and place 3,500 cy of top soil
	\$ 28,000	Revegetate	Purchase and distribute 3.5 acres
	\$ 133,363	Concrete V-ditch Storm Water Drain	Kessler quote per TR-23, includes construction and materials
	\$ 88,389	Waste Rock Pile Cap	Kessler quote per TR-23, includes topsoil seed and mulch
	\$ 1,402,627	Subtotal (Direct Costs)	
		<u>Alluvial Fill (DRMS Indirect Costs)</u>	
	\$ 28,333	Liability Insurance	2.02% of Direct Costs
	\$ 14,728	Performance Bond	1.05% of Direct Costs
	\$ 21,101	Job superintendent	322.59 hrs @\$65.41
	\$ 140,263	Profit	10% of Direct Costs
	\$ 204,424	Subtotal (Indirect Costs)	
		<u>Alluvial Fill(Eng/Management)</u>	
	\$ 68,300	Engineering Word &/or Contract/Bid Prep	4.25% of Direct and Indirect Costs
	\$ 80,353	Reclamation management &/or Admin.	5% of Direct and Indirect Costs
	\$ 148,652	Subtotal (Eng/Management)	
Total Bond	\$ 4,772,573		

Schwartzwalder Mine Water Treatment Plant Cost Detail

	Quantity Annual	Unit	\$/Unit	Full Year Ops	Annual Cost	Notes
IWTP						
Organic Carbon Dosage	1,972	Kg	\$ 2	\$ 2,959	\$ 2,959	Carbon source; amends backfill slurry so mine pool is treated
Replacement membranes (\$/membrane)	48	membrane	\$ 495	\$ 23,760	\$ 11,880	Assumes 6 months operation; every 6 month replacement
Cartridge Filters (\$/filter)	144	filter	\$ 12	\$ 1,728	\$ 1,728	assumes 6 months operation; every 2 month replacement
Caustic Soda (25%)/EDTA (\$/tote)	6	Tote	\$ 750	\$ 4,500	\$ 2,250	CIP; 1 tote per every 2 months, assumes 6 months ops
Muriatic Acid (\$/tote)	6	Tote	\$ 750	\$ 4,500	\$ 2,250	CIP; 1 tote per every 2 months, assumes 6 months ops
Citric Acid (\$/50lb)	18	50 lb bag	\$ 50	\$ 900	\$ 450	CIP; 3 bags per CIP; assumes 6 months ops, monthly CIP
Barium Chloride (\$/50lbs)	60	50 lb bag	\$ 89	\$ 5,340	\$ 2,670	Amends backfill slurry; assumes 6 months ops
Anti-Scale (\$/tote)	3	Tote	\$ 7,700	\$ 23,100	\$ 11,550	Continuous use in RO; assumes 6 months ops.
RO/Software 3rd party support	24	hour	\$ 120	\$ 2,880	\$ 2,880	Operations and maintenance support
Electrical/Mechanical 3rd party support	192	hour	\$ 100	\$ 19,200	\$ 9,600	3rd party maintenance support
Gloves/tools/PPE/pH buffer/HD/etc.	5%	%		\$ 4,295	\$ 4,295	Other WTP consumables
RO Maintenance/Repair/Replacement	10%	%		\$ 8,591	\$ 8,591	Note: this is an equivalent to buying a new RO every 10 years
Utilities (Electric)	504,922	KW/year	\$ 0	\$ 60,591	\$ 30,295	Assumes 6 months operation April-September
Utilities (Propane)	1,000	gallons	\$ 4	\$ 4,000	\$ 4,000	Winter building heat (October-March)
WTP Operator	2,080	hours	\$ 39	\$ 81,000	\$ 44,238	Loaded rate; 6 months continuous ops plus 2 days/mo during standby
Subtotal					\$ 139,636	\$

	Quantity Annual	Unit	\$/Unit	Annual Cost
RO System Standby (full year)	12	month	\$ 2,500	\$ 30,000
RO System Standby (half year)	6	month	\$ 2,500	\$ 15,000