



Department of Environmental Quality

To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.



Matthew Mead, Governor

Todd Parfitt, Director

April 23, 2018

Mr. John Cash, V.P of Regulatory Affairs
Lost Creek ISR, LLC / Ur-Energy USA, Inc.
5880 Enterprise Dr., Ste. 200
Casper, WY 82609

RE: Permit PT0788 Lost Creek ISR 2016-2017 Annual Report Review

Dear Mr. Cash,

The Wyoming Department of Environmental Quality - Land Quality Division (LQD) has reviewed the 2016-2017 Annual Report for the Lost Creek ISR Project, Permit No. 788. The enclosed memorandum provides LQD's review comments, which require response in order to complete the review. Please see the enclosed review memorandum and submit responses by **May 31, 2018**.

Additionally, LQD consulted with the Nuclear Regulatory Commission on their review of the 2017-2018 surety estimate. The NRC requested (outlined in ML18012A427, January 10, 2018 RAI letter) and approved (March 30, 2018 letter) LCI's revision to the proposed surety. Once satisfactory responses are received to all of the LQD's concerns, the Annual Report may be closed out.

If you have any questions, please contact me at jean.lawlor@wyo.gov or (307) 335-6952.

Sincerely,

Jean Lawlor, P.G.
Natural Resources Analyst
WDEQ-LQD District 2

Attachments: 2016-2017 Annual Report Review Memorandum
Example Surface Disturbance Calculation tables

ec. Nancy Williams, Supervisor, Lander DEQ-LQD
Tammi Pusheck, Cheyenne DEQ-LQD
cc. Mr. John Saxton, U.S. NRC, MS T-8F5, 11545 Rockville Pike, Two White Flint North,
Rockville, MD 20852.
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ANNUAL REPORT REVIEW MEMORANDUM

TO: PT0788 Lost Creek ISR Project, Annual Report

FROM: Jean Lawlor, Natural Resources Analyst, LQD District 2;
Uranium Recovery Program Staff, LQD District 1

DATE: April 23, 2018

SUBJECT: PT0788 Lost Creek ISR 2016-2017 Annual Report Review

Discussion:

This memorandum presents the LQD's review comments for the Lost Creek ISR Project 2016-2017 Annual Report (AR) received in the District 2 office October 20, 2017 from Michael Gaither of Lost Creek ISR, LLC / Ur-Energy USA, Inc. This AR covers the activities at the Lost Creek ISR mine from the period of September 21, 2016 through September 20, 2017. LQD is sending the following comments to Lost Creek ISR, LLC (LCI) under cover letter dated April 23, 2018 to request that LCI provide clarification, additional information, and/or revisions to complete the submittal and review of the AR.

The preliminary Surety Estimate provided with this 2016-2017 Annual Report (\$17,623,500) reflects an increase of \$2,038,200 from the current bond amount of \$15,586,000 set forth in the LQD Director's Bond Approval Letter dated March 2, 2017. New disturbances since the last reporting period are largely a result of new development in Mine Unit 2 and are summarized in AR Table 3.6-2: Disturbance and Reclamation Summary.

Review Comments:

- 1) In **Table 3.1-1: Operating Wellfields**, the reported number of Total Wells (80) for Header House 1-10 does not equal the sum of Injection Wells (55) plus Production Wells (26). Please confirm, and correct as necessary, the well quantities for Header House 1-10.
- 2) W.S. § 35-11-411 and Wyoming Non-coal Rules and Regulations Chapter 11, Section 15(c) set forth the requirements of the annual report. Chapter 11, Section 15(c)(iii) states that annual reports shall include at a minimum "*the total quantity of recovery fluid injected and the total quantity of recovery fluid extracted during the reporting period for each well-field area including a description of how these quantities were determined.*" This subtotal by well field is intended to provide resolution of individual well field bleeds to determine whether an inward gradient is being maintained, rather than providing gross mine injection and extraction that might mask negative bleed at an individual well field. However, the AR reports only the total (annual average) injection and recovery as measured at the central processing plant (**Table 3.2-1: Mine Unit Flow Totals**). As LQD understands that Mine Unit 2 has commenced production, please break down this grand total to report the subtotal fluid volumes recovered and injected in Mine Units 1 and 2, and if possible at HH2-2.
- 3) Information provided in the quarterly reports indicates that over the 3rd and 4th quarters of 2017, HH2-2 fluid volume injected exceeded fluid recovered during the majority of those quarters, suggesting a prolonged period of negative bleed (flow away from well field). A positive bleed (inward gradient) on HH2-2 will be maintained as stated in the Permit Operations

Plan, Section 3.6 Mine Unit Control: *"the 0.5 to 1.5% bleed will be instantaneous and continuous during normal commercial production...LCI may operate without a bleed for no more than 24 hours per event. If a bleed of at least 0.5% cannot be re-established within 24 hours, injection in the affected area will be shut down and LCI will notify LQD of the event by telephone or email by the next business day."* LQD realizes that the startup of new HH2-2 may have required many flow adjustments over time to establish a pumping equilibrium and a sustainable positive bleed in Wellfield 2. As the quarterly reports indicate that the bleed on HH2-2 initially was negative, please explain when an inward gradient was established and how it is currently being maintained at Mine Unit 2.

- 4) **Table 3.3-1** lists the spill soil sample uranium and radium 226 data from the 12/22/2016 and 9/5/2017 spills as "still pending." If lab results are now available, please add these to this table. If not, please explain the status of these 2016 and 2017 spill soil samples.
- 5) Comparing **Table 3.6-1A: Long-Term Topsoil Pile Summary** and **Table 3.6-1C: Subsoil Pile Summary** to **Figure 3.6-1A**, I did not see Topsoil piles 1, 2, 10, 11, or MU2 labeled on this map. I did not see MU2 Trunkline or MU2 Drilling Subsoil piles labeled on this map. If these are not currently on the map, please either add the locations, or add identifying numbers to those un-numbered topsoil and subsoil locations shown.
- 6) There appears to be an error in the total volume calculation for short-term topsoil stockpiles within **Table 3.6-1B: Short-Term Topsoil Pile Summary**. The reported total is 5526 yd³; however, only the MU2 Trunk Line (1170 yd³) and MU2 Drill Pits (440 yd³) stockpiles are listed, adding to a total volume of 1610 yd³. It appears that the total quantities are incorrect, or a topsoil pile(s) volume is/are missing. Please confirm, and correct as necessary, the list of topsoil piles and volumes in Table 3.6-1B.
- 7) *[Affected acreage calculation specific to ISR mines is under discussion within the WMA-LQD Uranium Work Group. Comments 7 through 9 below are based on discussions with Lander LQD staff on how LQD requires bentonite and coal mines, where surface disturbance is the predominant reclamation concern, to track and calculate their affected acreage and associated reclamation bonding. Example surface disturbance area summary tables submitted by bentonite mines are attached for reference.]*

LCI's cumulative total disturbance area should be compared to and no greater than the Approved Acreage to Affect from LQD Permit Form 1, Item 5 (324 acres), which remains the same every year unless modified by a Revision or Amendment to the permit. In **Table 3.6-2: Disturbance and Reclamation Summary**, for a given line item, the column "Disturbance through AR [year] Period" should reflect **cumulative disturbance since the start of mine development** and should be the same or greater every year such that the bottom row "Totals" for column "Disturbance through AR [year] Period" is also the same or greater every year. For example, in the 2016 AR Table 3.6-2, Pattern Area was reported as 34.8 acres disturbed and 15.2 acres reclaimed. However, in 2017 zero acres are reported as disturbed and 34.1 acres reclaimed; even if no more area was disturbed to install wellfield patterns in 2017, cumulative area disturbed should remain at 34.8 acres and may not yet be added to reclamation. This table should show both cumulative and reporting period disturbance (see examples from bentonite mines, attached). Please review previous year annual reports to revise the Table 3.6-2 disturbance areas to cumulative area disturbed since mine development commenced through 2017.

- 8) The "Net Disturbance Area" (bottom row of Table 3.6-2) calculation is LCI's assessment only of disturbed vs. "reclaimed" area not yet approved by LQD for bond release ("unapproved"). To

record their reclamation efforts not yet approved, LCI may show cumulative area reclaimed (specifically “area seeded” or “topsoil replaced”) in 2017 but not yet bond-released added to area reclaimed in previous years. However, unapproved reclaimed area may **not** be subtracted from the total disturbed area until LQD approves reclamation bond release. Please see the attached tables for examples of how different stages of reclamation may be tracked. As LQD understands that Mine Unit 2 construction commenced during this reporting period, please explain why the Total “Disturbance Area through AR 2016” area reported (116.88 acres) decreased to 88.31 acres reported for 2017.

- 9) Complete surface reclamation (0 acres disturbed) will not be approved and may not be credited for those areas that will be disturbed again before or during final reclamation, e.g. buried trunk lines and pattern area wells that must be removed for final reclamation per NRC requirements. In Table 3.6-2 under row “Mine Unit 1, Trunkline,” column “Disturbance through AR 2016 Period,” 1.6 acres were listed in the 2016 AR but 0 acres are listed for 2017; this should remain as 1.6 acres disturbed, even if no further trunk lines were constructed in 2017. This appears to have been done for other facilities in this summary table from year to year, e.g. Class V wells, Deep Wells, Main Roads, Staging Area and Drill Shop. For the future 2017-2018 annual report, please review and revise disturbance areas reported considering whether reclamation of these areas a) has been approved for bond release by LQD, b) is temporary only and will undergo additional disturbance, or c) has been permanently reclaimed/seeded but not yet bond released.
- 10) Table 3.6-2 facilities listed should correspond to the same facilities listed in **AR Appendix A, Table RP-4: Reclamation/Restoration Bond Estimate (Oct2017)** to track and compare bond coverage. As currently organized it is very difficult to determine how estimated disturbance areas shown on Table 3.6-2 correspond or compare to the same disturbance areas bonded for in Table RP-4. This table should be organized either using the same general categories outlined in Table RP-4 summary page 2 (e.g. I. Groundwater Restoration, II. Equipment Removal & Disposal Cost...VII. Total Miscellaneous Reclamation Cost), or Table RP-4 should be organized using the same general categories listed in Table 3.6-2 (e.g. Main Plant Area, Deep Wells, Pipelines...Mine Unit 1, Mine Unit 2, etc.). Consistent units also should be used, e.g. Table 3.6-2 lists road disturbance in acres, while Table RP-4 (p. 19, Wellfield Road Reclamation; p. 21, Access Road Reclamation) lists roads to be reclaimed in feet, miles, square feet, and acres. For the future 2017-2018 annual report, please reorganize one or both of these tables for consistency and to facilitate direct comparison.
- 11) Dimensions and quantities associated with the new structures/construction reported for 2017 in Sections 3.6.2 and 3.7 do not appear to have been updated in **Table RP-4** from values listed in the 2016 AR Restoration and Cost Estimate. Please confirm that the dimensions, quantities, and resulting cost to reclaim these new structures and wells is accurately listed in the corresponding reclamation item in Table RP-4, including but not limited to:
 - a. Section 3.6.2 states Header House 2 and associated lateral pipelines were constructed. In Table RP-4, p. 13, Wellfield Piping, the length of piping for Wellfield 2 (24,231 feet) is the same as that listed in 2016 AR Appendix B Table 5: Wellfield Buildings, p. 12, Wellfield Piping, Wellfield 2.
 - b. MU2 trunk line apparently was constructed in 2017. In Table RP-4, p. 14-15, III Buried Trunkline lists the same trunk line footage (2172 feet) as for 2016 AR Appendix B Table 5, p. 13, III Buried Trunkline.
 - c. Additional culverts reportedly were installed. Table RP-4, p. 23, VII Culvert Removal lists the same footage (375 feet) as for 2016 AR Appendix B Table 8, p.21, VII Culvert Removal.

- d. Section 3.7 states that a total of 245 injection and production wells were completed (in MU2?) in 2017. Table RP-4, p. 17, Well Abandonment lists 101 Production wells plus 234 Injection wells for 335 total new wells constructed in Wellfield 2. This is the same number of I- and P- wells listed in the 2016 AR Appendix B Table 6, p. 15, Well Abandonment Wellfield 2.
 - e. Two monitor wells reportedly were installed in 2016. Table RP-4, p. 17, Well Abandonment lists 99 monitor wells for Wellfield 2, as does previous AR 2016 Appendix B Table 6, p. 15, Well Abandonment Wellfield 2.
 - f. As a new wellfield is being installed, it is expected that the wellfield pattern area and road lengths would increase relative to 2016. However, Table RP-4, p. 19, Wellfield Pattern area Reclamation lists 25 acres for Wellfield 2 in 2017, as does AR 2016 Appendix B Table 7, p. 17, Wellfield Pattern Area Reclamation Wellfield 2. Wellfield road lengths listed also are the same for 2016 and 2017.
- 12) There is a discrepancy in the total wells reported for Wellfield 2 in **Table RP-4**. On one page, the total number of wells for Wellfield 2 is listed as 374 (Table RP-4, p. 3: Ground Water Restoration); on another page the total number of wells is listed as 434 (Table RP-4, p. 17: I. Well Abandonment). Please confirm the correct total, or if these are intentionally different totals, please explain the difference.
 - 13) An agreement with the Water Quality Division-Underground Injection Control Program requires that LQD increase cost estimates to plug and abandon (P&A) Class V Deep Disposal Wells by 3% yearly to cover the cost of inflation. When approved in 2013, the original engineering cost estimates were \$112,950 per deep disposal well. Increasing this amount 3% each year for four years (2013 – 2017) results in a cost estimate of \$127,126 per Deep Disposal Well. The costs proposed in the AR are \$111,996 per deep disposal well (**Table RP-4**, p. 17, II.A Waste Disposal Well Abandonment, Subtotal Well Plugging Costs per Well). LQD requests that LCI increase the cost estimate to P&A their three deep disposal wells to \$127,126 per deep disposal well for a total of \$381,378.
 - 14) Guideline 12, Appendix L specifies a \$2.50 per foot cost estimate for ISR facilities. In 2012 the WMA-LQD Uranium Work Group proposed reducing the Appendix L unit cost from \$3.00 to \$2.50 per foot, which was approved by then-LQD Administrator Nancy Nuttbrock. In **Table RP-4** (p. 17, I. Well Abandonment) rates of \$1.29 per foot (Well abandonment Unit Cost \$584/well divided by 454 feet average depth) and \$1.26 per foot (Unit Cost \$607/well divided by 481 feet average depth) are used for Wellfields 1 and 2, respectively. Using \$2.50/foot, cost estimates would increase in Wellfield 1 from \$567,116 to \$1,102,085 and in Wellfield 2 from \$263,414 to \$521,885. In the future 2017-2018 Annual Report, please revise the well abandonment cost estimates using the unit cost to be set for the coming year by the Work Group.
 - 15) The NRC requested (January 10, 2018 RAI letter) and approved (March 30, 2018 letter) LCI's revision to the proposed surety to include an estimate of the amount of radioactive contamination in onsite subsurface material (LCI February 23, 2018 response to RAI letter). Please revise **Table RP-4** (in p. 23, IX. Cost to Remove, Transport, and Dispose of Contaminated Soil, or wherever is an appropriate location) to incorporate "Attachment A: Spill Cleanup Summary" cost information provided in LCI's February 23, 2018 response letter approved by NRC.
 - 16) Section 3.9.1, Groundwater Monitoring, inaccurately states that no results exceeded the UCL value for MU1 or MU2 during the reporting period. Multiple chloride samples exceeding the

UCL at the same well for subsequent samples are evident from review of **Table 3.9-1: UCL Monitoring Results**:

- Well MO108 (MU1 overlying) reported chloride exceeding the UCL of 21.4 mg/L in groundwater samples collected 10/19/16, 10/25/16, 11/1/16, 11/8/16, and 12/5/16. For the 12/5/16 sample, the percent difference between the assay (26 mg/L) and UCL (21.5 mg/L) concentrations exceeded 20%.
 - Well MU109 (MU1 underlying) reported chloride exceeding UCL in samples collected 5/5/17 (21.9 mg/L) and 5/17/17 (24.5 mg/L).
 - a. LCI's Fourth Quarter 2016 report (LCI January 27, 2017 letter report to LQD Lander) does mention these exceedances. Please 1) clearly indicate these specific well locations both in text and on the location map Figure 3.1-1B, 2) discuss corrective actions taken, and 3) discuss possible reasons for the elevated chloride, including the well completion zone, local groundwater flow direction and gradient during this period in this overlying unit as compared to the producing zone, and the possible significance of their proximity to HH1-6 and a mapped fault.
 - b. In future reports, please follow up on the chloride or other indicator concentrations in these two specific wells by discussing any further exceedances and/or trends, or lack thereof, exhibited by these or any other site wells exhibiting UCL exceedances.
- 17) Depth to groundwater measurements in site wells are presented in **Table 3.9-3** but not discussed. A marked increase in depth to groundwater in many wells from approximately early January to late February 2017 is evident from a quick review of the multiple plots of time vs. groundwater depth. What is the cause of this wide-spread depth increase during this period? Does this correspond to the aquifer pumping test noted during this time in the electronic version (only) of Table 3.9-1, p. 13? Groundwater levels are typically reported as elevations above sea level to enable site-wide well comparisons and potentiometric surface mapping. Is there a reason why groundwater levels are reported as depths below ground rather than elevations above sea level?
- 18) Please discuss the data in **Table 3.9-4: Storage Pond Quarterly Monitoring**. Most of the selenium concentrations exceed the maximum 0.02 mg/L stated in the Operations Plan (Section OP 5.2.3.1) as the concentration above which selenium can become detrimental to some wildlife species. As committed to in the Operations Plan, how is LCI protecting wildlife from selenium exposure at these ponds? The 2016 AR (Sect. 3.9.3) reported that bird netting had been replaced over both ponds in September 2016; is this netting still in place and effective? For future reports, please present the pond data sorted by Sample ID such that all N Pond results are grouped together, and all S Pond results are grouped together to facilitate review and recognition of constituent trends over time.
- 19) LCI may seek **subsurface** reclamation bond release by LQD for the 20 wells reportedly abandoned during this AR period (Table 4.2-1) and for other wells and drill holes P&A'd in previous years. As the subsurface P&A portion of the bond may be released before or separately from the surface re-vegetation portion of the bond, LQD suggests tracking subsurface reclamation (drill hole and well P&A) separately from surface disturbance/reclamation (e.g. wellfield topsoil stripping, drill pad topsoil stripping, road construction, re-seeding). However, the total number of existing vs. abandoned wells (and drill holes) needs to be reviewed for consistency across the report tables (see Comments 10d., 10e., and 11 above and 20 below).

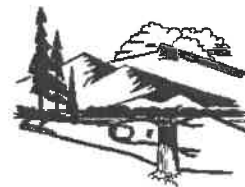
20) Regarding surface disturbance related to delineation and/or exploration drill holes, **Table 5.3-1: Drilling Disturbance Summary** does not seem to be consistent with the information provided in **Table 3.6-2** or **Table RP-4**. Table 5.3-1 lists 16 delineation holes drilled for a total disturbance of 0.41 acres. Table RP-4, p. 23, VI Exploration Hole **Surface Reclamation** lists 849 holes drilled 2005 – 2016 (@ 0.025 ac/hole from Table 5.3-1 calculates to 21.2 acres cumulative disturbance) with a reclamation unit cost per hole, rather than per acre. Table 3.6-2 lists 0.33 acres for Mine Unit 1 Delineation Drilling/Historic Holes, 0.05 acres for Mine Unit 2 Delineation drilling, and 0 acres for Exploration Drilling. Please confirm these drill hole quantities and revise these three tables for consistent quantities and units.

END OF MEMO



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RE: Permit PT0788 Lost Creek ISR 2016-2017 Annual Report Review

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cc. Nancy Williams, Supervisor, Lander DEQ-LQD
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EXAMPLE

SUMMARY OF ACTIVITY DURING THE 2017 REPORT PERIOD

PIT # OR NAME	2016 TOTAL AFFECTED ACRES	2017 TOTAL AFFECTED ACRES	AFFECTED THIS PERIOD ACRES
COWLEY AMENDMENT 188L - 191L	169.0	176.0	7.0
131G & 132G	56.3	58.9	2.6
NORTH EMBLEM	131.1	133.7	2.6
147G	0.0	12.8	12.8
159G	30.5	33.8	3.3
52G	52.9	52.9	0.0
185G	146.9	156.5	9.6
PR Block E	36.2	37.9	1.7
71T & 99T -Meeteetse Draw	104.0	142.5	38.5
101T, 101T EXT, 70T & 108T	154.6	165.3	10.7
	881.5	970.3	88.8
Total New Disturbance This Year		88.8	



EXAMPLE

Table 1: Activities During the Report Period

Permit 322C: Lovell Area

April 25, 2017

This table summarizes the current status of lands disturbed or reclaimed during the report period.

Area		Mining & Associated Disturbance Activities										Total New Reclamation By Owner					
		Mining Disturbance					Reclamation					Total New Reclamation By Owner					
		Mined (1)	AD (2)	(3)	(4)	Run On Topsoiled	BLM	ACC	STATE LEASE	PRIVATE LEASE	Seeded (5)	Reseeded (6)	No Seeding Req. (7)	BLM	ACC	STATE LEASE	PRIVATE LEASE
Blue Wash-SHO	Frammie	A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blue Wash-SHO	Carr	A	2.8	3.7	0.6	0.0	0.0	6.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blue Wash-SHO	SHO East	U	10.3	6.4	0.3	0.0	17.0	0.0	0.0	0.0	12.1	0.0	0.0	12.1	0.0	0.0	0.0
Blue Wash-SHO	SHO East	V	5.0	0.2	0.0	0.0	5.2	0.0	0.0	0.0	6.4	0.0	0.0	6.4	0.0	0.0	0.0
Blue Wash-SHO	SHO North	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0
Blue Wash-SHO	SHO North	D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	61.1	0.0	0.0	60.0	1.1	0.0	0.0
Blue Wash-SHO	SHO North	F	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.7	0.0	0.0	16.7	0.0	0.0	0.0
Blue Wash-SHO	SHO North	M	3.0	1.4	0.0	0.0	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blue Wash-SHO	SHO South	A	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.0	1.9	0.0	0.0	1.9	0.0	0.0	0.0
Blue Wash-SHO	SHO South	B	2.2	0.7	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
White Rock-Joy-Pak	White Rock	A	5.7	6.5	1.6	0.0	12.4	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
White Rock-Joy-Pak	White Rock	L	2.0	3.1	0.6	0.0	5.4	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
White Rock-Joy-Pak	Joy-Pak	A	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pete	Pete	A	2.4	1.0	0.0	0.0	0.0	3.4	0.0	0.0	4.5	0.0	0.0	0.0	4.5	0.0	0.0
Pete	Pete	B	0.4	0.2	0.0	0.0	0.0	0.6	0.0	0.0	4.3	0.0	0.0	0.0	4.3	0.0	0.0
Pete	Pete	F (40)	6.6	0.0	0.0	0.0	5.3	1.3	0.0	0.0	20.5	0.0	0.0	10.4	10.1	0.0	0.0
Pete	Pete	F (60)	9.8	0.6	0.0	0.0	0.0	10.5	0.0	0.0	13.1	0.0	0.0	0.0	13.1	0.0	0.0
Pete	Pete	H	2.5	5.5	2.0	0.0	5.0	4.9	0.0	0.0	7.5	0.0	0.0	4.1	3.4	0.0	0.0
Pete	Pete	J	1.4	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Table 1 - 1

4/25/2017

Mining & Associated Disturbance Activities

Area	Property	Series	Mining Disturbance							Total New Disturbance By Owner							Total New Reclamation By Owner						
			Mined		AD		Run On		Topsolled		BLM	ACC	STATE LEASE	PRIVATE LEASE	Seeded (5)	Reclaimed (6)	No Seeding Req. (7)	BLM	ACC	STATE LEASE	PRIVATE LEASE		
			(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)													
Gifford	Gifford 1 & 2	A	4.2	1.5	0.0	0.0	0.0	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Gifford 1 & 2	C	5.1	1.9	0.1	0.0	7.2	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0	
Mining Totals			63.6	33.0	5.2	0.0	70.9	28.7	1.8	0.5	0.0	155.3	0.0	0.0	0.0	118.7	36.6	0.0	0.0	0.0	0.0		
Road Construction Activities																							
Blue Wash-SHO	SHO North	Haul Road	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.2	0.0	0.0	6.2	2.9	0.0	0.0	0.0	0.0	0.0	
Road Totals			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.2	0.0	0.0	6.2	2.9	0.0	0.0	0.0	0.0	0.0		
Permit Totals			63.6	33.0	5.2	0.0	70.9	28.7	1.8	0.5	164.4	0.0	0.0	0.0	124.9	39.5	0.0	0.0	0.0	0.0			

- (1) Areas where soil was salvaged and significant overburden was affected
- (2) Areas where soil was salvaged but where no significant overburden was affected
- (3) Areas where no soil was salvaged but where soil was disturbed
- (4) Areas where subsoil and topsoil was spread but not seeded with a permanent seed mix
- (5) Areas where subsoil and topsoil was spread that were seeded with a permanent seed mix
- (6) Areas previously seeded were reseeded with a new permanent seed mix
- (7) Areas that were pre-mine barren lands and were backfilled and contoured but not seeded



Table 1 - 2

Table 7: Seeding Summary

Permit 322C: Lovell Area

April 25, 2017

This table represents reclaimed acreage that have been seeded, Year(s) Seeded, Bond Release Status and the Bond Retained.
 * Acres regraded but not requiring seed, mapped pre-mine as barren lands or badlands.

Cost of Topsoiling and Seeding per acre: **\$1,252**

Bond Release Status:

0 - Acreage bonded at topsoil and seeding cost/acre.

Partial - Acreage bonded at \$500 /acre, as per required minimum.

Full - No liability, acreage is fully released from bond.

Area	Property	Year Seeded	Year(s) Reseeded	Bonded Seeded		Bonded BC		Bonded Stockpond		Bond Release Status:			Bond Amount Retained			
				Acres	Acres*	Acres	Acres	0	Partial	Full	Year	Year				
Cody		1980		0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.6	1997	\$0			
		1981		0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.3	1997	\$0			
		1981	1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	1997	\$0			
		1984		0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1997	\$0			
		1985		0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.6	1997	\$0			
		1990		0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.9	1997	\$0			
		1992		0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	1997	\$0			
Blue Wash-SHO	Frannie	2008		8.5	0.0	0.0	0.0	0.0	0.0	0.0	8.5	0.0	\$4,269			
		2010		10.3	0.0	0.0	0.0	0.0	0.0	0.0	10.3	0.0	\$5,135			
		2011		6.4	0.0	0.0	0.0	0.0	0.0	0.0	6.4	0.0	\$3,201			
		2013		2.5	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	\$1,230			
		2013		2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	\$1,005			
		2014		3.3	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	\$1,665			
		2015		5.7	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0	\$2,837			
		2016		0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	\$426			
		Blue Wash-SHO	Blue Wash	1980		0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.9	4.6	1978	\$442
				1981		2.8	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	\$1,420	
				1986		0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	\$157	
				1988	1992	6.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	\$3,024	
				1988		5.4	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.0	\$2,721	
				1990		1.7	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	\$840	
				1992		17.8	0.0	0.0	0.0	0.0	0.0	0.0	17.8	0.0	\$8,880	
				1994		5.9	0.0	0.0	0.0	0.0	0.0	0.0	5.9	0.0	\$2,960	
1998				10.1	0.0	0.0	0.0	0.0	0.0	0.0	10.1	0.0	\$5,067			
2002				2.5	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	\$1,232			
2003				23.1	0.6	0.0	0.0	0.0	0.0	0.0	23.7	0.0	\$11,827			
2006				9.3	21.8	0.0	0.0	0.0	0.0	0.0	31.2	0.0	\$15,580			
2007				3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	\$1,511			
2008				10.5	0.0	0.0	0.0	0.0	0.0	0.0	10.5	0.0	\$5,262			
2010				19.6	3.3	0.0	0.0	0.0	0.0	0.0	22.9	0.0	\$11,449			
2011				6.2	0.0	0.0	0.0	0.0	0.0	0.0	6.2	0.0	\$3,122			
2012		0.0	6.1	0.0	0.0	0.0	0.0	0.0	6.1	0.0	\$3,030					

Table 7 - 1

4/25/2017

Table 5: Topsoil and Seeding Summary

Permit 322C: Lovell Area

April 25, 2017

This table summarizes soil stockpile volumes, areas needing soil, areas where soil has been replaced, and estimated associated costs of completing reclamation of these areas.

Area	Property	Series	Acres Needing TS (1)	Pile No. (2)	Year Piled	Volume Cu. Yds.	Equipment (Feet)	Average Haul Distance (Feet)	Percent Grade	Cost/LCY	Topsoiling Cost	Acres TS, not Seeded (3)	Run on (4)	Acres Needing Seeding (5)	Topsoiling Cost	Topsoiling & Seeding Cost																																	
																	Topsoiling Cost	Topsoiling & Seeding Cost																															
<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: right;">320.4</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td style="text-align: right;">\$ 239,270</td> <td style="text-align: right;">\$ 747</td> <td style="text-align: right;">\$ 505</td> <td style="text-align: right;">\$ 1,252</td> <td></td> <td></td> <td></td> </tr> </table>																																				320.4							\$ 239,270	\$ 747	\$ 505	\$ 1,252			
			320.4							\$ 239,270	\$ 747	\$ 505	\$ 1,252																																				
Blue Wash-SHO	Frannie	A, D, E	33.5	58-97-22-A-1 58-97-22-A-2 58-97-22-A-3	2008 2010 2014	2,548 11,472 4,897	637 Scraper 637 Scraper 637 Scraper	500 500 500	0% (Level) 0% (Level) 0% (Level)	\$0.77 \$0.77 \$0.77	\$1,955 \$8,802 \$3,757	0.0	1.5	35.1	\$17,706																																		
Blue Wash-SHO	Carr	A	6.4	58-97-23-A-1	2017	4,801	637 Scraper	500	0% (Level)	\$0.77	\$3,683	0.0	0.6	7.0	\$3,543																																		
Blue Wash-SHO	SHO Center	R, S, T, N	12.0	57-96-4-A-1 57-96-4-A-2 57-96-4-A-3 57-96-4-B-1	2008 2008 2008 2008	3,975 980 3,103 2,044	637 Scraper 637 Scraper 637 Scraper 637 Scraper	500 500 500 500	0% (Level) 0% (Level) 0% (Level) 0% (Level)	\$0.77 \$0.77 \$0.77 \$0.77	\$3,050 \$752 \$2,381 \$1,568	0.2	1.5	13.6	\$6,884																																		
Blue Wash-SHO	SHO East	P	0.6	57-96-10-A-2 57-96-10-B-2	2012 2012	948 671	637 Scraper 637 Scraper	500 500	0% (Level) 0% (Level)	\$0.77 \$0.77	\$727 \$515	0.0	0.0	0.6	\$301																																		
Blue Wash-SHO		U, V	41.8	57-96-10-A-4 57-96-4-A-9 57-96-4-A-10	2014 2015 2017	1,648 129 843	637 Scraper 637 Scraper 637 Scraper	1000 500 500	0% (Level) 5% Downhill 5% Downhill	\$0.77 \$0.77 \$0.77	\$1,264 \$99 \$647	0.0	0.8	42.6	\$21,516																																		
Blue Wash-SHO	SHO North	F	1.9	57-96-4-A-12	2016	1,834	637 Scraper	1000	0% (Level)	\$0.92	\$1,685	0.0	0.0	1.9	\$939																																		
Blue Wash-SHO	SHO South	A, B	23.5	57-96-5-A-1 57-96-5-A-5 57-96-5-A-6 57-96-5-B-1 57-96-5-B-2 57-96-5-B-3	2010 2014 2016 2010 2014 2016	12,395 1,498 2,506 12,264 2,143 4,070	637 Scraper 637 Scraper 637 Scraper 637 Scraper 637 Scraper 637 Scraper	2000 2000 2000 2000 2000 2000	0% (Level) 0% (Level) 0% (Level) 0% (Level) 0% (Level) 0% (Level)	\$1.18 \$1.18 \$1.18 \$1.18 \$1.18 \$1.18	\$14,666 \$1,772 \$2,965 \$14,511 \$2,536 \$4,816	0.0	2.3	25.9	\$13,066																																		
White Rock-Joy-Pak	White Rock	A	12.2	56-96-2-A-1 57-95-31-A-1 57-95-31-A-2 57-95-31-B-1 57-95-31-B-2	2016 2016 2016 2016 2016	2,514 1,302 414 2,140 869	637 Scraper 637 Scraper 637 Scraper 637 Scraper 637 Scraper	1500 1500 1500 1500 1500	0% (Level) 0% (Level) 0% (Level) 0% (Level) 0% (Level)	\$1.05 \$1.05 \$1.05 \$1.05 \$1.05	\$2,650 \$1,373 \$436 \$2,256 \$916	0.0	1.6	13.8	\$6,976																																		
White Rock-Joy-Pak		L	10.7	56-96-2-A-2 56-96-2-A-3 56-96-2-A-4 56-96-2-B-1	2016 2016 2016 2016	5,728 347 461 734	637 Scraper 637 Scraper 637 Scraper 637 Scraper	2000 2000 2000 2000	0% (Level) 0% (Level) 0% (Level) 0% (Level)	\$1.18 \$1.18 \$1.18 \$1.18	\$6,777 \$411 \$545 \$868	0.0	0.6	11.3	\$5,699																																		

