

September 19, 2018

Electronically Submitted

Utah Coal Program
Utah Division of Oil, Gas, and Mining
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Subject: Task #5690, Amendment to Volume 9, Appendix A-1 to Reduce the Hydrologic Monitoring Program for Sites Within and Outside Mine Permit Boundaries, PacifiCorp, Deer Creek Mine C/015/0018, Emery County, Utah.

Amendment to Volume 1, R645-301-720 Hydrologic Resources and Monitoring Requirements (Including map HM-1A), to Reduce the Hydrologic Monitoring Program for Sites Within and Outside Mine Permit Boundaries, PacifiCorp, Deer Creek Mine C/015/0018, Emery County, Utah.

PacifiCorp, by and through its wholly-owned subsidiary, Interwest Mining Company "Interwest", submitted an amendment to amend Volume 9, Hydrologic Volume, Appendix A, to reduce the water monitoring responsibilities as outlined in the hydrologic monitoring program, on June 6, 2018. PacifiCorp sent a follow-up letter to the Division on June 25, following discussions at the Collaborative Meeting, suspending the monitoring program indefinitely due to hazardous conditions and Forest Service closures caused by the Trail Mountain Fire.

Since the June 25 letter, the Trail Mountain wildfire that began as a prescribed burn and that jumped out of control on June 5, 2018, eventually spread across the top of East Mountain, burning over 18,000 acres of lands above and around the PacifiCorp Deer Creek mine properties and permit area, devastating the vegetation and landscape. Nearly all of the surface springs that are in the PacifiCorp monitoring program that overlie the underground mining area are within the burned area. Nearly all of the few springs that remain outside the fire area are outside of the mining area as well. The destruction of the vegetation within the fire area has the potential to significantly alter the hydrologic characteristics of the springs and their recharge on East Mountain and mask any effects that could possibly be caused by mining. In addition, the surface hydrologic monitoring sites established and monitored for nearly thirty years are now completely impacted by the Trail Mountain fire. More than three years have elapsed since the cessation of mining activities at Deer Creek. Data presented in the above amendments shows that there has been no effect on the hydrologic balance from mining at Deer Creek.

On July 18, 2018, PacifiCorp received response from the Division identifying deficiencies to Task #5690. Specifically, two deficiencies were listed:

- Groundwater Water Monitoring

- The permittee must conduct a field inspection in conjunction with the Division and USDS Forest Service in order to ascertain the extent of monitoring that is required to assess potential impacts/material damage to the hydrologic balance within and adjacent to the permit area.
- Surface Water Monitoring
 - The permittee must conduct a field inspection in conjunction with the Division and USDS Forest Service in order to ascertain the extent of monitoring that is required to assess potential impacts/material damage to the hydrologic balance within and adjacent to the permit area.

The Division noted that the Trail Mountain fire affected the area of hydrologic monitoring and inspection of the monitoring sites would have to be delayed until it was safe to conduct a field reconnaissance.

On September 11, 2018, at the request of PacifiCorp, Division representative Keenan Storrar and USFS representative Jeff Salow attended a meeting in Huntington to discuss the deficiencies outlined in the July 18, 2018 letter from the Division. To assist the Division and Forest Service with PacifiCorp's proposal to amend the hydrologic monitoring, transitioning from operational to reclamation status, PacifiCorp presented the following information:

- Historic perspective of Federal Lease Relinquishment
 - Case studies of PacifiCorp's previous applications (Phases I through III)
 - Environmental data submittal for a minimum of three years after the last date of mining (protocol for lease relinquishment developed in conjunction with BLM/USFS/DOGM and PacifiCorp. MOU agreement signed on 09/12/96, by BLM/USFS/DOGM)
 - Mining history
 - Subsidence analysis
 - Vegetation analysis
 - Hydrologic analysis (surface and groundwater)
 - CERCLA data
- Mill Fork Lease Extension
 - Permitting history of the Mill Fork Lease
 - Hydrologic baseline extension
 - Mine closure
- Cottonwood Mine
 - Hydrologic monitoring reduction amendment
 - Reclamation sequencing
 - Post reclamation hydrologic monitoring
- Final reclamation of the Deer Creek Mine
 - Status of current and future reclamation plans
 - Deer Creek Mine will be fully reclaimed by year end 2019

Based on all of the data presented, PacifiCorp reiterated the need to transition hydrologic monitoring from operational to reclamation status, especially in light of the devastating effects of the Trail Mountain Fire and the fact that the last effective date of production for the Deer Creek Mine was in December 2014.

Groundwater Monitoring

The Division expressed concern about the time frame of the mine closure (December 2014) and the period of post-mining hydrologic monitoring, through 2017 – three years of post-mining monitoring. PacifiCorp pointed out that even though the last effective date of production was December 2014, the actual date of second mining (full extraction) related to monitored groundwater sources was mid-2012. In addition, to fully evaluate potential mining impacts to groundwater resources, several factors have to be taken into account:

- Mine layout
 - Single or multiple seam mining
 - Mine layout and configuration dictates the amount of measured subsidence
- Mine timing
- Measured subsidence in reference to the location of groundwater resources

To provide better resolution of the mining timeline and the period of groundwater monitoring, PacifiCorp has revised the table entitled “Removed Sites” to include an additional column “Elapsed Time from Last Date of Mining” (see attached revised table “Removed Sites”). During the meeting, DOGM and USFS representatives recommended that PacifiCorp select a series of springs undermined by the Deer Creek Mine with measured subsidence and a groundwater source located along the Joes Valley Fault. A field visit will be scheduled to review the sites in the near future (prior to PacifiCorp’s next scheduled monitoring – mid-October). PacifiCorp recommends the following series of springs for the field reconnaissance field trip (see attached map Mill Fork Subsidence with Springs):

<u>Spring ID</u>	<u>Spring Selection Requirement</u>	<u>Water Right</u>	<u>Years of Post Mine monitoring</u>
MF-10	Near maximum measured subsidence	Yes	7 + years
MF-219	Near maximum measured subsidence	No	7 + years
SPI-26	Near measured subsidence boundary	Yes	Not undermined
UJV-101	Located along Joes Valley Fault	No	7 + years

Surface Water Monitoring

PacifiCorp discussed surface hydrologic monitoring sites associated with the Deer Creek Mine. As with the case of the Cottonwood Mine, PacifiCorp recommended retaining surface monitoring sites above and below reclaimed or scheduled reclamation sites. Those sites retained are the following:

<u>Surface Monitoring Site</u>	<u>Site Location</u>	<u>Projected Reclaimed Site (year)</u>
RCF1	Rilda Canyon – Right Fork Above	Rilda Canyon 1 st Right (2018)
RCF2*	Rilda Canyon – Above NEUWSSD Springs	Rilda Canyon 1 st Right (2018)
RCF3	Rilda Canyon – Below NEUWSSD Springs	Rilda Canyon 1 st Right (2018)
RCW4	Rilda Canyon – near Hwy 31	Rilda Canyon 1 st Right (2018)
DCR01	Deer Creek Above Mine	Deer Creek Mine (2019)
DCR04	Deer Creek Below Mine	Deer Creek Mine (2019)
DCR06	Deer Creek near Hwy 31	Deer Creek Mine (2019)

*RCF2 flume site was removed by the USFS due to concerns with restricted flow from runoff as a result of the Trail Mountain fire

The devastating effects of the Trail Mountain Wildfire on vegetation resources and resulting runoff will make it difficult to assess reclamation related impacts to the drainage systems, especially in Rilda Canyon. All of the surface monitoring sites established to monitoring activities associated with the Deer Creek Mine have been impacted by the Trail Mountain Wildfire. The Division and USFS agreed with PacifiCorp's recommendation for the retained surface water monitoring program to access reclamation activities.

PacifiCorp is confident that the data submitted in the Hydrologic Reduction Amendment clearly demonstrates that the protocols established by the mining industry and the Division to monitor potential impacts associated by mining have been achieved.

Sincerely,



Ken Fleck

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Attachments: Field Trip Map
Removed Sites Table

Cc: file

OPB = Outside Permit Boundaries
 CCC = Cottonwood Canyon Creek
 DC = Deer Creek
 MF = Mill Fork
 RC = Rilda Creek/Rilda Canyon
 HC = Huntington Creek
 MHC = Meetinghouse Creek
 GW = Grimes Wash
 ST = Straight Canyon
 IC = Indian Creek

Recommended Field Reconnaissance Sites

REMOVED SITES

DOGM Database #	Monitoring Site	Mine	Location (Section)	Location (Twnshp/Rng)	Within Relinquished Area? (Y/N)	Lease #	Relinquishment Date	Date Mined Blind Canyon	Date Mined Hiawatha	Elapsed Time From Last Date Of Mining	Type	Stratigraphic Structure	Water Rights ID	Water Rights Owner	Remarks
12	Sheba Spring	DC	7	T17S, R7E	N	UTU-084923	Scheduled for relinquishment in 2018	No Mining	No Mining	NA	Spring	Flagstaff Form.			Spring developed for livestock. Water flows through an underground pipe to a trough
152	80-50	DC	29	T16S, R7E	N	UTU-06039	Retained for Reclamation	No Mining	No Mining	Na	Spring	Blackhawk Form.			Spring located near base of ridge separating the Right and Left forks of Rilda Canyon
369	SPI-29	DC	11	T16S, R6E	Y	UTU-88554	May-18	No Mining	No Mining	NA	Spring	North Horn Form.			SPI-29 is a low volume spring/seep located below trail in a small clearing on a west facing slope surrounded with conifers and aspens. The spring drains to a small shallow basin adjacent to source. Crandall Canyon Mine developed the nearby trail into an access road during the 2007 mine collapse. Roadway reclaimed in 2013. Flow from spring SPI-29 generally ranges from 0.0/seep to a maximum of <3.0 gpm. Area near and the spring site disturbed/re-developed post Crandall Canyon mine collapse. Wet area developed on nearby access road, flow from original source dissipated (see Spring Justification document - photos). Post disturbance flow rate from spring source sufficient to maintain level in small basin, difficult to establish consistent measuring point. Flow rate estimated at 0.5 gpm on May 23, 2018.
281	UJV-213	DC	10	T16S, R6E	Y	UTU-88554	May-18	No Mining	First Mining Hiawatha 25th West Bleeder Feb. 2012	6 Years +	Spring	Castle Gate Sandstone	a21560	USFS	UJV-213 is a low volume spring/seep located above drainage near Joes Valley Fault on south facing slope covered with aspens and mountain brush. Spring not identified during previous surveys. Below spring, drainage diverted through 1" poly pipe to trough located approximately 300' to the west. Flow from spring UJV-213 generally ranges from 0.0/seep to a maximum of 3.0 gpm. Spring flow dissipates rapidly below spring source. Change application is to allow the applicant the right to develop the 3 unnamed springs to draw a portion of the stock away from the Spoon Creek riparian area
259	UJV-101	DC	10	T16S, R6E	Y	UTU-84285	May-18	No Mining	First Mining Hiawatha 22nd West Bleeder Mar. 2011	7 Years +	Spring	Castle Gate Sandstone			UJV101 is a low volume spring/seep located above drainage near Joes Valley Fault on south facing slope covered with aspens and mountain brush. Flow from spring UJV-101 generally ranges from 0.0/seep to a maximum of < 4.0 gpm. Spring flow dissipates rapidly below spring source.
315	JV-34	OPB	15	T16S, R6E	N	Within 1/2 mile offset of UTU-84285	May-18	No Mining			Spring	Joes Valley Alluvium			JV-34 spring located in Joes Valley alluvial basin near the 345 kV powerline. A series of springs emerge vertically through the alluvium creating marsh/wetland area. Flow from spring JV-34 varies dramatically based on winter pack on spring runoff, generally ranges from 0.0/seep to a maximum of 80.0 gpm.
290	JV-9	OPB	22	T16S, R6E	N	Within 1/2 mile offset of UTU-84285	May-18	No Mining			Spring	Joes Valley Alluvium			JV-9 spring is located in Joes Valley alluvial basin south of the Joes Valley cutoff road. A series of springs emerge vertically through the alluvium creating marsh/wetland area. Flow from spring JV-9 varies dramatically based on winter pack on spring runoff, and generally ranges from 0.0/seep to a maximum of 3.0 gpm.
273	UJV-206	DC	22	T16S, R6E	Y	UTU-88554	May-18	No Mining	No Mining	BC 8 Years + Hia. 7 Years +	Spring	Upper Price River	93-3400 a23166	USFS	UJV-206 is located along power line corridor on a west facing slope overlooking Joes Valley surrounded by aspens and conifers. Spring drains to a trough adjacent to the spring. Change application filed to allow Mr. Johansen the right to develop East Mountain Springs for use in a recreational cabin, and stock watering from a trough in the vicinity of the cabin, approved 6/16/2011.
200	MF-219	DC	11	T16S, R6E	Y	UTU-88554	May-18	First Mining Blind Canyon 7th Left Sep. 2009	Second Mining Blind Canyon 7th Left Apr. 2010		Spring	North Horn Form.			MF-219 is a spring/seep located along the reclaimed access road to Mill Fork Ridge originally developed as a fire access road and later used to access coal exploration sites for ARCO Coal. Access road reclaimed in the 1980's. MF-219 is located on a south facing slope surrounded with conifers. Flow from spring MF-219 generally ranges from 0.0/seep to a maximum of <15.0 gpm.
235	SPI-26	DC	11	T16S, R6E	Y	UTU-88554	May-18	No Mining	No Mining		Spring	North Horn Form.			SPI-26 is a spring located near the main Mill Fork ridge road. SPI-26 is located on east facing slope surrounded with conifers. Site crudely developed with 1" PVC diverting flow to old steel bath tub. Flow from spring SPI-26 generally ranges from - 2 gpm to a maximum of 55.0 gpm.
173	MF-10	DC	14	T16S, R6E	Y	UTU-88554	May-18	Second Mining Blind Canyon 5th Left Jul. 2009	Second Mining Hiawatha 21st West Jan. 2011	BC 9 Years + Hia. 7 Years +	Spring	North Horn Form.	93-1412	USFS	aka Edmonds Bear Hole Spring MF-10 is a spring located along natural bench directly below a massive sandstone channel on north facing slope covered with conifers. Flow from spring MF-10 generally ranges from - 5 gpm to a maximum of 60 gpm.
187	MF-19B	DC	13	T16S, R6E	Y	UTU-88554	May-18	Second Mining Blind Canyon 7th North Sump Feb. 2006	First Mining Hiawatha 7th North Sump Feb. 2006	12 Years +	Spring	North Horn Form.	93-1413	USFS	aka Tuttle Ridge Spring MF-19B is located along natural bench directly below a massive sandstone channel on an east facing slope covered with conifers. Sampled approximately 100' below spring source. Flow from spring MF-19B generally ranges from 0 gpm to a maximum of 2.5 gpm.
209	RR-5	DC	14	T16S, R6E	Y	UTU-88554	May-18	No Mining	No Mining		Spring	North Horn Form.	93-1571	USFS	RR-5 is located in a clearing on an east facing slope surrounded by conifers. Flow from spring RR-5 generally ranges from 0/seep to a maximum of 34 gpm.
156	EM-216	DC	23	T16S, R6E	Y	UTU-88554	May-18	No Mining	No Mining		Spring	North Horn Form.	93-3399	USFS	EM-216 is a low volume spring/seep located along the Mill Fork access road. Flow from spring EM-216 generally ranges from 0.0 gpm to a maximum of 1.3 gpm. Flow from EM-216 normally occurs early in the year and dissipates rapidly with recordable flow rarely existing after the month of July.
377	Grants Spring	DC	23	T16S, R6E	Y	UTU-88554	May-18	No Mining	No Mining		Spring	North Horn Form.			Grants Spring is a low volume spring/seep located below ridge on west facing slope above main Mill Fork access road vegetated with conifers and aspens. Flow from spring Grants Spring generally ranges from 0.5 gpm to a maximum of <3 gpm. Developed With Steel Pipe Diverted to Trough (not functioning).
219	RR-15	DC	23	T16S, R6E	Y	UTU-88554	May-18	No Mining	No Mining		Spring	North Horn Form.			RR-15 located on northeast facing slope surrounded with conifers. Flow from springs RR-16 and RR-15 diverted to weir with recorder (Emery Water Conservancy District). Per request from Emery Conservancy District, PacifiCorp removed the weir and recorder in August 2002. Flow from spring RR-15 generally ranges from 10 gpm to a maximum of 55 gpm.
227	RR-23A	DC	24	T16S, R6E	Y	UTU-88554	May-18	No Mining	No Mining		Spring	North Horn Form.			RR-23A is located in a clearing on an east facing slope surrounded by aspens. Abundant tufa deposits. Spring forms a small drainage. Flow from spring RR-23A generally ranges from 10 gpm to a maximum of 50 gpm.
164	EMPOND	DC	23	T16S, R6E	Y	UTU-88554	May-18	No Mining	No Mining		Spring	North Horn Form.			EMPOND is located below ridge on east facing slope above small pond adjacent to road. Vegetation of the area surrounding the spring is dominated by conifers. Flow from spring EMPOND generally ranges from 1 gpm to a maximum of <10 gpm.

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366	MRF-30	DC	7	T16S, R7E	Y	UTU-88554	May-18	No Mining	No Mining		Spring	Upper Price River			MFR-30 is located in small clearing on a north facing slope. Area surrounding the spring source is vegetated with mountain brush, aspens and conifers. Flow from spring MFR-30 generally ranges from 0/seep to a maximum of <3 gpm.
374	MFR-10	DC	12	T16S, R6E	Y	UTU-88554	May-18	No Mining	No Mining		Spring	North Horn Form.			MFR-10 is located at the end of a trail which leads to reclaimed road. Denoted as "Spring" on Rilda Quad. map. Area surrounding the spring source is vegetated with conifers and aspens. Flow from spring MFR-10 generally ranges from 10 gpm to a maximum of 45 gpm (recorded flow of 2001 was 0.0 gpm).
171	MF-7	DC	12	T16S, R6E	Y	UTU-88554	May-18	No Mining	No Mining		Spring	Blackhawk Form.			MF-7 is located on hillside near Mill Fork drainage on a north facing slope covered with spruce trees. Flow from spring MF-7 generally ranges from 10 gpm to a maximum of 65 gpm.
197	MF-213	OPB	17	T16S, R7E	N	Within 1/2 mile offset of UTU-88554	May-18	No Mining	No Mining		Spring	Blackhawk Form.	93-259	USFS	MF-213 is located near drainage bottom (Mill Fork - Right Fork) on an east/southeast facing slope covered with mountain brush, conifers and aspens. Large tufa deposits. Flow from spring MF-213 generally ranges from 15 gpm to a maximum of 70 gpm.
378	LITTLE BEAR	OPB	9	T16S, R7E	N	2.5 miles east of UTU-88554	May-18	No Mining	No Mining		Spring	Star Point Sandstone	93-1411	USFS	Little Bear Spring is located on the south slope of Little Bear Canyon. Main culinary supply to CVSSD (Cities of Huntington, Cleveland and Elmo). Flow from spring Little Bear Spring generally ranges from 225 gpm to a maximum of 475 gpm.
319	ICA	IC - Indian Creek	3	T16S, R6E	N	Within 1/2 mile offset of UTU-84285	May-18	No Mining	No Mining		Surface Water	NA	NA	NA	Surface monitoring site established as part of the Mill Fork Lease expansion in 2003.
373	ICF	IC - Indian Creek	10	T16S, R6E	N	Within 1/2 mile offset of UTU-84285	May-18	No Mining	No Mining		Surface Water	NA	NA	NA	Surface monitoring site established as part of the Mill Fork Lease expansion in 2003.
317	ICD	IC - Indian Creek	15	T16S, R6E	N	Within 1/2 mile offset of UTU-84285	May-18	No Mining	No Mining		Surface Water	NA	NA	NA	Surface monitoring site established as part of the Mill Fork Lease expansion in 2003.
318	ICB	IC - Indian Creek	15	T16S, R6E	N	Within 1/2 mile offset of UTU-84285	May-18	No Mining	No Mining		Surface Water	NA	NA	NA	Surface monitoring site established as part of the Mill Fork Lease expansion in 2003.
376	MFU-03	MF - Mill Fork	17	T16S, R7E	N	Within 1/2 mile offset of UTU-88554	May-18	No Mining	No Mining		Surface Water	NA	NA	NA	Mill Fork Canyon is a tributary of Huntington Creek and was included in PacifiCorp's monitoring program starting in 1997.
150	MFA01	MF - Mill Fork	20	T16S, R7E	N	Within 1/2 mile offset of UTU-024317	May-18	No Mining	No Mining		Surface Water	NA	NA	NA	Mill Fork Canyon is a tributary of Huntington Creek and was included in PacifiCorp's monitoring program starting in 1997.
151	MFB02	MF - Mill Fork	22	T16S, R7E	N	Within 1/2 mile offset of PC Fee	NA	No Mining	No Mining		Surface Water	NA	NA	NA	Mill Fork Canyon is a tributary of Huntington Creek and was included in PacifiCorp's monitoring program starting in 1997.
9	MHC01	OPB MHC - Meetinghouse Creek	35	T16S, R7E	N	Within 1/2 mile offset of UTU-47979	Scheduled for relinquishment in 2018	No Mining	No Mining		Surface Water	NA	NA	NA	Meetinghouse Canyon is a tributary of Huntington Creek and was included in PacifiCorp's monitoring program starting in 1984.
54	HCC01	OPB HC - Huntington Creek	36	T16S, R7E	N	NA	NA	No Mining	No Mining		Surface Water	NA	NA	NA	Monitoring of Huntington Creek was initiated in March 1988.
55	HCC02	OPB HC - Huntington Creek	31	T16S, R8E	N	NA	NA	No Mining	No Mining		Surface Water	NA	NA	NA	Monitoring of Huntington Creek was initiated in March 1988.
56	HCC04	OPB HC - Huntington Creek	6	T17S, R8E	N	NA	NA	No Mining	No Mining		Surface Water	NA	NA	NA	Monitoring of Huntington Creek was initiated in March 1988.
68	P1	DC RC - Rilda Canyon	28	T16S, R7E	N	UTU-2810	NA	No Mining	No Mining		Well	Alluvium	NA	NA	A series of alluvial wells (P1 - P7) established by West Appa Coal Company to monitor Rilda Canyon alluvial system adjacent to NEWUSSD springs.
72	P5	DC RC - Rilda Canyon	28	T16S, R7E	N	SL-051221	NA	No Mining	No Mining		Well	Alluvium	NA	NA	A series of alluvial wells (P1 - P7) established by West Appa Coal Company to monitor Rilda Canyon alluvial system adjacent to NEWUSSD springs.
73	P6	DC RC - Rilda Canyon	29	T16S, R7E	N	UTU-06039	NA	No Mining	No Mining		Well	Alluvium	NA	NA	A series of alluvial wells (P1 - P7) established by West Appa Coal Company to monitor Rilda Canyon alluvial system adjacent to NEWUSSD springs.
74	P7	DC RC - Rilda Canyon	29	T16S, R7E	N	UTU-06039	NA	No Mining	No Mining		Well	Alluvium Blackhawk	NA	NA	A series of alluvial wells (P1 - P7) established by West Appa Coal Company to monitor Rilda Canyon alluvial system adjacent to NEWUSSD springs.
67	EM-47	DC RC - Rilda Canyon	29	T16S, R7E	Y	UTU-06039	NA	No Mining	No Mining		Well	Star Point Sandstone	NA	NA	Monitoring well located in the Right Fork of Rilda Canyon established in 1980.