Interwest Mining Company
Huntington Office
P. O. Box 310
15 North Main Street
Huntington, UT 84528

November 18, 2015 Electronically Submitted

Utah Coal Program
Utah Division of Oil, Gas, and Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

Subj: Amendment to Reduce the Hydrologic Monitoring Program for Sites Within the Mine Permit Boundaries, PacifiCorp, Deer Creek Mine C/015/0018, Emery County, Utah.

PacifiCorp, by and through its wholly-owned subsidiary, Interwest Mining Company as mine manager, hereby submits an amendment to amend Volume 9, Hydrologic Volume, Appendix A and Deer Creek Mine Volume 1, to reduce the water monitoring responsibilities as outlined in the hydrologic monitoring program.

In 2013, Energy West Mining Company (the mines past operator) submitted an amendment to reduce its monitoring responsibilities for sites within the Deer Creek, Cottonwood/Wilberg, and Trail Mountain mines. The Division agreed with PacifiCorp when they gave conditional approval for this amendment (Task ID #4443) on November 10, 2014 that its underground mining operations did not impact quantity or quality of spring flow of the over-lying springs.

Interwest is now proposing to remove five springs and two wells from its monitoring program. The springs and one well were retained in the monitoring program in 2013 since they were considered at the time to be strategic monitoring sites as plans for accessing the Cottonwood Tract from the 2nd West Section in the Deer Creek Mine were being discussed. PacifiCorp is no longer the holder of the Cottonwood Tract and therefore, has no future plans for using this access. The Deer Creek Mine was sealed in April of 2015 and monitoring these springs and well are no longer revelant.

Subsidence surveys have been conducted from the time of development and extraction operations of the underground mine. No subsidence has been recorded for the area where the springs and well are located. Subsidence surveys of this area were terminated in 2008 as subsidence was determined to be substantially complete.

PacifiCorp has conducted extensive research regarding the interrelationships between the surface and groundwater hydrologic systems and the potential impacts associated with its underground mining operations. Analysis has included; seep and spring surveys, drainage surveys, baseline data collection, in-house and consultant hydrologic studies and government and non-government

research project. The June 5, 2014 submittal, appendices A – D contains some of these research projects. Please review the documentation in the June 5, 2014 submittal (Task ID #4443).

The second well is associated with the Deer Creek waste rock site. This site was sold under a purchase agreement with Bowie Refined Coals LLC in August 2015. PacifiCorp feels that no other justification is needed to remove this site from the monitoring program since it no longer retains jurisdiction over the site.

This submittal includes the amended Volume 9, Appendix A and Deer Creek Volume 1, Part 2. Sites that are proposed for removal are "~~struck out~~". A justification document for removal of the five springs and one well is also included. This document includes an outline of the spring location, lease association, water quality, a graph showing flow versus the Palmer Drought Index, and photos of the sites. With this document, PacifiCorp is claiming that there has been no impact to the springs or well due to its underground mining operations.

The required C1/C2 forms are included. If you have any questions concerning this action, please contact Dennis Oakley at 435-687-4825.

Sincerely,

Kenneth S. Fleck

Kenneth Fleck
Geology and Environmental Affairs Manager

Cc: file

APPLICATION FOR COAL PERMIT PROCESSING

Permit Change ☒ New Permit ☐ Renewal ☐ Exploration ☐ Bond Release ☐ Transfer ☐

Permittee: PacifiCorp

Mine: Deer Creek Mine **Permit Number:** C/015/0018

Title: Amendment to Reduce the Hydrologic Monitoring Program for Sites Within the Mine Permit Boundaries, PacifiCorp, Deer Creek Mine C/015/0018, Emery County, Utah.

Description, Include reason for application and timing required to implement:

Instructions: If you answer yes to any of the first eight (gray) questions, this application may require Public Notice publication.

☐ Yes ☒ No 1. Change in the size of the Permit Area? Acres: _____ ☐ increase ☐ decrease.
☐ Yes ☒ No 2. Is the application submitted as a result of a Division Order? DO# _____
☐ Yes ☒ No 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area?
☐ Yes ☒ No 4. Does the application include operations in hydrologic basins other than as currently approved?
☐ Yes ☒ No 5. Does the application result from cancellation, reduction or increase of insurance or reclamation bond?
☐ Yes ☒ No 6. Does the application require or include public notice publication?
☐ Yes ☒ No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
☐ Yes ☒ No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
☐ Yes ☒ No 9. Is the application submitted as a result of a Violation? NOV # _____
☐ Yes ☒ No 10. Is the application submitted as a result of other laws or regulations or policies?
Explain: _____
☐ Yes ☒ No 11. Does the application affect the surface landowner or change the post mining land use?
☐ Yes ☒ No 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2)
☐ Yes ☒ No 13. Does the application require or include collection and reporting of any baseline information?
☐ Yes ☒ No 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
☐ Yes ☒ No 15. Does the application require or include soil removal, storage or placement?
☐ Yes ☒ No 16. Does the application require or include vegetation monitoring, removal or revegetation activities?
☐ Yes ☒ No 17. Does the application require or include construction, modification, or removal of surface facilities?
☒ Yes ☐ No 18. Does the application require or include water monitoring, sediment or drainage control measures?
☐ Yes ☒ No 19. Does the application require or include certified designs, maps or calculation?
☐ Yes ☒ No 20. Does the application require or include subsidence control or monitoring?
☐ Yes ☒ No 21. Have reclamation costs for bonding been provided?
☐ Yes ☒ No 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream?
☐ Yes ☒ No 23. Does the application affect permits issued by other agencies or permits issued to other entities?

Please attach four (4) review copies of the application. If the mine is on or adjacent to Forest Service land please submit five (5) copies, thank you. (These numbers include a copy for the Price Field Office)

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

Kenneth Fleck — Print Name

Kenneth L. Fleck — Sign Name, Position, Date

Manager of Environmental Affairs OCTOBER 7, 2015

Subscribed and sworn to before me this 7th day of October, 2015

Kristy Prettyman
Notary Public

My commission Expires: 03-07, 2016

Attest: State of Utah } ss:
County of Emery

KRISTY PRETTYMAN
NOTARY PUBLIC-STATE OF UTAH
COMMISSION# 654895
COMM. EXP. 03-07-2016

For Office Use Only:	Assigned Tracking Number:	Received by Oil, Gas & Mining

Form DOGM- C1 (Revised March 12, 2002)

APPLICATION FOR COAL PERMIT PROCESSING
Detailed Schedule Of Changes to the Mining And Reclamation Plan

Permittee: PacifiCorp
Mine: Deer Creek Mine **Permit Number:** C/019/0018
Title: Amendment to Reduce the Hydrologic Monitoring Program for Sites Within the Mine Permit Boundaries, PacifiCorp, Deer Creek Mine C/015/0018, Emery County, Utah.

Provide a detailed listing of all changes to the Mining and Reclamation Plan, which is required as a result of this proposed permit application. Individually list all maps and drawings that are added, replaced, or removed from the plan. Include changes to the table of contents, section of the plan, or other information as needed to specifically locate, identify and revise the existing Mining and Reclamation Plan. Include page, section and drawing number as part of the description.

			DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED
☐ Add	☒ Replace	☐ Remove	Volume 1, Part 2, pages 220 - 225
☐ Add	☒ Replace	☐ Remove	Volume 1, Part 2, Map HM-1A
☐ Add	☒ Replace	☐ Remove	Volume 9, Appendix A-1, Water Monitoring Program, 1-14 pages
☐ Add	☒ Replace	☐ Remove	Volume 9, Appendix A-1, Water Monitoring Schedule, 6 pages
☐ Add	☒ Replace	☐ Remove	Volume 9, Appendix A-1, Map HM-1A
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Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.	**Received by Oil, Gas & Mining**

Location: Section 33, Township 16 South, Range 7 East, SLB&M. This site is located within the Deer Creek mine permit boundary.

Lease Association: Springs 80-48 is associated with federal coal lease U-024319. PacifiCorp is the leaseholder of this Federal Coal Lease. The springs are located above the 3rd North B Mains at the entrance to the 2nd West longwall panel. The mains were developed in 1977. The panels in this area have been completely extracted from the Hiawatha Seam.

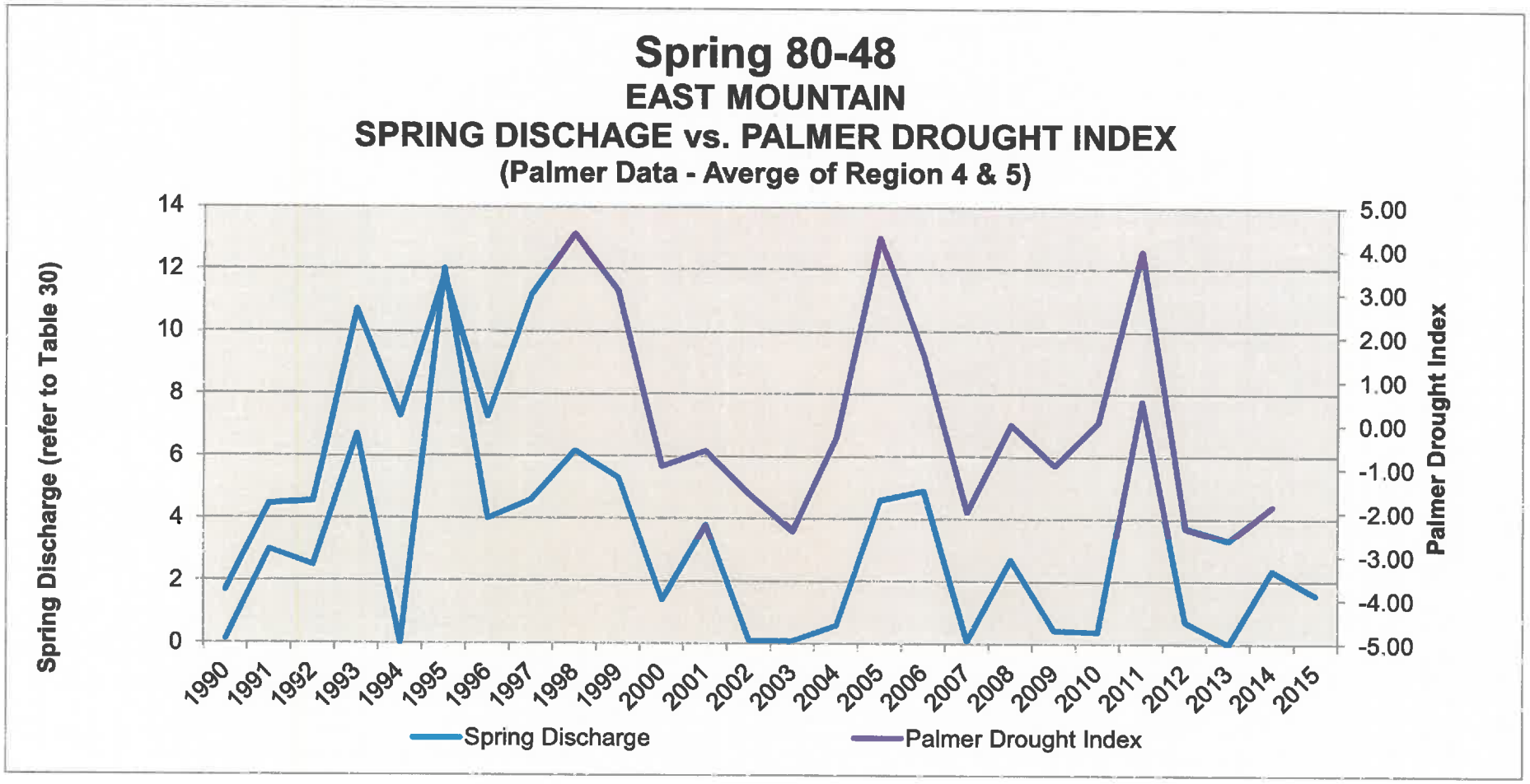
Subsidence: No subsidence is reported in the vicinity of the spring. Refer to the 2008 Annual Subsidence Report data which are included herein.

Water Data: Pre- and Post-water quality data is included for spring 80-48. Data show insignificant variances between pre- and post-quality results. Historic flow data has been collected for years 1990 through 2015 (25 years) although sampling has been conducted since 1980. This information is found on the following page where July spring flow is plotted against the Palmer Drought Index for regions 4 and 5. Spring flow shows a positive correlation with the Palmer Drought Indices. The mode of occurrence for Spring 80-48 is permeable fluvial channels that intersect land surface. The stratigraphic location for this spring is the North Horn Formation.

Justification for removal from monitoring: Site 80-48 has been monitored by Energy West Mining Company (Now Interwest Mining Company) since 1980. There have been no reported occurrences in which mining has impacted this site. Historic quality and quantity data has not indicated such impacts to the sites.

This spring was considered a strategic monitoring site as plans for accessing the Cottonwood Tract from the 2nd West Section in the Deer Creek Mine were discussed. PacifiCorp is no longer the holder of the Cottonwood Lease and therefore, has no future plans for using this access. The Deer Creek Mine was sealed in April of 2015. Although this site is located within a current federal coal lease and within the mine permit boundaries, its location is in the southern extents of the Deer Creek and Wilberg/Cottonwood permit boundaries where no mining has been conducted for at least 10 years.

This site is also located where it requires access through a certain surface private property owners land. This property owner has expressed his disliking of PacifiCorp accessing his land and has restricted access by locking gates. This owner is not always available to gives access through his property. During the big game hunting seasons within September and October, the property owner does not allow any other access except for his paid hunting clients. October is a scheduled monitoring time period. Therefore, it is requested for the reasons stated above, that the site be removed from the monitoring program.


Spring 80-48
EAST MOUNTAIN
SPRING DISCHAGE vs. PALMER DROUGHT INDEX
(Palmer Data - Averge of Region 4 & 5)
Spring Discharge (refer to Table 30)
Palmer Drought Index
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Spring Discharge
Palmer Drought Index

East Mountain Spring:	**80-48**
Water Quality Data:	**July Operational Data**
Mine Association:	**Deer Creek Mine**
Date of Development:	**Blind Canyon Seam: May 1997**
Date of Second Mining:	**First Mining Only**

Historical Data: 1990-2014

	MAXIMUM	MINIMUM	AVERAGE
BICARBONATE	437	272	324.65
CALCIUM	147.7	44.8	69.41
CARBONATE	5	0	1.2
CHLORIDE	15	2	4.455
CONDUCTIVITY	595	380	529.15
DISSOLVED OXYGEN	9.9	5	7.09
FLOW	12	0.13	3.71
HARDNESS	501	261	302.25
TOTAL IRON	2.6	0.05	0.44
DISSOLVED IRON	2	0	0.26
MAGNESIUM	41.4	24.1	31.29
DISSOLVED MANGANESE	0.1	0.002	0.026
MANGANESE	0.5	0	0.059
OIL AND GREASE	0	0	
PH	8.27	7.3	7.78
POTASSIUM	1	0.29	0.58
SET SOLIDS	0	0	
SODIUM	5.92	2.61	4.79
SULFATE	150	4	14.15
SUSPENDED SOLIDS	124	5	38.6
TEMPERATURE	52.8	6.4	15.1
TOTAL DISSOLVED SOLIDS	327	190	293.15

Spring: 80-48

Note: Spring was developed in 2009 as part of a cattlemen's mitigation plan associated with the Elk Spring culinary development project.

Location: T16S, R7E, Section 33
Associated Formation: North Horn
GPS: N 39°22'55.7"
W 111°09'13.8"

Note: Access to spring requires travel through private property in which owner does not allow.

Location: Section 31, Township 16 South, Range 7 East, SLB&M. This site is located outside the Deer Creek mine permit boundary. The spring is located above a block of unmined coal south of the 3rd West longwall panel.

Lease Association: Springs 89-65 was associated with federal coal lease U-7653. This lease was terminated in March 2002. PacifiCorp was the sublessee of this lease. PacifiCorp notified the Lessee (Lincoln Reavis, Trustee of the Louisiana D. Brown 1992 Irrevocable Trust) in December 2001 that it was terminating its sublease agreement of this Federal Coal Lease.

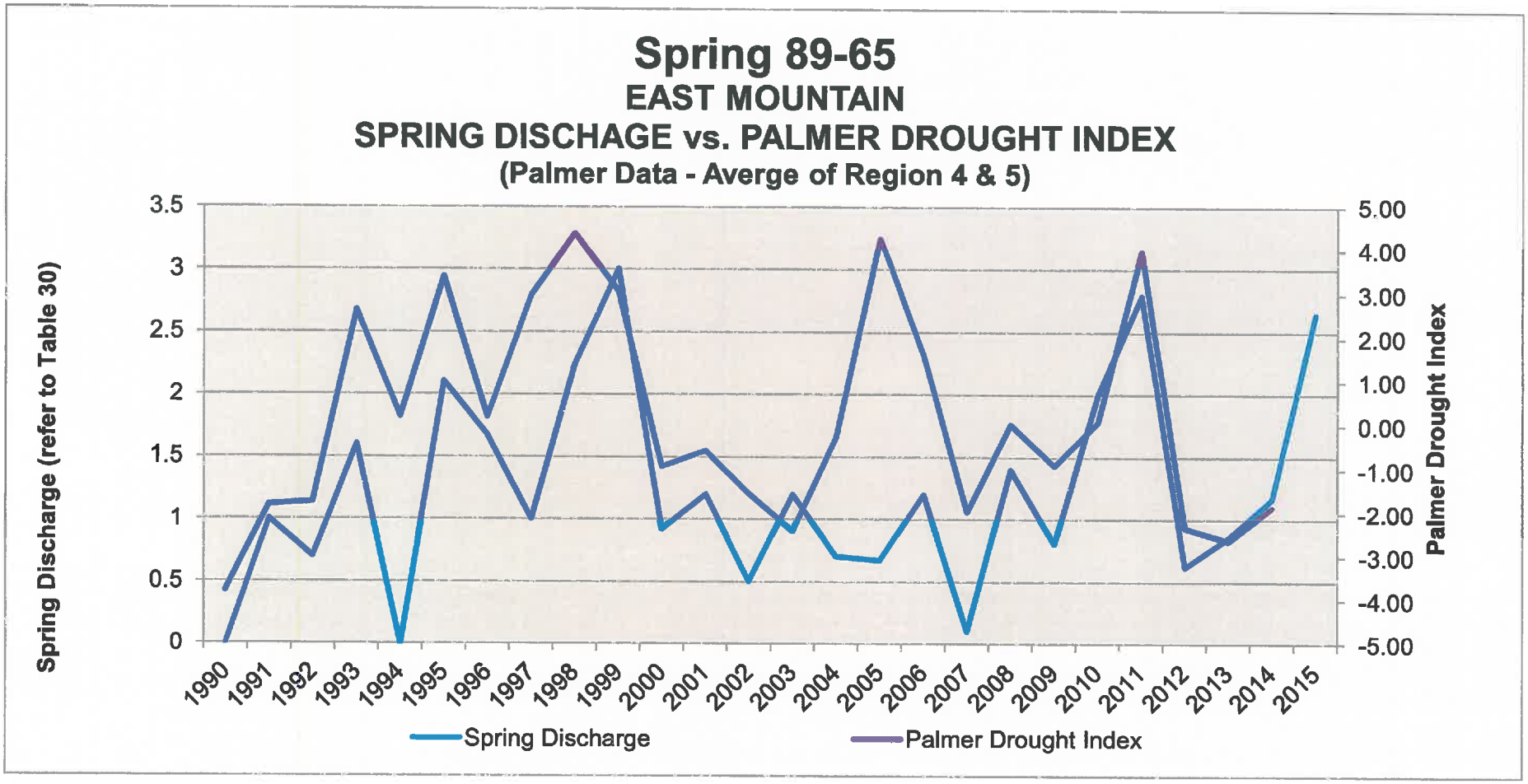
Subsidence: No subsidence is reported in the vicinity of the spring. Refer to the 2008 Annual Subsidence Report data which are included herein.

Water Data: Pre- and Post-water quality data is included for spring 89-65. Data show insignificant variances between pre- and post-quality results. Historic flow data has been collected for years 1990 through 2015 (25 years) although sampling has been conducted since 1989. This information is found on the following page where July spring flow is plotted against the Palmer Drought Index for regions 4 and 5. Spring flow shows a positive correlation with the Palmer Drought Indices. The mode of occurrence for Spring 89-65 is permeable fluvial channels that intersect land surface. The stratigraphic location for this spring is the North Horn Formation.

Justification for removal from monitoring: Site 89-65 has been monitored by Energy West Mining Company (Now Interwest Mining Company) since 1989. There have been no reported occurrences in which mining has impacted this site. Historic quality and quantity data has not indicated such impacts to the site.

This spring was considered a strategic monitoring site as plans for accessing the Cottonwood Tract from the 2nd West Section in the Deer Creek Mine were discussed. PacifiCorp is no longer the holder of the Cottonwood Lease and therefore, has no future plans for using this access. The Deer Creek Mine was sealed in April of 2015.

This site is also located where it requires access through a certain surface private property owners land. This property owner has expressed his disliking of PacifiCorp accessing his land and has restricted access by locking gates. This owner is not always available to gives access through his property. During the big game hunting seasons within September and October, the property owner does not allow any other access except for his paid hunting clients. October is a scheduled monitoring time period. Therefore, it is requested for the reasons stated above, that the site be removed from the monitoring program.


Spring 89-65
EAST MOUNTAIN
SPRING DISCHAGE vs. PALMER DROUGHT INDEX
(Palmer Data - Averge of Region 4 & 5)
Spring Discharge (refer to Table 30)
Palmer Drought Index
3.5
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Spring Discharge
Palmer Drought Index

East Mountain Spring: 89-65
Water Quality Data: July Operational Data
Mine Association: Deer Creek Mine
Date of Development: N/A
Date of Second Mining: N/A

Historical Data: 1990-2014	MAXIMUM	MINIMUM	AVERAGE
BICARBONATE	375	270	325.80
CALCIUM	170	68.3	81.77
CARBONATE	5	0	0.625
CHLORIDE	10	1.5	3.02
CONDUCTIVITY	633	488	560.65
DISSOLVED OXYGEN	9.6	4.5	7.52
FLOW	3	0.62	1.39
HARDNESS	570	262	307
TOTAL IRON	3.8	0	0.81
DISSOLVED IRON	0.1	0	0.02
MAGNESIUM	34	17.8	24.92
DISSOLVED MANGANESE	0.071	0	0.02
MANGANESE	0.1	0	0.012
OIL AND GREASE	0	0	
PH	7.86	7.35	7.56
POTASSIUM	10	0.53	1.33
SET SOLIDS	0	0	
SODIUM	10	1.82	6.87
SULFATE	20	2	13.45
SUSPENDED SOLIDS	225	2	113.50
TEMPERATURE	45.5	4.8	12.24
TOTAL DISSOLVED SOLIDS	353	248	309.30

Spring: 89-65

Location: T16S, R7E, Section 31
Associated Formation: North Horn
GPS: N 39°22'53.3"
W 111°09'26"

Note: Access to spring requires travel through private property in which owner does not allow.

Location: Section 5, Township 17 South, Range 7 East, SLB&M. This site is located within the Deer Creek mine permit boundary.

Lease Association: : Spring 89-66 is associated with federal coal lease U-084923. PacifiCorp is the sublease holder of this Federal Coal Lease. The spring is located above the extraction face of the 2nd West longwall panel in the Hiawatha Seam. The headgate and tailgate sections of this panel were started in June and July of 2004. The 2nd West panel was completed in June 2005.

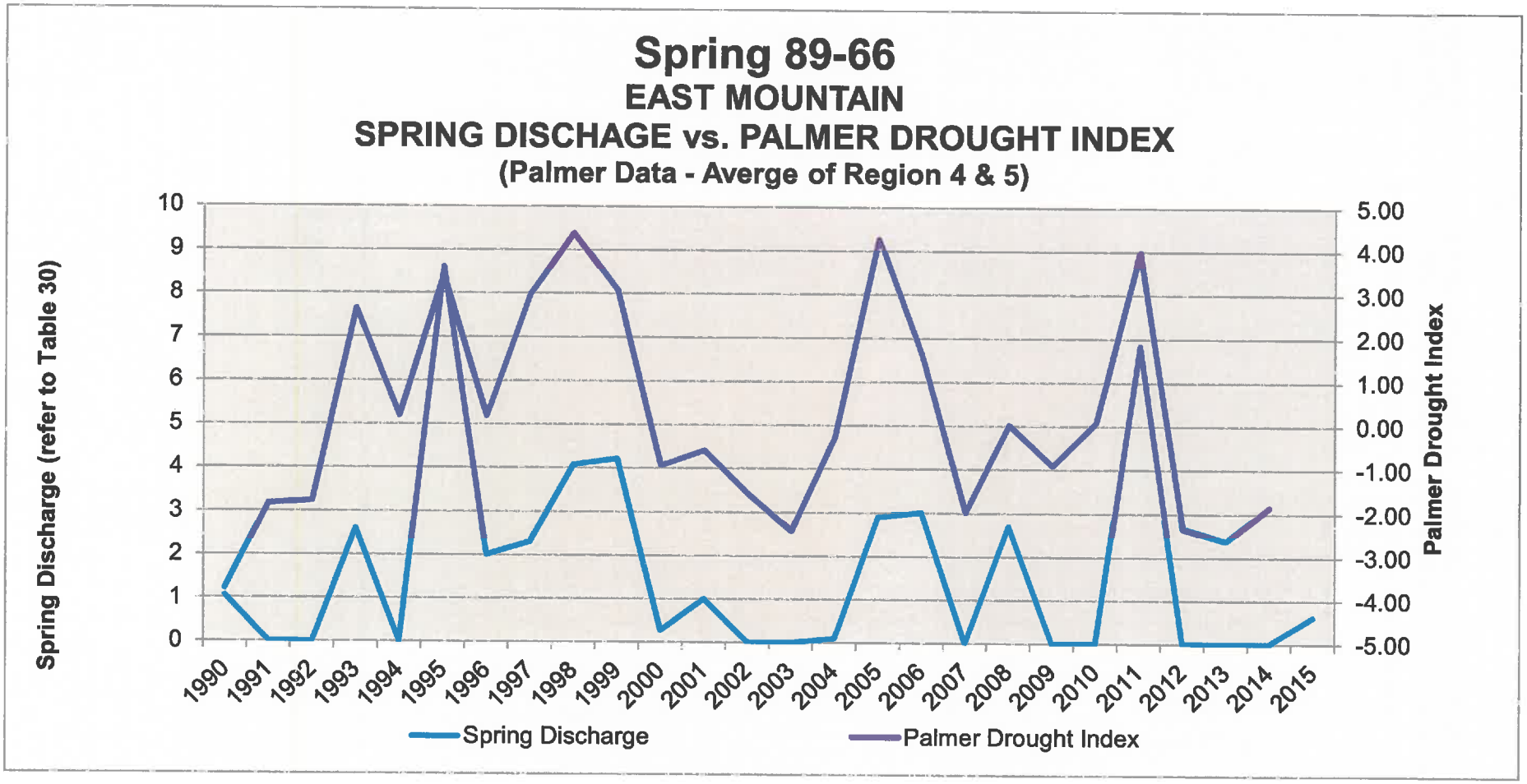
Subsidence: No subsidence is reported in the vicinity of the spring. Refer to the 2008 Annual Subsidence Report data which are included herein.

Water Data: Pre- and Post-water quality data is included for spring 89-66. Data show insignificant variances between pre- and post-quality results. Historic flow data has been collected for years 1990 through 2015 (25 years) although sampling has been conducted since 1989. This information is found on the following page where July spring flow is plotted against the Palmer Drought Index for regions 4 and 5. Spring flow shows a positive correlation with the Palmer Drought Indices. The mode of occurrence for spring 89-66 is permeable fluvial channels that intersect land surface. The stratigraphic location for this spring is the North Horn Formation.

Justification for removal from monitoring: Site 89-66 has been monitored by Energy West Mining Company (Now Interwest Mining Company) since 1989. There have been no reported occurrences in which mining has impacted this site. Historic quality and quantity data has not indicated such impacts to the site.

This spring was considered a strategic monitoring site as plans for accessing the Cottonwood Tract from the 2nd West Section in the Deer Creek Mine were discussed. PacifiCorp is no longer the holder of the Cottonwood Lease and therefore, has no future plans for using this access. The Deer Creek Mine was sealed in April of 2015.

This site is also located within a certain surface private property owners land. This property owner has expressed his disliking of PacifiCorp accessing his land and has restricted access by locking gates. This owner is not always available to gives access through his property. During the big game hunting seasons within September and October, the property owner does not allow any other access except for his paid hunting clients. October is a scheduled monitoring time period. Therefore, it is requested for the reasons stated above, that the site be removed from the monitoring program.


Spring 89-66
EAST MOUNTAIN
SPRING DISCHAGE vs. PALMER DROUGHT INDEX
(Palmer Data - Averge of Region 4 & 5)
Spring Discharge (refer to Table 30)
Palmer Drought Index
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Spring Discharge
Palmer Drought Index

East Mountain Spring: 89-66
Water Quality Data: July Operational Data
Mine Association: Deer Creek Mine
Date of Development: Blind Canyon Seam: 2nd West Tailgate developed June 2004
Date of Second Mining: June 2005

Historical Data: 1990-2014	MAXIMUM	MINIMUM	AVERAGE
BICARBONATE	397	234	292.29
CALCIUM	110.4	41.9	51.44
CARBONATE	5	0	1.20
CHLORIDE	10	4	5.25
CONDUCTIVITY	554	438	494.57
DISSOLVED OXYGEN	10.3	4.7	7.58
FLOW	8.6	0.27	3.01
HARDNESS	370	227	263.64
TOTAL IRON	1.89	0	0.55
DISSOLVED IRON	0.28	0	0.072
MAGNESIUM	36.67	23	32.74
DISSOLVED MANGANESE	0.14	0	0.039
MANGANESE	0.1	0	0.023
OIL AND GREASE	0	0	
PH	8.13	7.22	7.62
POTASSIUM	1.4	0.67	0.87
SET SOLIDS	0	0	
SODIUM	6.7	3.56	5.33
SULFATE	35	0.9	12.85
SUSPENDED SOLIDS	10	1	6.33
TEMPERATURE	45	4.7	12.18
TOTAL DISSOLVED SOLIDS	294	202	253.21

Spring: 89-66

Location: T17S, R7E, Section 5
Associated Formation: North Horn
GPS: N 39°22'44.5"
W 111°09'26.2"

Note: Spring is located within the boundaries of private property in which owner does not allow access.

Location: Section 32, Township 16 South, Range 7 East, SLB&M. This site is located within the Deer Creek mine permit boundary.

Lease Association: : Springs 89-67 and 89-68 are associated with federal coal lease U-47977. PacifiCorp is the lease holder of this Federal Coal Lease. The spring is located above the unmined coal barrier between 2nd West longwall panel to the south and the 3rd West longwall panel to the north. The coal reserve is situated in the Hiawatha Seam. The two entry system of the 2nd West section began development in December 1997. Longwall extraction of the 3rd West panel was completed in April 1999. The 2nd West panel was completed in June 2005.

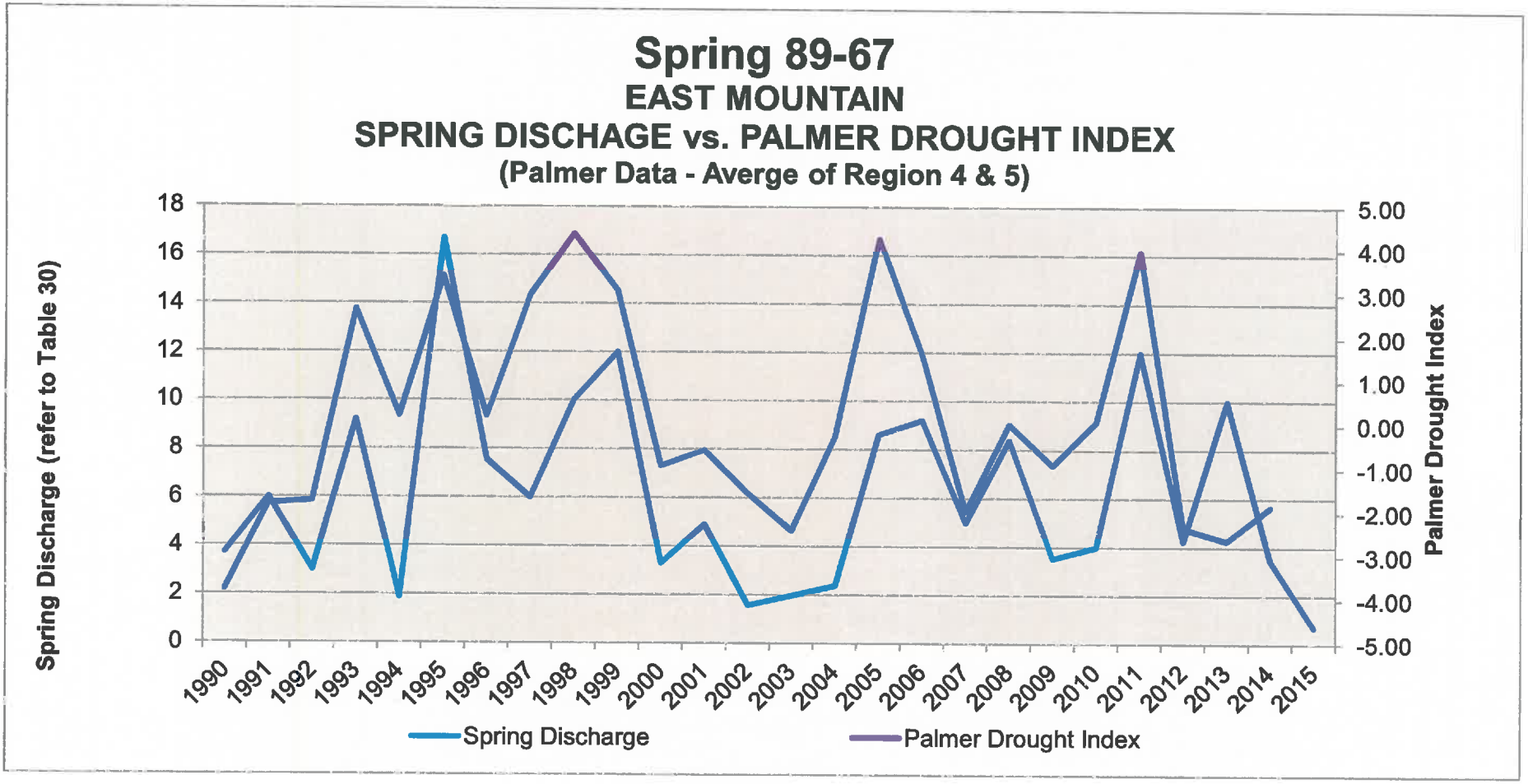
Subsidence: No subsidence is reported in the vicinity of the spring. Refer to the 2008 Annual Subsidence Report data which are included herein.

Water Data: Pre- and Post-water quality data is included for springs 89-67 and 89-68. Data show insignificant variances between pre- and post-quality results. Historic flow data has been collected for years 1990 through 2015 (25 years) although sampling has been conducted since 1989. This information is found on the following page where July spring flow is plotted against the Palmer Drought Index for regions 4 and 5. Spring flow shows a positive correlation with the Palmer Drought Indices. The mode of occurrence for springs 89-67 and 89-68 is permeable fluvial channels that intersect land surface. The stratigraphic location for this spring is the North Horn Formation.

Justification for removal from monitoring: Sites 89-67 and 89-68 have been monitored by Energy West Mining Company (Now Interwest Mining Company) since 1989. There have been no reported occurrences in which mining has impacted these sites. Historic quality and quantity data has not indicated such impacts to the sites.

These springs were considered strategic monitoring sites as plans for accessing the Cottonwood Tract from the 2nd West Section in the Deer Creek Mine were discussed. PacifiCorp is no longer the holder of the Cottonwood Lease and therefore, has no future plans for using this access. The Deer Creek Mine was sealed in April of 2015.

These sites are also located where it requires access through a certain surface private property owners land. This property owner has expressed his disliking of PacifiCorp accessing his land and has restricted access by locking gates. This owner is not always available to gives access through his property. During the big game hunting seasons within September and October, the property owner does not allow any other access except for his paid hunting clients. October is a scheduled monitoring time period. Therefore, it is requested for the reasons stated above, that the site be removed from the monitoring program.


Spring 89-67
EAST MOUNTAIN
SPRING DISCHAGE vs. PALMER DROUGHT INDEX
(Palmer Data - Averge of Region 4 & 5)
Spring Discharge (refer to Table 30)
Palmer Drought Index
18
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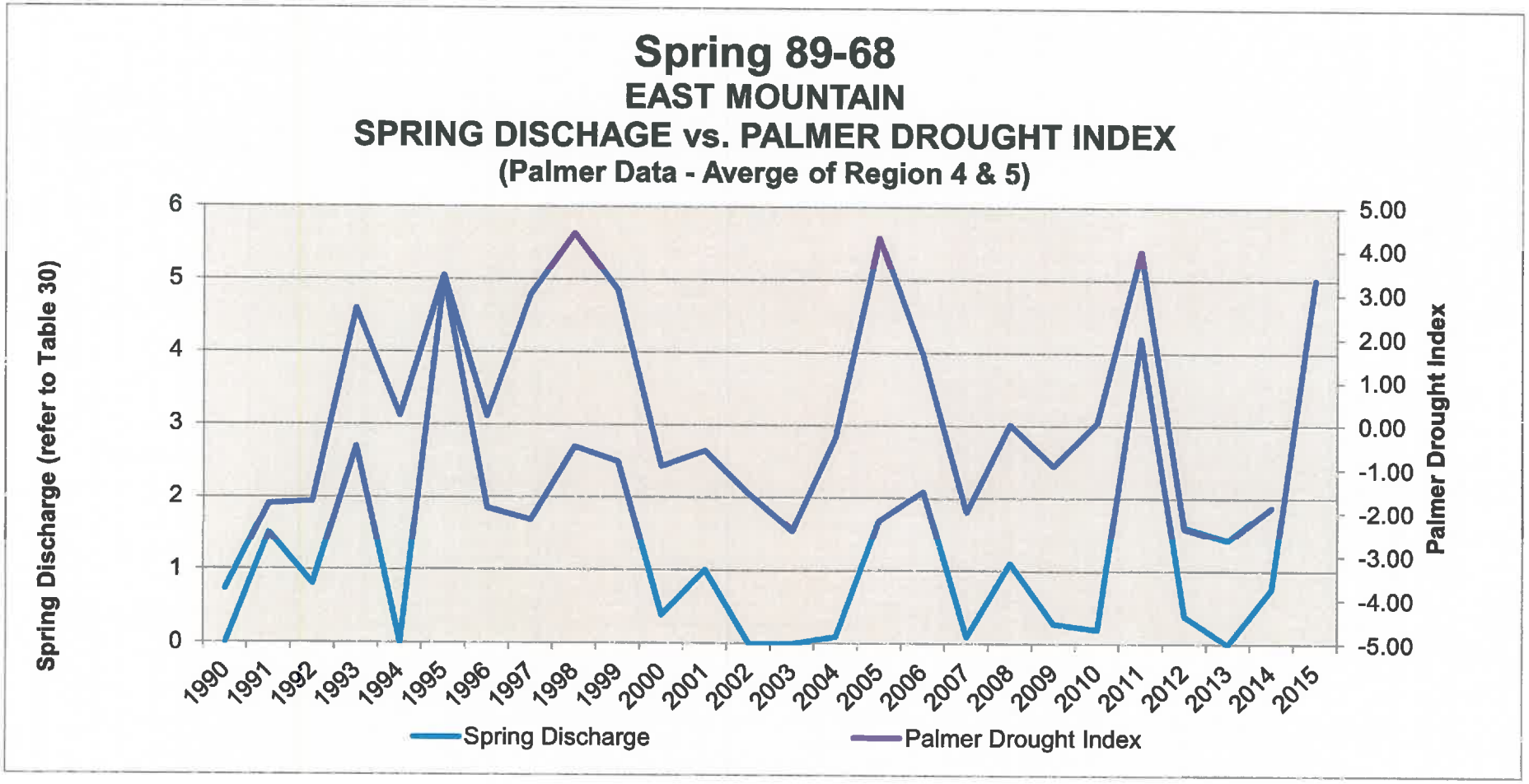
Spring Discharge
Palmer Drought Index


Spring 89-68
EAST MOUNTAIN
SPRING DISCHAGE vs. PALMER DROUGHT INDEX
(Palmer Data - Averge of Region 4 & 5)
Spring Discharge (refer to Table 30)
Palmer Drought Index
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2014
2015
Spring Discharge
Palmer Drought Index

East Mountain Spring: 89-67
Water Quality Data: July Operational Data
Mine Association: Deer Creek Mine
Date of Development: N/A
Date of Second Mining: N/A

Historical Data: 1990-2014

	MAXIMUM	MINIMUM	AVERAGE
BICARBONATE	368	232	295.71
CALCIUM	76.8	33.9	52.13
CARBONATE	5	0	0.70
CHLORIDE	10	3.5	5.26
CONDUCTIVITY	583	473	534.75
DISSOLVED OXYGEN	10.4	5	7.37
FLOW	16.7	1.6	6.36
HARDNESS	342	211	268.83
TOTAL IRON	1	0	0.29
DISSOLVED IRON	0.2	0	0.044
MAGNESIUM	36.5	30.6	33.62
DISSOLVED MANGANESE	0.038	0	0.011
MANGANESE	0.2	0	0.031
OIL AND GREASE	0	0	
PH	8.26	7.21	7.64
POTASSIUM	5	0.4	1.26
SET SOLIDS	0	0	
SODIUM	17	8.2	11.89
SULFATE	65	9	18.83
SUSPENDED SOLIDS	8	2	4.60
TEMPERATURE	40.8	3.6	11.48
TOTAL DISSOLVED SOLIDS	313	190	282.67

East Mountain Spring: 89-68
Water Quality Data: July Operational Data
Mine Association: Deer Creek Mine
Date of Development: N/A
Date of Second Mining: N/A

Historical Data: 1990-2014	MAXIMUM	MINIMUM	AVERAGE
BICARBONATE	368	232	295.71
CALCIUM	76.8	33.9	52.13
CARBONATE	5	0	0.70
CHLORIDE	10	3.5	5.26
CONDUCTIVITY	583	473	534.75
DISSOLVED OXYGEN	10.4	5	7.37
FLOW	16.7	1.6	6.36
HARDNESS	342	211	268.83
TOTAL IRON	1	0	0.29
DISSOLVED IRON	0.2	0	0.044
MAGNESIUM	36.5	30.6	33.62
DISSOLVED MANGANESE	0.038	0	0.011
MANGANESE	0.2	0	0.031
OIL AND GREASE	0	0	
PH	8.26	7.21	7.64
POTASSIUM	5	0.4	1.26
SET SOLIDS	0	0	
SODIUM	17	8.2	11.89
SULFATE	65	9	18.83
SUSPENDED SOLIDS	8	2	4.60
TEMPERATURE	40.8	3.6	11.48
TOTAL DISSOLVED SOLIDS	313	190	282.67

Spring: 89-67

Location: T16S, R7E, Section 32
Associated Formation: North Horn
GPS: N 39°22'44.5"
W 111°09'26.2"

Note: Access to spring requires travel through private property in which owner does not allow.

Note: Spring was developed in 2009 as part of a cattlemen's mitigation plan associated with the Elk Spring culinary development project.

Spring: 89-68

Location: T16S, R7E, Section 32
Associated Formation: North Horn
GPS: N 39°22'53.6"
W 111°09'21.4"

Note: Access to spring requires travel through private property in which owner does not allow.

Note: Spring was developed in 2009 as part of a cattlemen's mitigation plan associated with the Elk Spring culinary development project.

Location: Section 24, Township 17 South, Range 6 East, SLB&M. This site is located within the Deer Creek mine permit boundary. The well head is located on alluvial deposits just above the Trail Mountain Mine portals.

Lease Association: : Well EM-31 is associated with federal coal lease U-083066. PacifiCorp is the sublease holder of this Federal Coal Lease. The well is located within unmined coal managed by the BLM and was developed on surface lands managed by the USFS.

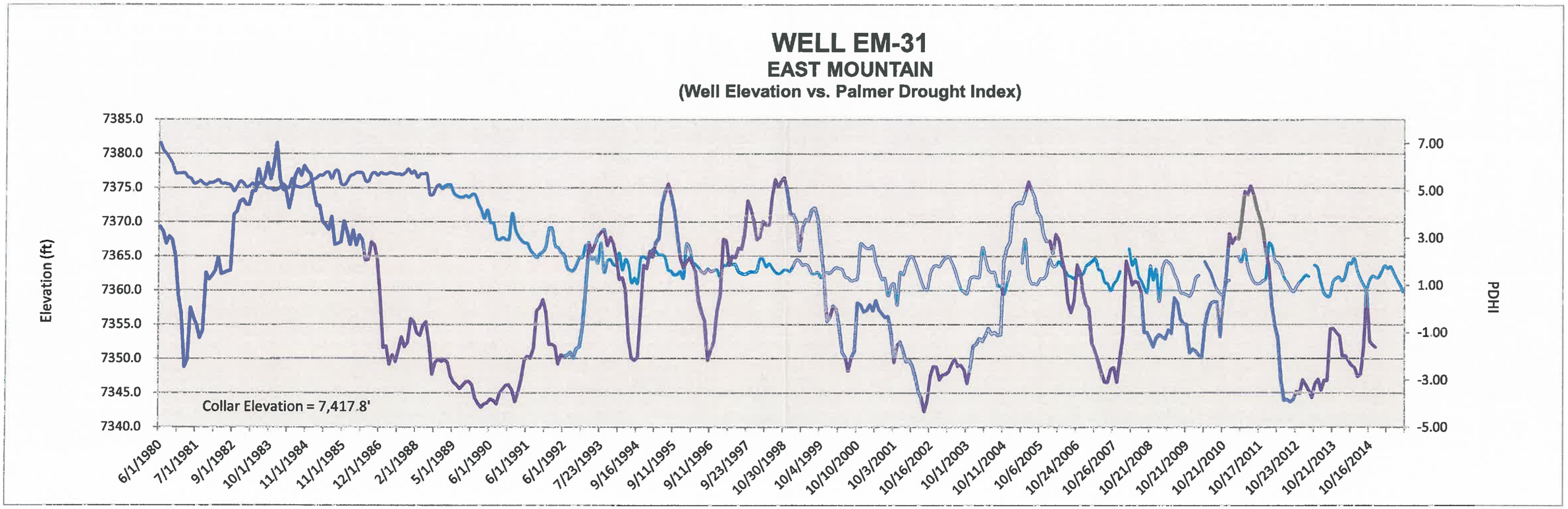
Subsidence: No subsidence is reported in the vicinity of the well. Refer to the 2008 Annual Subsidence Report data which are included herein. No mining has occurred with 1000 feet of this site.

Water Data: Level data is included for well EM-31. Data show insignificant fluctuations of water level. Historic data has been collected for years 1980 through 2015 (35 years) although the well was developed in 1978. The total depth of the well is 280 feet. The elevation at the collar is 7417.8 feet. The drill hole diameter is 9.75 inches and fitted with a 4 inch (ID) casing and packed with gravel to within 50 feet of surface. Perforations were set between 180 feet and 250 feet. The annular is cemented from 0-50 feet. The lithologic well log is attached.

Justification for removal from monitoring: Well EM-31 has been monitored by Energy West Mining Company (Now Interwest Mining Company) since 1980. There have been no reported occurrences in which mining has impacted this site. Historic level data has not indicated such impacts to the site.

Originally, the site was developed to assess the pieziometric gradient of the western reserves of the Wilberg Mine. Water elevation of the well was the only parameter ever monitored. The hydrograph of EM-31 shows that the well responds subtly to annual precipitation and long-term climatic cycles. We believe that these hydraulic responses are due in large part to hydraulic communication between the gravel-pack zone and shallow, overlying groundwater systems. The Star Point Sandstone, in other locations, does not respond to annual precipitation or climatic trends.

Since there is no longer mining in Cottonwood/Wilberg or Deer Creek mines, PacifiCorp see's no reason to retain this site as a required monitoring location. Therefore, it is requested for the reasons stated above, that the site be removed from the monitoring program.


WELL EM-31
EAST MOUNTAIN
(Well Elevation vs. Palmer Drought Index)
Elevation (ft)
PDHI
7385.0
7380.0
7375.0
7370.0
7365.0
7360.0
7355.0
7350.0
7345.0
7340.0
7.00
5.00
3.00
1.00
-1.00
-3.00
-5.00
Collar Elevation = 7,417.8'
6/1/1980
7/1/1981
9/1/1982
10/1/1983
11/1/1984
11/1/1985
12/1/1986
2/1/1988
5/1/1989
6/1/1990
6/1/1991
6/1/1992
7/23/1993
9/16/1994
9/11/1995
9/11/1996
9/23/1997
10/30/1998
10/4/1999
10/10/2000
10/3/2001
10/16/2002
10/1/2003
10/11/2004
10/6/2005
10/24/2006
10/26/2007
10/21/2008
10/21/2009
10/21/2010
10/17/2011
10/23/2012
10/21/2013
10/16/2014

PacifiCorp

Interwest Mining Company

Amendment to Reduce the Hydrologic Monitoring Program

Replace Volume 1, Part 2, Pages 220 - 225

Hydrology

The Deer Creek Mine is part of the East Mountain property in which PacifiCorp holds coal mining interests. The East Mountain property encompasses multiple adjacent mining operations including; Cottonwood/Wilberg Mine, Deer Creek Mine, and the reclaimed Des Bee Dove Mine (Phase III Bond Released approved August 2014). PacifiCorp has collected comprehensive baseline information on the hydrologic resources of the East Mountain property that consists of ground and surface water investigations, climatological information, baseline cumulative impact area information, and probable hydrologic consequence determination to ensure the protection of the hydrologic balance of the Deer Creek Mine permit area and East Mountain property. This information is found in Volume 9, Volume 9A, and/or Volume 9B.

As part of the requirements of the Utah Coal Regulations R645-301-731.221 through R645-301-731.225, a hydrologic monitoring program has been established in cooperation with Utah Division of Oil, Gas, and Mining. The hydrologic monitoring program involves collecting water quality and quantity samples of ground and surface water for specific sites pertinent the Deer Creek Mine permit area.

The following details the hydrologic monitoring program for the Deer Creek Mine permit for surface and ground water monitoring sites, required sampling parameter list, and map showing site locations.

Surface Water Hydrology (for detailed information for the Deer Creek Mine see Volumes 9, 9A, and 9B)

Cottonwood Creek Drainage System

Indian Creek (refer to Deer Creek Volume 12 R645-301-700: Hydrologic Monitoring Map MFS1851D)

1) ICA
2) ICF
3) ICD
4) ICB

Huntington Creek Drainage System

Huntington Creek (refer to Volume 9, Hydrologic Section, Cottonwood/Wilberg and Deer Creek Mines, Map HM-1A)

1) HCC01
2) HCC02
3) HCC04

Deer Creek Canyon (refer to Volume 9, Hydrologic Section, Cottonwood/Wilberg and Deer Creek Mines, Map HM-1A)

1) DCR01
2) DCR04
3) DCR06

Meetinghouse Canyon–South Fork (refer to Volume 9, Hydrologic Section, Cottonwood/Wilberg and Deer Creek Mines, Map HM-1A)

1) MHC01

Rilda Canyon (refer to Volume 9, Hydrologic Section, Cottonwood/Wilberg and Deer Creek Mines, Map HM-1A)

1) RCF1
2) RCLF1
3) RCLF2
4) RCF2
5) RCF3
6) RCW4

Mill Fork Canyon (refer to Deer Creek Volume 12 R645-301-700: Hydrologic Monitoring Map MFS1851D)

1) MFA01
2) MFB02
3) MFU03

Ground Water Hydrology (for detailed information for the Deer Creek Mine see Volumes 9 and 9A: Hydrologic Section, Cottonwood/Wilberg and Deer Creek Mines)

East Mountain Springs (refer to Volume 9, Hydrologic Section, Cottonwood/Wilberg and Deer Creek Mines, Map HM-4)

1) Sheba Springs
~~2) 80-48~~
3) 80-50
~~4) 89-65~~
~~5) 89-66~~
~~6) 89-67~~
~~7) 89-68~~
8) Rilda Canyon Meters (Meters 2 & 3)*

* NEWUSSD controls Rilda Canyon meters. Monitoring will be conducted when meters are functioning.

East Mountain Springs – Mill Fork Area (refer to Deer Creek Permit Volume 12 R645-301-700: Hydrologic Monitoring Map MFS1851D)

1) EM-216
2) MFR-30
3) JV-9
4) JV-34
5) RR-5
6) RR-15
7) RR-23A
8) MF-7
9) MF-10
10) MF-19B
11) MF-213
12) MF-219
13) SP1-26
14) SP1-29
15) MFR-10
16) UJV 101
17) UJV-206
18) UJV-213
19) EM Pond
20) Little Bear Spring
21) Grants Spring

Piezometric Data – Surface

Rilda Canyon

1) P1
2) P5
3) P6
4) P7
5) EM-47

~~Cottonwood Creek Canyon~~

~~1) EM-31~~

~~Piezometric Data – Underground~~

~~1) Refer to Annual Hydrologic Reports for Locations: Map HM-2~~

~~Waste Rock Wells~~

~~1) DCWR1~~

UPDES Monitoring Locations – UPDES Permit #UT0023604

1) 001 – Sediment Pond
2) 002 – Mine Discharge

Required Monitoring Parameters

Field Measurements shall be collected during monitoring of surface and ground water sites. Field measurements include:

- Date and Time
- Flow
- pH
- Temperature
- Conductivity
- Dissolved Oxygen (perennial streams only)

Surface and ground water samples shall be analyzed for quality utilizing the following parameters (in mg/L). Baseline parameters shall be collected every 5 years. Operational samples shall be collected at all other times and as dictated by the monitoring schedule.

Laboratory Measurements:

#	*	-	Total Settleable Solids (UPDES Only)
#	*	-	Total Suspended Solids (Surface Only)
	*	-	Total Dissolved Solids
	*	-	Total Hardness ($CaCO_3$)
		-	Acidity ($CaCO_3$)
		-	Aluminum (Al) - Dissolved
		-	Arsenic (As) - Dissolved
		-	Boron (B) - Dissolved (Waste Rock Sites Only)
	*	-	Carbonate (CO_3^{-2})
	*	-	Total Alkalinity/Bicarbonate ($CaCO_3$)
		-	Cadmium (Cd) - Dissolved
	*	-	Calcium (Ca) - Dissolved
	*	-	Chloride (Cl-)
		-	Copper (Cu) - Dissolved
	*	-	Iron (Fe) - Total & Dissolved
		-	Lead (Pb) - Dissolved
	*	-	Magnesium (Mg) - Dissolved
	*	-	Manganese (Mn) - Total & Dissolved
		-	Molybdenum (Mo) - Dissolved
		-	Nitrogen: Ammonia (NH3) - reported as N

Laboratory Measurements cont.

- Nitrite (NO_2) - reported as N
- Nitrate (NO_3^-) - reported as N
- * Potassium (K) - Dissolved
- * Oil & Grease*
- Ortho Phosphate (PO_4^{-3}) - reported as P
- Selenium (Se) - Dissolved (Waste Rock Sites Only)
- * Sodium (Na) - Dissolved
- * Sulfate (SO_4^{-2})
- Zinc (Zn) - Dissolved
- * Cation-Anion Balance

Construction * Operational - Baseline

*UPDES & surface waters above & below mine sites

Monitoring Schedule

Surface monitoring sites shall be field monitored quarterly for all field parameters except for Indian Creek Sites – monitoring to be conducted during base flow only. Surface sites shall also be analyzed for quality for all quality parameters listed except for Indian Creek sites – monitoring to be conducted during base flow only.

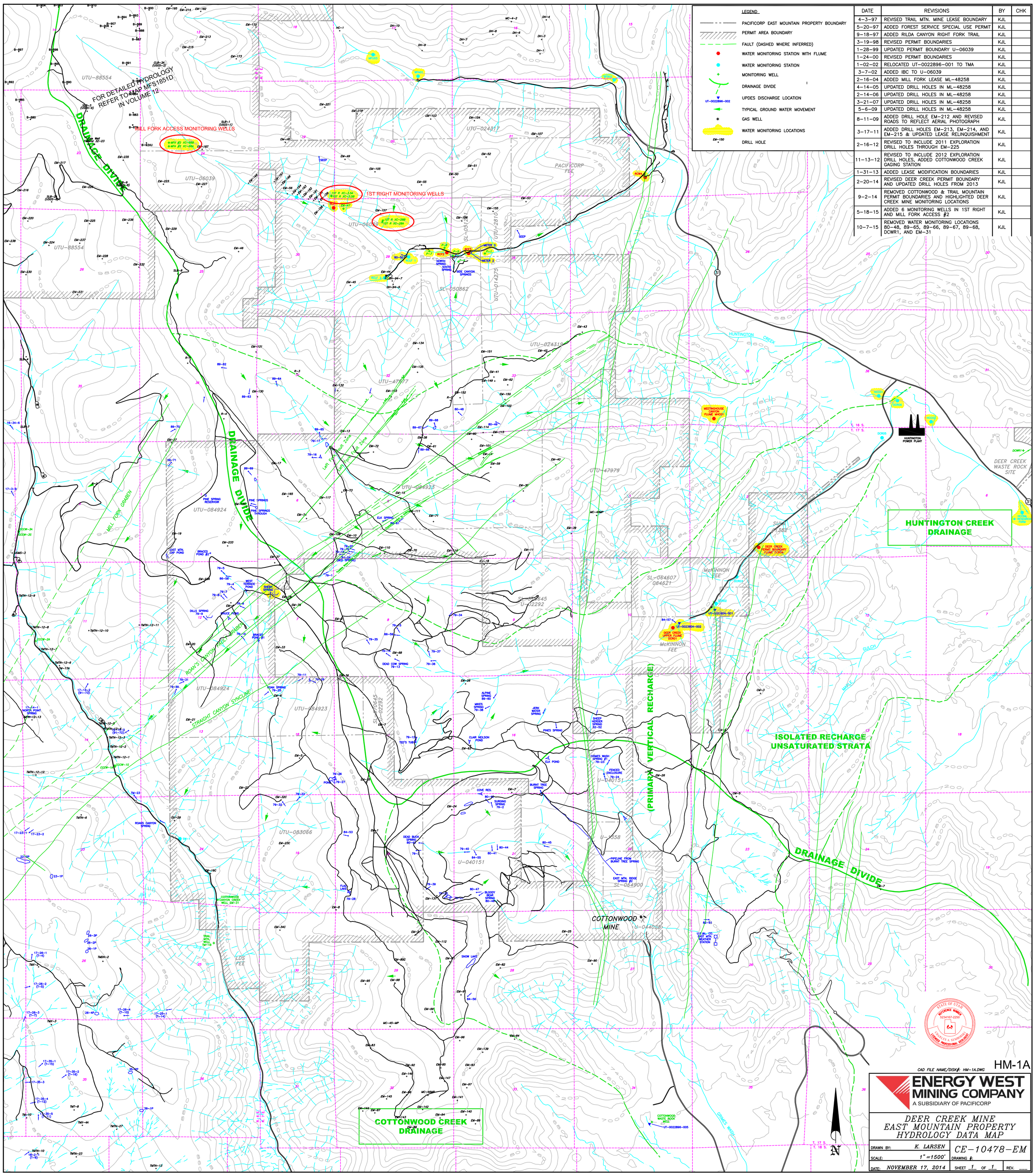
East Mountain Springs (including the Mill Fork Area) shall be field monitored during the months of July and October. Rilda Canyon Springs – NEWUSSD: Meters 2 & 3 shall be field monitored monthly depending on access. East Mountain Springs (including the Mill Fork Area) shall also be analyzed for quality during the months of July and October. Rilda Canyon Springs – NEWUSSD: Meters 2 & 3 shall be monitored for quality monthly depending on access. All surface and ground water monitoring requirements for the Mill Fork Area are found in Volume 12, Deer Creek Mine, Mill Fork Lease, Section R645-301-700.

PacifiCorp

Interwest Mining Company

Amendment to Reduce the Hydrologic Monitoring Program

Replace Volume 1, Part 2, Map HM-1A



LEGEND

- PACIFICORP EAST MOUNTAIN PROPERTY BOUNDARY
- PERMIT AREA BOUNDARY
- FAULT (DASHED WHERE INFERRED)
- WATER MONITORING STATION WITH FLUME
- WATER MONITORING STATION
- MONITORING WELL
- DRAINAGE DIVIDE
- UT-0022896-002 — UPDES DISCHARGE LOCATION
- TYPICAL GROUND WATER MOVEMENT
- GAS WELL
- WATER MONITORING LOCATIONS
- EM-150 — DRILL HOLE

DATE	REVISIONS	BY	CHK
4-3-97	REVISED TRAIL MTN. MINE LEASE BOUNDARY	KJL	
5-20-97	ADDED FOREST SERVICE SPECIAL USE PERMIT	KJL	
9-18-97	ADDED RILDA CANYON RIGHT FORK TRAIL	KJL	
3-19-98	REVISED PERMIT BOUNDARIES	KJL	
1-28-99	UPDATED PERMIT BOUNDARY U-06039	KJL	
1-24-00	REVISED PERMIT BOUNDARIES	KJL	
1-02-02	RELOCATED UT-0022896-001 TO TMA	KJL	
3-7-02	ADDED IBC TO U-06039	KJL	
2-16-04	ADDED MILL FORK LEASE ML-48258	KJL	
4-14-05	UPDATED DRILL HOLES IN ML-48258	KJL	
2-14-06	UPDATED DRILL HOLES IN ML-48258	KJL	
3-21-07	UPDATED DRILL HOLES IN ML-48258	KJL	
5-6-09	UPDATED DRILL HOLES IN ML-48258	KJL	
8-11-09	ADDED DRILL HOLE EM-212 AND REVISED ROADS TO REFLECT AERIAL PHOTOGRAPH	KJL	
3-17-11	ADDED DRILL HOLES EM-213, EM-214, AND EM-215 & UPDATED LEASE RELINQUISHMENT	KJL	
2-16-12	REVISED TO INCLUDE 2011 EXPLORATION DRILL HOLES THROUGH EM-225	KJL	
11-13-12	REVISED TO INCLUDE 2012 EXPLORATION DRILL HOLES, ADDED COTTONWOOD CREEK GAGING STATION	KJL	
1-31-13	ADDED LEASE MODIFICATION BOUNDARIES	KJL	
2-20-14	REVISED DEER CREEK PERMIT BOUNDARY AND UPDATED DRILL HOLES FROM 2013	KJL	
9-2-14	REMOVED COTTONWOOD & TRAIL MOUNTAIN PERMIT BOUNDARIES AND HIGHLIGHTED DEER CREEK MINE MONITORING LOCATIONS	KJL	
5-18-15	ADDED 6 MONITORING WELLS IN 1ST RIGHT AND MILL FORK ACCESS #2	KJL	
10-7-15	REMOVED WATER MONITORING LOCATIONS 80-48, 89-65, 89-66, 89-67, 89-68, DCWR1, AND EM-31	KJL	

HM-1A

CAD FILE NAME/DISK#: HM-1A.DWG

ENERGY WEST MINING COMPANY
A SUBSIDIARY OF PACIFICORP

DEER CREEK MINE
EAST MOUNTAIN PROPERTY
HYDROLOGY DATA MAP

DRAWN BY: K. LARSEN
SCALE: 1"=1500'
DATE: NOVEMBER 17, 2014
CE-10478-EM
DRAWING #:
SHEET 1 OF 1
REV.

PacifiCorp

Interwest Mining Company

Amendment to Reduce the Hydrologic Monitoring Program

Replace Volume 9, Appendix A-1, Water Monitoring Program 1-14 pages

PACIFICORP
ENERGY WEST
HYDROLOGIC MONITORING PROGRAM
DEER CREEK MINE

I. MONITORING LOCATIONS – DEER CREEK MINE

A. Surface Water Hydrology (for maps refer to Deer Creek and Wilberg/Cottonwood Mine: Volume 9 Map HM-1A, Deer Creek Volume 12 R645-301-700: Hydrologic Monitoring Map MFS1851D Mill Fork Lease for East Mountain locations listed below

1. Cottonwood Creek Drainage System

a. ***Indian Creek*** (refer to Deer Creek Volume 12 R645-301-700: Hydrologic Monitoring Map MFS1851D)

(1) ICA - Indian Creek Above
(Approximately 2500 feet northwest of the Mill Fork permit boundary) 400 feet North, 2350 feet West of the Southwest corner of Section 3, Township 16 South, Range 6 East.

(2) ICF - Indian Creek Flume
(Approximately 2100 feet west of the Mill Fork permit boundary) 300 feet North, 3400 feet West of the Southwest corner of Section 10, Township 16 South, Range 6 East.

(3) ICD - Indian Creek Ditch
(Approximately 1600 feet west of the Mill Fork permit boundary, irrigation ditch for Upper Joes Valley) 240 feet North, 2850 feet West of the Southwest corner of Section 15, Township 16 South, Range 6 East.

(4) ICB - Indian Creek Below
(Approximately 3700 feet west of the Mill Fork permit boundary, junction of Indian Creek and FDR040) 70 feet North, 120 feet West of the Southwest corner of Section 16, Township 16 South, Range 6 East.

2. Huntington Creek Drainage System

a. ***Huntington Creek*** (refer to Deer Creek and Wilberg/Cottonwood Mines: Volume 9 Map HM-1A)

(1) HCC01 - Above Deer Creek Confluence:
1400 feet north, 2200 feet west of the southeast corner of Section 36, Township 16 South, Range 7 East.

(2) HCC02 - Below Deer Creek Confluence:
300 feet north, 300 feet west of the southwest corner of Section 31, Township 16 South, Range 8 East.

(3) HCC04 - @ Research Farm*
800 feet north, 200 feet east of the southwest corner of Section 5, Township 17 South, Range 8 East.
*Not listed on map due to scale.

b. ***Deer Creek*** (refer to Deer Creek and Wilberg/Cottonwood Mines: Volume 9 Map HM-1A)

(1) DCR01 - Above the mine:
(Approximately 600 feet upstream from the mine facility.) 200 feet North, 800 feet West of the Southeast corner of Section 10, Township 17 South, Range 7 East.

(2) DCR04 - Near C1/C2 Belt Intersection:
(Approximately 5,000 feet downstream from the mine facility.) 300 feet North, 2000 feet East of the Southeast corner of Section 2, Township 17 South, Range 7 East.

(3) DCR06 - @ Huntington Creek Confluence:
(Approximately 15,000 feet downstream from the facility) 1400 feet north, 1100 feet east of the southeast corner of Section 6, Township 16 South, Range 7 East.

c. ***Meetinghouse Canyon - South Fork*** (refer to Deer Creek, Wilberg/Cottonwood, Des-Bee-Dove Mine: Volume 9 Map HM-1)

(1) MHC01 - Meetinghouse Canyon South Fork (Approximately 200 feet upstream from the north and south convergence.) 800 feet North, 1500 feet East of the Southwest corner of Section 35, Township 16 South, Range 7 East.

d. ***Rilda Canyon*** (refer to Deer Creek and Wilberg/Cottonwood Mines: Volume 9 Map HM-1A)

(1) RCF-1 - Rilda Canyon - Right Fork: (Approximately 4000 feet upstream from the Right and Left fork convergence.) 400 feet South, 200 feet West of the Northeast corner of Section 30, Township 16 South, Range 7 East.

(2) RCLF1 - Rilda Canyon - Left Fork, below Rilda Canyon Portals: (Approximately 200 feet upstream from the Right and Left fork convergence.) 2400 feet North, 2100 feet West of the Southeast corner of Section 29, Township 16 South, Range 7 East.

(3) RCLF2 - Rilda Canyon - Left Fork, above Rilda Canyon Portals: (Approximately 1600 feet upstream from the Right and Left fork convergence.) 1600 feet North, 2300 feet West of the Southwest corner of Section 29, Township 16 South, Range 7 East.

(4) RCF2 - Rilda Canyon - Above NEWUSSD springs: 2500 feet South, 400 feet West of the Northeast corner of Section 29, Township 16 South, Range 7 East.

(5) RCF3 - Rilda Canyon - Below NEWUSSD springs: 2550 feet South, 1000 feet East of the Northeast corner of Section 28, Township 16 South, Range 7 East.

(6) RCW4 - Rilda Canyon: (Approximately 1000 feet upstream from the confluence with Huntington Creek.) 850 feet North, 1900 feet West of the Southeast corner of Section 26, Township 16 South, Range 7 East.

e. ***Mill Fork Canyon*** (refer to Deer Creek Volume 12 R645-301-700: Hydrologic Monitoring Map MFS1851D)

(1) MFA01 - Mill Fork Canyon - Above Old Mine: (Approximately 2000 feet above old mine portals @ end of USFS development road.) 100 feet North, 1500 feet West of the Southeast corner of Section 17, Township 16 South, Range 7 East.

(2) MFB02 - Mill Fork Canyon - Above Huntington Creek Confluence: (Approximately 200 feet above confluence with Huntington Creek @ culvert outfall.) 100 feet South, 1900 feet East of the Northwest corner of Section 22, Township 16 South, Range 7 East.

(3) MFU03 - Mill Fork Canyon - Above Mill Fork Fault Crossing: (Approximately 700 feet upstream of projected Mill Fork Fault crossing) 1150 feet North, 1700 feet East of the Southwest corner of Section 17, Township 16 South, Range 7 East.

3. Reclamation Monitoring: Following final reclamation, backfilling and grading monitoring will be conducted at points immediately above and below the reclaimed site.

B. Groundwater Hydrology – Deer Creek Mine

1. East Mountain Springs (refer to Deer Creek and Wilberg/Cottonwood Mines: Volume 9 maps HM-4)

Sheba Springs ~~80-48~~
80-50
~~89-65~~
~~89-66~~
~~89-67~~
~~89-68~~
Rilda Canyon-(Meters 2&3) [1]

[1]-NEWUSSD controls Rilda Canyon meters. Monitoring will be conducted when meters are functioning.

2. East Mountain Springs - Mill Fork Area (refer to Deer Creek Permit Volume 12 R645-301-700: Hydrologic Monitoring Map MFS1851D)

EM-216	MFR-30
JV-9	RR-5
JV-34	RR-15
MF-7	RR-23A
MF-10	SP1-26
MF-19B	SP1-29
MF-213	UJV-101
MF-219	UJV-206
MFR-10	UJV-213
EMPOND	Grants Spring
Little Bear Spring	

3. Piezometric Data

a. Surface

(1) Rilda Canyon (refer to Deer Creek and Wilberg/Cottonwood Mines: Volume 9 Map HM-1a)

P1
P5
P6
P7
EM-47

~~(2) Cottonwood Canyon Creek~~

~~*East Mountain* (refer to Deer Creek and Wilberg/Cottonwood Mines: Volume 9 Map HM-1a)~~

~~EM-31~~

b. Underground: Deer Creek In-Mine

(1) (Refer to Annual Hydrologic Reports for Locations : Map HM-2)

4. Deer Creek In-Mine Water Locations

a. Refer to Annual Hydrologic Reports for Locations: Map HM-2

~~**5. Waste Rock Wells** (refer to Deer Creek Mine: Volume 10 Map CM-10778-WB)~~

~~a. DCWR1~~

C. UPDES Monitoring Locations – Deer Creek Mine

a. ***Deer Creek Mine***
UPDES UT0023604
001- Sediment Pond
002- Mine Discharge

II. MONITORING SCHEDULE – DEER CREEK MINE
(see enclosed monitoring schedules for operational, baseline, and reclamation monitoring)

A. Field Measurements

Field Measurements collected during quality sampling: Listed below are the sites which will be monitored by PacifiCorp - Energy West in accordance with the guidelines established by DOGM; i.e.

- Date and Time
- Flow
- pH
- Temperature
- Conductivity
- Dissolved oxygen (perennial streams only)

Surface Monitoring

Surface monitoring locations will be field monitored quarterly for all field parameters, except Indian Creek - monitoring to be conducted during base flow only.

1. Cottonwood Canyon Creek

a. Indian Creek

(1) ICA
(2) ICF
(3) ICD
(4) ICB

2. Huntington Canyon Drainage

a. Deer Creek

(1) DCR01
(2) DCR04
(3) DCR06

b. Huntington Creek

(1) HCC01
(2) HCC02
(3) HCC04

Flow in Huntington Creek is measured only at HCC01 by Utah Power, and will be reported in the Annual Hydrologic Report.

c. Meetinghouse Canyon - South Fork:

(1) MCH01

d. Rilda Canyon

(1) RCF1*
(2) RCLF 1
(3) RCLF 2
(4) RCF2
(5) RCF3
(6) RCW4

* Baseline flow will be measured adjacent to EM-163

e. Mill Fork Canyon

(1) MFA01
(2) MFB02
(3) MFU03

Groundwater Monitoring

1. East Mountain Springs (see monitoring location list I.B.1)

2. East Mountain Springs - Mill Fork Area (see monitoring location list I.B.3)

   East Mountain Springs will be field monitored during the months of July and October. Rilda Canyon Springs - (NEWUSSD: Meters 2 & 3; when functioning) will be field monitored monthly depending upon access.

3. In-Mine

   a. Deer Creek

   In-mine locations will be field monitored quarterly for all field parameters except pH, conductivity, and dissolved oxygen.

4. Piezometric Wells

   a. Surface

      Piezometric surface wells will be field monitored for level only on a monthly basis depending upon access.

      (1) Rilda Canyon (see Map HM-1 for locations)

         P1
         P5
         P6
         P7
         EM-47

      ~~(2) Cottonwood Canyon Creek (see Map HM-1 for locations)~~

         ~~EM-31~~

~~5. Waste Rock Wells~~

   ~~a. Deer Creek~~

PACIFICORP
ENERGY WEST
HYDROLOGIC MONITORING PROGRAM
DEER CREEK MINE

UPDES Monitoring

1. Deer Creek

UPDES sites 001 and 002 will be monitored as specified in the individual permit~~s~~.

Reclamation Monitoring

Surface Water Resources: (see enclosed summary of operational, baseline, and reclamation monitoring schedules)
Surface monitoring locations will be field monitored monthly for flow and all field parameters quarterly until bond release.

Ground Water Resources: (see enclosed summary of operational, baseline, and reclamation monitoring schedules)

Springs East Mountain Springs will be field monitored during the months of July and October.

Rilda Canyon Springs (NEWUSSD: Meters 2 & 3; when functioning) will be field monitored monthly for flow depending upon access. East Mountain Springs (including Rilda Springs) monitoring will be conducted until permit area reduction approval or unless otherwise approved by the Division.

Wells: Piezometric surface wells (Rilda Canyon and Cottonwood Canyon): will be field monitored for level only on a monthly basis depending upon access. Piezometric surface well monitoring will be conducted until permit area reduction approval or unless otherwise approved by the Division.

~~Waste Rock Well: will be field monitored for level only on a quarterly basis. Monitoring will be conducted until sealing during final reclamation.~~

UPDES: Sites will be monitored as specified in the individual permits

B. Quality Sampling (Laboratory Measurements)

1. Surface Water Hydrology: Water samples will be collected and analyzed quarterly (one sample at low flow and high flow) during the first or second week of the quarter, except for Indian Creek - quality samples will be collected during baseflow only. Parameters analyzed are those listed in the DOGM Guidelines for Surface Water Quality (see Table 1-Surface Water Quality Parameter List). Quarterly sampling was initiated during March 1988 and will continue throughout the year; i.e., June, September, and December. Baseline analysis was performed in 2011 and will be repeated every five years there-after.

a. Cottonwood Creek Drainage

(1) Indian Creek

(a) ICA
(b) ICD
(c) ICB

b. Huntington Creek Drainage

(1) Deer Creek

(a) DCR01
(b) DCR04
(c) DCR06

(2) Huntington Creek

(a) HCC01
(b) HCC02
(c) HCC04

(3) Meetinghouse Canyon - South Fork:

(a) MCH01

(4) Rilda Canyon

(a) RCF1
(b) RCF3
(c) RCW4

(5) Mill Fork Canyon

(a) MFA01
(b) MFB02
(c) MFU03

Reclamation Monitoring - Surface Water Hydrology: Water samples will be collected and analyzed quarterly (one sample at low flow and high flow) during the first or second week of the quarter. Parameters analyzed are those listed in the DOGM Guidelines for Surface Water Quality (see Table 1-Surface Water Quality Parameter List). Sampling will be conducted on a quarterly basis until bond release. Baseline analysis will be performed on the 5th and 9th years following reclamation. In no case will baseline sampling time frame exceed 5 years converting from operational to reclamation monitoring.

2. Groundwater Hydrology

a. East Mountain Springs: Water samples will be collected and analyzed during the months of July and October. Rilda Canyon Springs (NEWUSSD: Meters 2 & 3; when functioning) will be monitored for quarterly for quality. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Water Quality (see Table 2-Ground Water Quality Parameter List).

b. In-Mine: Two water samples will be collected and analyzed per mine quarterly until mine is sealed or access is discontinued. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Water Quality (see Table 2-Ground Water Quality Parameter List).

c. Wells: No analysis required.

~~d. Waste Rock Wells: One water sample will be collected and analyzed per location quarterly. Parameters analyzed are those listed in the DOGM~~

~~Guidelines for Groundwater Water Quality (see Table 2-Ground Water Quality Parameter List).~~

Baseline analysis was performed in 2011 and will be repeated every five years thereafter.

Reclamation Monitoring - Groundwater Hydrology:

a. East Mountain Springs: Water samples will be collected and analyzed during the months of July and October. Rilda Canyon Springs (NEWUSSD: Meters 2 & 3; when functioning) will be monitored quarterly for quality. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Water Quality (see Table 2-Ground Water Quality Parameter List). East Mountain Springs (including Rilda Springs) monitoring will be conducted until permit area reduction approval or unless otherwise approved by the Division.

b. In-Mine: Two water samples will be collected and analyzed per mine quarterly until the mine is sealed or the sites become inaccessible. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Water Quality (see Table 2-Ground Water Quality Parameter List).

c. Wells: Rilda and Cottonwood Canyon wells will be sealed during final reclamation. Quarterly sampling will continue until sealing. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Water Quality (see Table 2-Ground Water Quality Parameter List).

~~d. Waste Rock Wells: Waste rock wells will be sealed during final reclamation. One water sample will be collected and analyzed per location quarterly until well sealing. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Water Quality (see Table 2-Ground Water Quality Parameter List).~~

e. Post Reclamation Monitoring: PacifiCorp commits to conduct annual surveys to identify new discharge locations within and below sealed portals. If discharge occurs, one water sample will be collected and analyzed per location quarterly. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Water Quality (see Table 2-Ground Water Quality Parameter List). Baseline analysis will be performed on the 5th and 9th year.

3. UPDES Monitoring Sites

a. Deer Creek Mine

UPDES sites will be monitored as specified in the individual permits.

III. ANNUAL REPORTS

All data collected regarding the hydrology of East Mountain will be summarized by the applicant in an annual Hydrologic Monitoring Report. Copies of the report will be submitted to the Utah State Division of Oil, Gas and Mining. In addition, any raw data collected will be submitted to the Utah State Division of Oil, Gas and Mining on a quarterly basis.

PacifiCorp

Interwest Mining Company

Amendment to Reduce the Hydrologic Monitoring Program

Replace Volume 9, Appendix A-1, Water Monitoring Schedule, 6 pages

PACIFICORP

ENERGY WEST MINING COMPANY

HYDROLOGIC MONITORING SCHEDULE

DEER CREEK MINE

SURFACE HYDROLOGY - OPERATIONAL SAMPLING (Table 1)

Drainage System	Drainage	Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cottonwood Creek Drainage System	***Joes Valley***	**ICA**	Based Flow Monitoring Only (October or November)									Operational		
	Indian Creek	**ICD**	Based Flow Monitoring Only (October or November)									Operational		
		ICB	Based Flow Monitoring Only (October or November)									Operational		
Huntington Drainage System	***Deer Creek***	**DCR01**	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
		DCR04	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
		DCR06	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
	Huntington Creek	**HCC01**	Flow *	Flow *	Operational*	Flow *	Flow *	Operational*	Flow *	Flow *	Operational*	Flow *	Flow *	Operational*
		HCC02			Operational*			Operational*			Operational*			Operational*
		HCC04			Operational*			Operational*			Operational*			Operational*
			* Flow in Huntington Creek is measured @ HCC01 by Utah Power, and will be reported in the Annual Hydrologic Report											
	Meetinghouse Canyon	**MCH01**	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
	Rilda Canyon	**RCF1***	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
		RCLF1	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field
		RCLF2	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field
		RCF2	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field
		RCF3	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
		RCW4	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
			* Baseline flow will be measured adjacent to EM-163											
	Mill Fork Canyon	**MFA01**	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
		MFB02	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
		MFU03	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational

PACIFICORP

ENERGY WEST MINING COMPANY

HYDROLOGIC MONITORING SCHEDULE

DEER CREEK MINE

GROUNDWATER HYDROLOGY - OPERATIONAL SAMPLING (Table 2)

Groundwater Type			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Springs	***East Mountain***	***(Includes Mill Fork Springs)***							Operational	Flow *	Flow *	Operational		
										* Recession Springs				
	East Mountain-Rilda Canyon		Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
~~***In-Mine***~~	~~***Deer Creek***~~				~~Operational~~			~~Operational~~			~~Operational~~			~~Operational~~
~~***Wells***~~	~~***Cottonwood Canyon Wells***~~		~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~
	~~***Deer Creek Waste Rock Well***~~				~~Operational~~			~~Operational~~			~~Operational~~			~~Operational~~
	~~***Deer Creek In-Mine Well***~~				~~Level~~			~~Level~~			~~Level~~			~~Level~~
	Rilda Canyon Wells		Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level

UPDES SAMPLING - (Table 1)

			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mine Water Discharge	***Deer Creek***	**DCD**	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
Sediment Pond Discharge	***Deer Creek***	**1 Outfall**	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational

PACIFICORP

ENERGY WEST MINING COMPANY

HYDROLOGIC MONITORING SCHEDULE

DEER CREEK MINE

SURFACE HYDROLOGY - BASELINE SAMPLING (Table 1) - 2011

Drainage System	Drainage	Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cottonwood Creek Drainage System	***Joes Valley***	**ICA**	Based Flow Monitoring Only (October or November)									Baseline		
	Indian Creek	**ICD**	Based Flow Monitoring Only (October or November)									Baseline		
		ICB	Based Flow Monitoring Only (October or November)									Baseline		
Huntington Drainage System	***Deer Creek***	**DCR01**	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
		DCR04	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
		DCR06	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
	Huntington Creek	**HCC01**	Flow *	Flow *	Baseline*	Flow *	Flow *	Baseline*	Flow *	Flow *	Baseline*	Flow *	Flow *	Baseline*
		HCC02			Baseline*			Baseline*			Baseline*			Baseline*
		HCC04			Baseline*			Baseline*			Baseline*			Baseline*
			* Flow in Huntington Creek is measured @ HCC01 by Utah Power, and will be reported in the Annual Hydrologic Report											
	Meetinghouse Canyon	**MCH01**	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
	Rilda Canyon	**RCF1***	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
		RCLF1	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field
		RCLF2	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field
		RCF2	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field
		RCF3	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
		RCW4	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
			* Baseline flow will be measured adjacent to EM-163											
	Mill Fork Canyon	**MFA01**	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
		MFB02	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
		MFU03	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline

PACIFICORP

ENERGY WEST MINING COMPANY

HYDROLOGIC MONITORING SCHEDULE

DEER CREEK MINE

GROUNDWATER HYDROLOGY - BASELINE SAMPLING (Table 2) - 2011

Groundwater Type			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Springs	***East Mountain***	***(Includes Mill Fork Springs)***							Baseline	Flow *	Flow *	Baseline		
										* Recession Springs				
	East Mountain-Rilda Canyon		Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
~~***In-Mine***~~	~~***Deer Creek***~~				~~Baseline~~			~~Baseline~~			~~Baseline~~			~~Baseline~~
~~***Wells***~~	~~***Cottonwood Canyon Wells***~~		~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~
	~~***Deer Creek Waste Rock Well***~~				~~Baseline~~			~~Baseline~~			~~Baseline~~			~~Baseline~~
	~~***Deer Creek In-Mine Well***~~				~~Level~~			~~Level~~			~~Level~~			~~Level~~
	Rilda Canyon Wells		Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level

UPDES SAMPLING - (Table 1)

			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mine Water Discharge	***Deer Creek***	**DCD**	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
Sediment Pond Discharge	***Deer Creek***	**1 Outfall**	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational

PACIFICORP

ENERGY WEST MINING COMPANY

HYDROLOGIC MONITORING SCHEDULE

DEER CREEK MINE

SURFACE HYDROLOGY - RECLAMATION SAMPLING (Table 1)

Drainage System	Drainage	Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cottonwood Creek Drainage System*	***Joes Valley***	**ICA**	Based Flow Monitoring Only (October or November)									Operational		
	Indian Creek	**ICD**	Based Flow Monitoring Only (October or November)									Operational		
		ICB	Based Flow Monitoring Only (October or November)									Operational		
Huntington Drainage System*	***Deer Creek***	**DCR01**			Operational			Operational			Operational			Operational
		DCR04			Operational			Operational			Operational			Operational
		DCR06			Operational			Operational			Operational			Operational
	Huntington Creek	**HCC01**			Operational**			Operational**			Operational**			Operational**
		HCC02			Operational**			Operational**			Operational**			Operational**
		HCC04			Operational**			Operational**			Operational**			Operational**
			*** Flow in Huntington Creek is measured @ HCC01 by Utah Power, and will be reported in the Annual Hydrologic Report*											
	Meetinghouse Canyon	**MCH01**			Operational			Operational			Operational			Operational
	Rilda Canyon	**RCF1*** **			Operational			Operational			Operational			Operational
		RCLF1			Field			Field			Field			Field
		RCLF2			Field			Field			Field			Field
		RCF2			Field			Field			Field			Field
		RCF3			Operational			Operational			Operational			Operational
		RCW4			Operational			Operational			Operational			Operational
			*** Baseline flow will be measured adjacent to EM-163*											
	Mill Fork Canyon	**MFA01**	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
		MFB02	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
		MFU03	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational

** Analyzed for Baseline Parameters During the Fifth (5) and Ninth (9) Year After Final Reclamation*

In no case will baseline sampling time frame exceed 5 years converting from operational to reclamation monitoring.

PACIFICORP

ENERGY WEST MINING COMPANY

HYDROLOGIC MONITORING SCHEDULE

DEER CREEK MINE

GROUNDWATER HYDROLOGY - RECLAMATION SAMPLING (Table 2)

Groundwater Type

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Springs	**East Mountain (Includes Mill Fork Springs)**							Operational			Operational		
	Spring monitoring will be conducted until permit area reduction approval or unless otherwise approved by the Division.												
	East Mountain-Rilda Canyon	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
	Rilda Spring monitoring will be conducted until permit area reduction approval or unless otherwise approved by the Division.												
	Spring monitoring will be conducted until permit area reduction approval or unless otherwise approved by the Division.												
~~***In-Mine***~~	~~**Deer Creek samples will be collected and analyzed quarterly until the mine is sealed or the sites become inaccessible**~~												
~~***Wells***~~													
	~~**Cottonwood Canyon Wells***~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~	~~Level~~
	~~*Cottonwood Canyon well monitoring will be conducted until permit area reduction approval or unless otherwise approved by the Division.*~~												
	~~**Deer Creek Waste Rock Well**~~			~~Operational~~			~~Operational~~			~~Operational~~			~~Operational~~
	~~*Deer Creek Waste Rock Well will sealed during Phase I reclamation. One water sample will be collected and analyzed per location quarterly until well sealing*~~												
	Rilda Canyon Wells*	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
	Rilda Canyon well monitoring will be conducted until permit area reduction approval or unless otherwise approved by the Division.												
	** Monitored monthly subject ot access*												

UPDES SAMPLING - (Table 1)

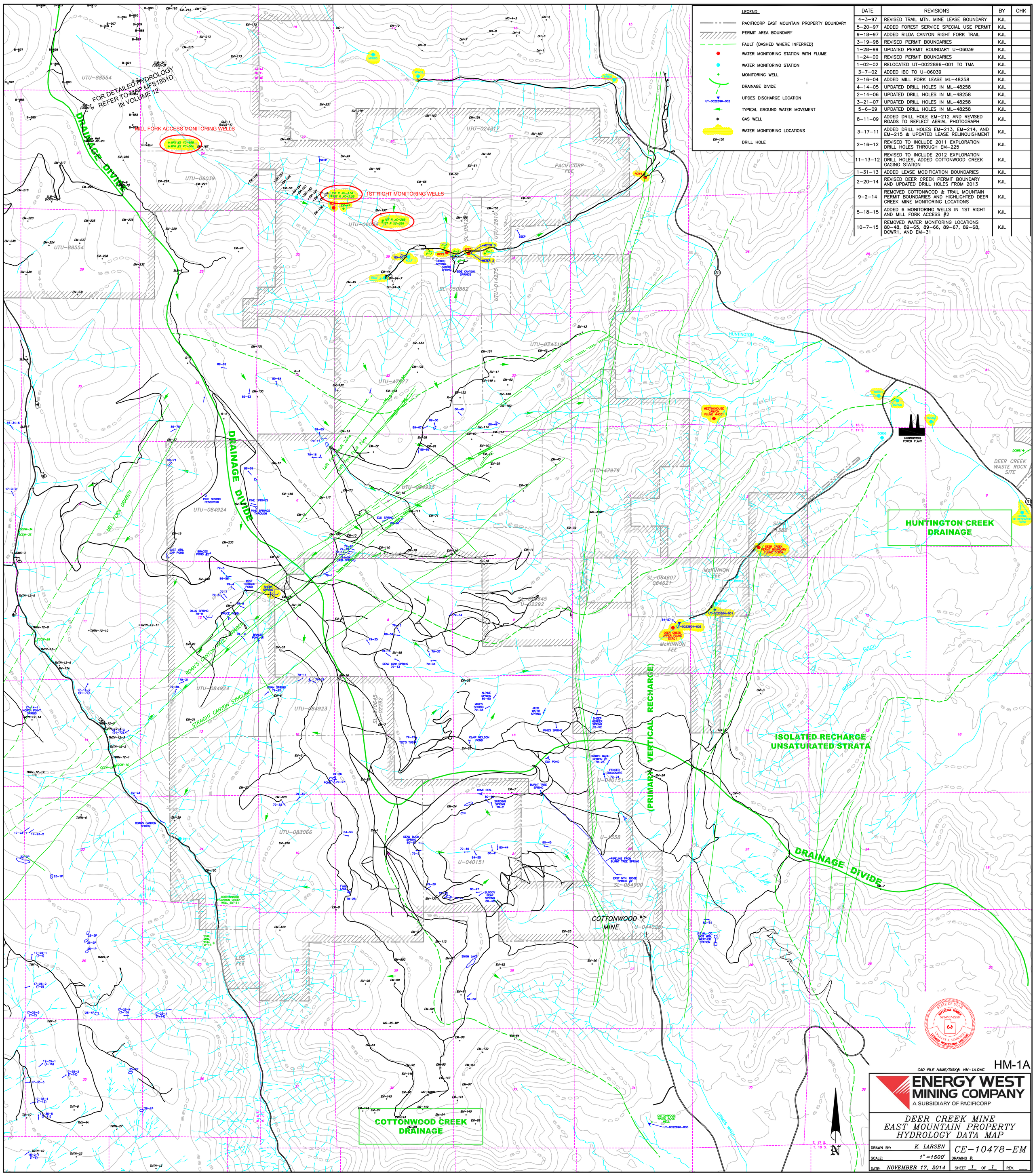
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mine Water Discharge**	***Deer Creek***	**DCD**	As Needed Basis According to UPDES Permit Stipulations											
	***** After Portal Sealing, PacifiCorp Will Monitor Down Dip For Development Of Groundwater Seeps/Springs Until Bond Release***													
Sediment Pond Discharge	***Deer Creek***	**1 Outfall**	As Needed Basis According to UPDES Permit Stipulations											

PacifiCorp

Interwest Mining Company

Amendment to Reduce the Hydrologic Monitoring Program

Replace Volume 9, Appendix A-1, Map HM-1A



LEGEND

- PACIFICORP EAST MOUNTAIN PROPERTY BOUNDARY
- PERMIT AREA BOUNDARY
- FAULT (DASHED WHERE INFERRED)
- WATER MONITORING STATION WITH FLUME
- WATER MONITORING STATION
- MONITORING WELL
- DRAINAGE DIVIDE
- UT-0022896-002 — UPDES DISCHARGE LOCATION
- TYPICAL GROUND WATER MOVEMENT
- GAS WELL
- WATER MONITORING LOCATIONS
- EM-150 — DRILL HOLE

DATE	REVISIONS	BY	CHK
4-3-97	REVISED TRAIL MTN. MINE LEASE BOUNDARY	KJL	
5-20-97	ADDED FOREST SERVICE SPECIAL USE PERMIT	KJL	
9-18-97	ADDED RILDA CANYON RIGHT FORK TRAIL	KJL	
3-19-98	REVISED PERMIT BOUNDARIES	KJL	
1-28-99	UPDATED PERMIT BOUNDARY U-06039	KJL	
1-24-00	REVISED PERMIT BOUNDARIES	KJL	
1-02-02	RELOCATED UT-0022896-001 TO TMA	KJL	
3-7-02	ADDED IBC TO U-06039	KJL	
2-16-04	ADDED MILL FORK LEASE ML-48258	KJL	
4-14-05	UPDATED DRILL HOLES IN ML-48258	KJL	
2-14-06	UPDATED DRILL HOLES IN ML-48258	KJL	
3-21-07	UPDATED DRILL HOLES IN ML-48258	KJL	
5-6-09	UPDATED DRILL HOLES IN ML-48258	KJL	
8-11-09	ADDED DRILL HOLE EM-212 AND REVISED ROADS TO REFLECT AERIAL PHOTOGRAPH	KJL	
3-17-11	ADDED DRILL HOLES EM-213, EM-214, AND EM-215 & UPDATED LEASE RELINQUISHMENT	KJL	
2-16-12	REVISED TO INCLUDE 2011 EXPLORATION DRILL HOLES THROUGH EM-225	KJL	
11-13-12	REVISED TO INCLUDE 2012 EXPLORATION DRILL HOLES, ADDED COTTONWOOD CREEK GAGING STATION	KJL	
1-31-13	ADDED LEASE MODIFICATION BOUNDARIES	KJL	
2-20-14	REVISED DEER CREEK PERMIT BOUNDARY AND UPDATED DRILL HOLES FROM 2013	KJL	
9-2-14	REMOVED COTTONWOOD & TRAIL MOUNTAIN PERMIT BOUNDARIES AND HIGHLIGHTED DEER CREEK MINE MONITORING LOCATIONS	KJL	
5-18-15	ADDED 6 MONITORING WELLS IN 1ST RIGHT AND MILL FORK ACCESS #2	KJL	
10-7-15	REMOVED WATER MONITORING LOCATIONS 80-48, 89-65, 89-66, 89-67, 89-68, DCWR1, AND EM-31	KJL	

HM-1A

CAD FILE NAME/DISK#: HM-1A.DWG

ENERGY WEST MINING COMPANY
A SUBSIDIARY OF PACIFICORP

DEER CREEK MINE
EAST MOUNTAIN PROPERTY
HYDROLOGY DATA MAP

DRAWN BY: K. LARSEN
SCALE: 1"=1500'
DATE: NOVEMBER 17, 2014
CE-10478-EM
DRAWING #:
SHEET 1 OF 1
REV.