

Bronco Utah Operations LLC
PO Box 527
Emery Utah, 84522
801-286-2301

October 30, 2017

VIA E-MAIL

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

C/015/0015
Received 10/31/17
Task #5554

**RE: Bronco Utah Operations LLC
Emery Mine
DOGM Permit No. C/015/0015
Emery 2 Subsidence Monitoring Plan Revision**

Mr. Haddock:

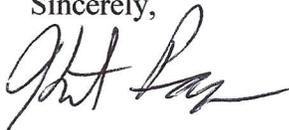
Please consider this a minor revision to the above mentioned permit which includes an executed C1 form, C2 form, revised pages, and Plate.

This submittal updates and revises the subsidence monitoring plan as well as Plate V-5 depicting the proposed and existing subsidence monitoring points. Several historical monitoring points were adjusted on the map to reflect their actual field surveyed locations. The proposed subsidence monitoring points that were not set will be removed from the map.

After historical review of the subsidence survey data included in the annual report, Bronco is proposing to discontinue monitoring of the points that have not experienced movement over the past 10 years.

If you have any questions concerning this request, please contact Kit Pappas at 435-286-2027.

Sincerely,



Kit Pappas
Environmental Manager

Attachment Application for Coal Permit Processing

APPLICATION FOR COAL PERMIT PROCESSING

Permit Change New Permit Renewal Exploration Bond Release Transfer

Permittee: Bronco Utah Operations LLC (BUOLLC)

Mine: Emery Mine

Permit Number: 015/0015

Title: e2 Phase II Subsidence Monitoring Plan Revision

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

Revise subsidence monitoring plan and update monitoring point locations

10/17

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: _____ Disturbed Area: _____ 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.

DAN R. BAUER
Print Name

Dan R. Bauer *Pres: CEO*
Sign Name, Position, Date 10/30/2017

Subscribed and sworn to before me this 30 day of OCTOBER, 2017

John Pappas
Notary Public
My commission Expires: MARCH 7, 2018 }
Attest: State of UTAH } ss:
County of CARBON



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

The mining method used historically in most of the mine was room and pillar mining with some partial pillar removal. Partial pillar removal is designed not to result in subsidence. Full extraction mining (planned subsidence) did occur at Emery and will occur at Emery 2 in areas previously approved and designated full extraction as noted on Plate V-5. If the new Emery 2 mine plan contemplates full extraction in areas other than those depicted on Plate V-5, Bronco will submit a revision with the required pre-subsidence survey data. As a result, any subsidence outside these areas would fall into the unplanned subsidence category. CH V, Figure 1 shows the partial pillar splitting diagram employed underground. This layout is the result of past experience as well as Federal and State regulations pertaining to roof control and ventilation. All pillar splitting will be approved by MSHA. A pillar split diagram specific to full extraction is provided in CH V, Figure 2. Full extraction pillar splitting will result in subsidence.

Maximum subsidence at the Emery Mine will be approximately 50% of the extraction height. Given the current mining horizon, this would relate to 3 feet of subsidence in areas of 6-foot extraction to 5 feet of subsidence in areas of 10-foot extraction. The predicted angle of draw will range from approximately 5 degrees at 150 feet of cover, 12 degrees at 350 feet of cover and 15 degrees at 750 feet of cover or greater. Please refer to Plate V-5 (Subsidence Monitoring Points and Buffer Zones) for estimated subsidence depth isopachs.

Consol intends to prevent subsidence from affecting Quitchupah Creek, Christiansen Wash and the alluvial valley floor area on the west side of the adjacent area (Refer to Plate V-5). There will be no full extraction within the designated buffer zones. An intermittently occupied dwelling in Section 30 will also be protected from subsidence. As of the date of this writing, a subsidence waiver has not been obtained on this dwelling. At such time as a waiver is obtained, the Division shall be notified and the buffer around this dwelling will be removed. Other than these features, the presubsidence survey and our knowledge of the permit area confirms there are not any structures overlying present or future underground workings for which mitigation of subsidence effects would be overly difficult.

The three above noted features will be protected by establishing buffer zones which in turn are created by leaving coal pillars of adequate size beneath these areas. The dimensions of the buffer zone will be determined by the overburden depth and the angle of draw. With respect to Quitchupah Creek and Christiansen Wash, the buffer zone will include an additional standoff distance of 100 feet on either side, as required by UMC 817.57. The pillar dimensions are based on established geotechnical information and a factor of safety for long-term pillar stability. The partial pillar splitting design data can be found at CH V Page 28a, 28b, and 28c. A pillar split plan sketch can be found at CH V Page 28 and Figure V-1 on CH V Page 28d. As can be seen from the following design data, this partial pillar splitting plan will not result in subsidence and is considered unplanned subsidence per the MRP.

Replaced 12/2004
Revised 1/2005, 8/2006, 2/2007, 9/2008, 5/2009
Revised 10/2017

V-B.2 Subsidence Survey and Monitoring Plan

1.0 Pre-Subsidence Survey

1.1 Pre-Subsidence Surveys Conducted per R645-301-525.100

- 1.1.1 Pre-mining elevations and gradients of any irrigation ditches and pond embankments within the angle of draw will be established.
- 1.1.2 The pre-subsidence survey and Plates will be compiled or updated 6 months prior to full extraction and copies provided to the surface landowner, DOGM, and the water conservancy per R645-301-525-130.

2.0 Control and Subsidence Monitoring Point Installation

2.1 Control Points

- 2.1.1 A series of survey control points (base survey stations) will be established outside the theoretical angle of draw for a particular area of mining. New control points will be established as the area of mining expands using Kinematic GPS survey methods.
- 2.1.2 Control points will be set in a manner that will provide stability against monument movement and frost heave. Methods may include caps or steel bars set in concrete, steel bars embedded to refusal, or caps set in stone.
- 2.1.3 Plate V-5 depicts existing control points.

2.2 Subsidence Monitoring Points

- 2.2.1 Subsidence monitoring points will, at a minimum, be established as depicted on Plate V-5:
 - At a point coincident to the geometric center of high extraction panels
 - At periodic intervals over mains and sub mains
- 2.2.2 Subsidence monitoring points will be set in a manner that will provide stability against monument movement and frost heave. Methods may include caps or steel bars set in concrete, steel bars embedded to refusal, or caps set in stone.
- 2.2.3 Plate V-5 depicts existing and proposed subsidence monitoring points.

3.0 Subsidence Monitoring Point Survey Protocol

3.1 Initial Pre-Mine Survey Protocol

- 3.1.1 New subsidence monitoring points shall be surveyed using Kinematic GPS survey methods that are tied to a control point that has been surveyed within 6 months prior with no movement found. The initial survey will have horizontal and vertical accuracy of at least 0.10 feet.

Replaced 10/2017

- 3.1.2 Initial survey of subsidence monitoring points will be completed at least three months prior to mining activities within the angle of draw.
- 3.1.3 Subsidence monitoring points will be surveyed annually thereafter.
- 3.2 Active Mining Survey Protocol:
 - 3.2.1 Subsidence monitoring points over partial pillar sections where no significant movement (± 0.5 feet) was found will be surveyed annually using Kinematic GPS survey methods. Points over advancing mains and sub mains need not be resurveyed unless there has been evidence underground (such as massive caving) that indicates subsidence may have taken place above them. Once these sections, mains or sub mains have been sealed, resurveys shall take place every two years.
 - 3.2.2 If a surveyed subsidence monitoring point demonstrates significant movement (± 0.5 feet), the Division shall be notified of the survey differences and the point resurveyed at 6-month intervals until no movement is indicated. Subsidence monitoring points where there is no longer significant movement will be surveyed annually.
 - 3.2.3 Resurveys of a subsidence monitoring point that exhibits significant movement will consist of a survey with horizontal and vertical accuracy of at least 0.10 feet.
 - 3.2.4 Irrigation ditches and pond embankments depicted in the pre-subsidence survey will be resurveyed after full extraction.

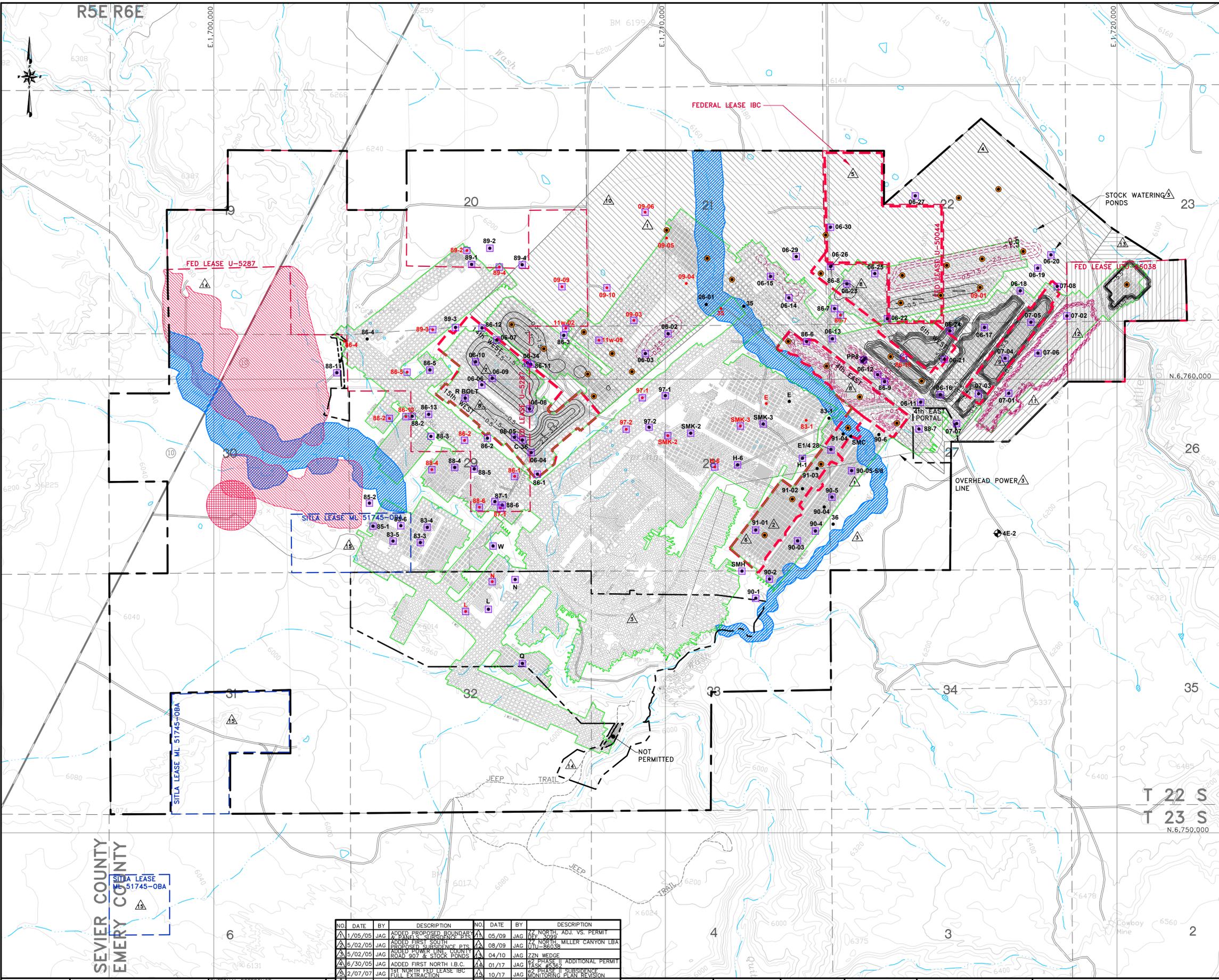
4.0 Subsidence Monitoring Point Inspection Protocol

- 4.1 In Emery sealed old works areas that experience significant movement:
 - 4.1.1 Since additional mining is not contemplated at this time within the Emery mined area depicted on Plate V-5, subsidence monitoring inspections in areas where subsidence has occurred will be completed on a quarterly basis.
 - 4.1.2 A record of this inspection will be forwarded to the Division and kept at the mine
- 4.2 In Emery 2 areas that experience significant movement:
 - 4.2.1 A mine representative will inspect monthly the surface area outlined on Plate V-5 as full extraction areas (planned subsidence) when pillar splitting begins and continue until the subsidence monitoring points indicate there is no significant movement.
 - 4.2.2 Irrigation ditches and pond embankments depicted in the pre-subsidence survey will be visually inspected monthly when pillar splitting begins and continue for 6 months.
 - 4.2.3 A record of this inspection will be forwarded to the Division and kept at the mine office.

5.0 Subsidence Monitoring Reporting Protocol

5.1 A subsidence monitoring report will be provided to DOGM as part of the Annual Subsidence monitoring reports shall contain the following information:

- Maps showing where pillars have been pulled
- Maps showing the location of subsidence monitoring stations
- The surface monitoring points above the areas outlined on Plate V-5 as full extraction areas (planned subsidence) that experience significant movement will have photographs recorded post-subsidence
- Differential level and horizontal survey summary
- Brief narrative explaining any "significant movement" and any action the applicant has taken to mitigate the effects of such movement or any tension or compression features visible on the surface



LEGEND	
	PERMIT AREA BOUNDARY
	ADJACENT AREA FOR NON-WATER RESOURCES. FOR THE AREA OF HYDROLOGIC EVALUATION, SEE PLATE VI-4
	AVF BUFFER ZONES
	STREAM BUFFER ZONES (NO FULL EXTRACTION)
	STRUCTURAL BUFFER ZONES
	SUBSIDENCE MONITORING POINT (CURRENTLY BEING MONITORED)
	SUBSIDENCE MONITORING POINT (ACTUAL SURVEYED POINT LOCATION)
	SUBSIDENCE MONITORING POINT (TO BE REMOVED FROM MONITORING PLAN)
	PROPOSED MONITORING POINT (TO BE REMOVED FROM MAP)
	SURVEYED CONTROL POINT
	PREVIOUSLY APPROVED FULL EXTRACTION
	EMERY PREVIOUSLY MINED OLD WORKS
	AREA TO BE FULLY EXTRACTED
	PREDICTED DEPTH OF SUBSIDENCE ISOPACHS
	PREDICTED DEPTH OF SUBSIDENCE ISOPACHS TO BE DELETED, FULL EXTRACTION DID NOT TAKE PLACE

SEVIER COUNTY
EMERY COUNTY

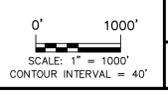
SITLA LEASE ML 51745-08A

BASE MAP:
U.S.G.S. 7.5 MINUTE QUADRANGLE'S EMERY WEST 1968,
EMERY EAST 1968, PHOTO REVISED 1978,
MESA BUTTE 1968, PHOTO REVISED 1978,
WALKER FLATS 1968, PHOTO REVISED 1978.

COORDINATE SYSTEM:
STATE PLANE COORDINATES,
NAD 83 CONUS,
ZONE 1302-UTAH, CENTRAL - US FEET
VERTICAL DATUM - NAVD 88-US FEET

EXTERNAL REFERENCE:
© UC1665\05\XREF\EMERY_FINAL_PERMIT-62P2-FE-17
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NO	DATE	BY	DESCRIPTION	NO	DATE	BY	DESCRIPTION
1	05/05	JAG	ADDED PROPOSED BOUNDARY	11	05/09	JAG	12 NORTH ADJ. VS. PERMIT
2	05/02	JAG	ADDED FIRST SOUTH	12	08/09	JAG	14 WEST MILLER CANYON LBA
3	05/02	JAG	ADDED POWER LINE POINT	13	04/10	JAG	ZZN WEDGE
4	06/30/05	JAG	ADDED FIRST NORTH I.B.C.	14	01/17	JAG	PHASE II ADDITIONAL PERMIT
5	02/07/07	JAG	151 NORTH FED LEASE IBC	15	10/17	JAG	PHASE II SUBSIDENCE MONITORING PLAN REVISION
6	09/05	JAG	151 SOUTH FULL EXTRACTION				
7	04/07	JAG	141 WEST FULL EXTRACTION				
8	07/07	JAG	141 WEST 6TH WEST AND				
9	03/08	JAG	4TH EAST FULL EXTRACTION				
10	09/08	JAG	LIFE OF MINE FULL EXTRACTION				



DRAWN BY: SWF
CHECKED BY: JAG
APPROVED BY: JAG

ORIGINAL DATE: 1/03
RE-DRAWN DATE: 12/05
DWG DATA: G:\UC1665\05\PHASE II DWG

EMERY MINE
EMERY COUNTY, UTAH
PERMIT NO.
ACT015/015

BRONCO UTAH OPERATIONS, LLC
P.O. BOX 1
PRICE, UT 84501

PLATE V-5
SUBSIDENCE MONITORING POINTS AND BUFFER ZONES

