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

October 10, 2018

C/015/0015
Received 10/12/18
Task #5769

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

RE: Bronco Utah Operations LLC
Emery Mine
DOGM Permit No. C/015/0015
Emery 2 Full Extraction 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 Plates.

This submittal updates a previous pre-subsidence survey on the surface south of Quitchupah Creek and requests approval to conduct full extraction mining and planned subsidence of the surface. Surface owner agreements will be obtained prior to any full extraction within a given tract not controlled by Bronco.

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

Sincerely,

Kit Pappas
Environmental Manager

Attachments 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:** 015/015
Title: Emery 2 Full Extraction
Description, Include reason for application and timing required to implement:
Emery 2 Full Extraction 10/18

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.

BART J. HYITA — PRESIDENT + CEO 10/10/18
Print Name — Sign Name, Position, Date

Subscribed and sworn to before me this 10 day of OCTOBER, 2018

Notary Public

My commission Expires: MARCH 7, 2022
Attest: State of UTAH } } ss:
County of CARBON

JOHN CHRISTOPHER PAPPAS
Notary Public - State of Utah
My Commission Expires
March 7, 2022
COMMISSION NUMBER 698870

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

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

Permittee: Bronco Utah Operations LLC (BUOLLC)
Mine: Emery Mine **Permit Number:** 015/015
Title: Emery 2 Full Extraction 10/18

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	CH V Table of Contents page 1
☐ Add	☒ Replace	☐ Remove	CH V page 27
☐ Add	☐ Replace	☐ Remove	
☒ Add	☐ Replace	☐ Remove	CH V App V-8 (Pre-subsidence Survey south of Quitchupah Creek, EarthFax 12/2017)
☐ Add	☐ Replace	☐ Remove	
☐ Add	☒ Replace	☐ Remove	CH V page 28
☐ Add	☐ Replace	☒ Remove	CH V pages 29 through 35
☐ Add	☐ Replace	☐ Remove	
☐ Add	☐ Replace	☐ Remove	
☐ Add	☒ Replace	☐ Remove	CH V Plate V-5 Subsidence Monitoring Points and Buffer Zones
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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**

CHAPTER V

GEOLOGY AND SUBSIDENCE

PARTS

APPENDICES

PLATES

Revised 5/2007, 3/2008, 1/2009, 5/2009
Revised 1/2018, 10/2018

The method used historically in most of the mine was room and pillar mining with some partial pillar extraction~~removal~~. Partial pillar extraction~~removal~~ is designed not to result in subsidence. Full extraction mining (planned subsidence) did occur above the ~~at~~sealed Emery Mine old works and will occur above~~at~~ the Emery 2 mine plan 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 as full extraction 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 design~~,~~ or pillar splitting (whether partial pillar extraction or full extraction) 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.~~

Bronco~~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 no 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 Pages 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.~~

Chapter V pages V-28 through V-35 have been removed. These pages included pillar stabilit~~u~~y design pertaining to the sealed Emery old works and are not pertinent to the Emery 2 mine plan.

Replaced 12/2004
Revised 1/2005, 8/2006, 2/2007, 9/2008, 5/2009
Revised 1/2018 ~~Revised~~, 10/2018

Pre-Subsidence Survey
Prior to Full Extraction,
Emery 2 Portal,
South of Quitchupah Creek

Bronco Utah Operations, LLC
Emery County, Utah

December 2017

EarthFax **EarthFax Engineering Group, LLC.**

Engineers / Scientists
www.earthfax.com

TABLE OF CONTENTS

FIGURES

ATTACHMENTS

PRE-SUBSIDENCE SURVEY PRIOR TO FULL EXTRACTION, EMERY 2 PORTAL, SOUTH OF QUITCHUPAH CREEK

CHAPTER 1

INTRODUCTION

The purpose of this report is to present baseline surface conditions prior to full extraction operations from the Emery 2 portal of the Bronco Utah Operations, LLC. (Bronco) Emery Mine, Emery County, Utah. The areas covered in this report include the following:

- Boxcut
- Mains
- Sub-Panel-01
- Panel-01 through Panel-03
- Panel-04-Rt through Panel-07-Rt
- The southern ¾ of Panel-13-Rt
- The area south of the Emery 2 Mains south to the Adjacent Area Boundary, excluding the southern portion of the Sitla Lease ML 51745-0BA (refer to Plate V-5).

In 1980, CONSOL commissioned a pre-subsidence survey covering the entire mine permit area. Three subsequent pre-subsidence surveys were commissioned; two in 2007 and one in 2008 to update the condition of surface features identified in 1980 prior to proposed full extraction of underlying panels. This pre-subsidence survey covers the southern portion of the mine plan, south of Quitchupah Creek, accessed through the Emery 2 portals (refer to Plate V-5).

This document is intended to be part of a Subsidence Control Plan as required in Section R645-301-525.100 of the Utah Administrative Code. Recording initial surface conditions will

facilitate locating and mitigating areas determined to be adversely affected by future subsidence. As part of the pre-subsidence survey, the locations and conditions of the following features were recorded:

- Structures (e.g. buildings, corrals, and roads)
- Fences
- Utilities (e.g. power, water lines, irrigation pivots, and water wells)
- Surface drainages (e.g. natural channels, irrigation ditches, and ponds)

This report references the original Pre-subsidence Survey performed prior to mining operations in 1980 (Valley Engineering, 1980). The feature numbers given in this document correspond to those described in the 1980 report. These features were surveyed in the field in November 2017, and any differences and/or changes from the conditions noted during the 1980 survey are noted both in the text and figures of this document. This report supersedes the Valley Engineering survey where conflicts exist.

CHAPTER 2
SURVEY AREA OBSERVATIONS

2.1 GENERAL AREA DESCRIPTION

This pre-subsidence survey covers approximately 1,265 acres of primarily undeveloped land, of which approximately 360 acres are irrigated fields or grazing pastures. The ground surface is generally flat with some small, steep hills formed by eroded washes and resistant bedrock outcrops. A perennial stream named Quitchupah Creek is generally outside of, but parallel to the eastern border of the survey area and drains in a general southeasterly direction. This stream receives irrigation return flow from surrounding agricultural land via a complex network of irrigation ditches, piping, and storage ponds.

Structures within the survey area include a ranch house, outbuildings, and corrals located near the southern farm lands, all of which are in dilapidated condition and appear to be decades old. A double wide manufactured home, in good condition, sits near the western edge of the northern farm lands and serves as the primary residence of the landowner controlling most of the property in the survey area. A large metal shed and fuel tanks, all in fair condition, sit nearby. A wooden shed, ranch house, and outhouse, all in dilapidated condition, are also present. A large corral and silo, both in good condition, are situated on the northern edge of the northern farm lands. On the southern edge of these same farm lands are two abandoned cabins. With the exception of the manufactured home, metal shed, and the corrals and silo located north of the northern farm lands, nearly all other structures are constructed of unfinished or rough cut timbers, cider block, or adobe, are in dilapidated condition, and appear to have been present for decades. There are several fences in the area in various states of repair. Most of the fences are constructed with barbed wire strung between posts made from natural rough cut tree limbs. Some fences use finished lumber fence posts or metal tee-stakes and tubing. There is one gravel-surfaced road, one semi-improved dirt road, and numerous unimproved dirt roads in the survey

area. The gravel-surfaced road is in good condition, and the dirt roads range from good to poor condition.

Utilities within the survey area include overhead power lines; a pressurized irrigation system that has been partially constructed and will be expanded during the spring and summer of 2018 that consists of buried water lines, buried power lines, and pivots; a city waterline feeding the manufactured home; and two water wells, both of which are believed to be abandoned. Bronco has entered into, or will enter into prior to full extraction, a Power Line Repair Agreement with Rocky Mountain Power to mitigate subsidence damage to power lines within the full extraction area.

All of the features (structures, fences, roads, drainages, utilities, etc.) located during the pre-subsidence survey are shown on Figure 1. Photographs of each feature evaluated during this survey are provided in Attachment A. Latitude and Longitude data provided on these photographs are georeferenced by the field camera and are considered to be generally approximate.

2.2 INDIVIDUAL FEATURE DESCRIPTIONS

Each numbered feature on Figure 1, within the current survey area, is described below. The numbers for each feature are identical to those used in the 1980 Pre-Subsidence Survey. Site Photographs are found in the back of this report.

Feature 1. Ranch House, Buildings, and Corrals. The description of this feature has been updated from the Valley Engineering (1980) report. The ranch house, buildings, and corrals all appear to be several decades old and are in dilapidated condition. The rough cut wood walls of the ranch house are intact, however, the adobe walls are beginning to crumble. The walls in a framed wood extension, built onto the eastern side of ranch house, have failed and the roof in

that section of the house has collapsed. One corner of the cinder block building has collapsed. The remaining buildings and corrals are constructed of rough wood logs and rough cut boards. The wood roofs on these building are failing. The corrals are unusable and have mostly fallen to the ground. There are several types of fences in the area; the most common was barbed wire or wire mesh on the bottom with barbed wire above the mesh. Fence posts were mainly steel or rough cut tree limbs.

Feature 2. Irrigation Ditch and Bridge. The description of this feature has been updated from the Valley Engineering (1980) report. The bridge is approximately 120 yards west of the ranch buildings (Feature 1). The earthen ditch, which flows from north to south, is approximately 2½ to 3 feet wide and 1-1½ feet deep and did not contain any water. The ditch widens to 3 to 4 feet where it crosses underneath the road leading to the ranch and then narrows to its normal width. The northern portion of the 15 foot wide bridge is constructed of 7 feet of railroad ties placed perpendicular to the ditch. The southern 8 foot portion of the bridge consists of two parallel 12" diameter CMP pipes covered in soil. The bridge, though usable, is in poor condition.

Feature 3. Ranch Fence Line. The description of this feature has been updated from the Valley Engineering (1980) report. This fence line is located west of the ditch in Feature 2. The fence posts are natural rough cut tree limbs. The fencing fabric consists of wire mesh and two strands of barbed wire above the mesh. It is approximately 4 feet from the ground to the upper barbed wire strand. The fence is in fair condition. A metal gate in the fence line controls access to the ranch house (Feature 1). South of this location, the fence line becomes a 4-strand barb wire fence, constructed of natural wood posts with intermittent steel t-posts. This section of fence is also in fair condition.

Feature 4. Ranch Access Road. The description of this feature has been updated from the Valley Engineering (1980) report. Most of this single lane road is surfaced with natural clay

material; however in some areas, gravel has been placed to improve the road's condition. Mounds of soil on either side of the road indicate it has been bladed numerous times to remove rutting formed from vehicle travel when the surface of the road was saturated from precipitation.

Feature 5. Utility Power Lines. This feature is essentially unchanged from how it is described in the Valley Engineering (1980) report, which states the following: "These power lines are located approximately 200 yards to the west of the ranch buildings (Feature 1). The poles run north and south and are approximately 40 feet high." It appears that several of the poles have been replaced since the 1980 survey. The poles are in good condition.

Feature 6. Pond. The description of this feature has been updated from the Valley Engineering (1980) report. The pond, cut into a small hill on its northwestern corner and diked on the surrounding edges, is roughly square in shape and measures approximately 75 feet x 75 feet x 5 feet deep. A black plastic liner is exposed at numerous locations around the dike. Exposure to the elements has severely degraded the liner and it is no longer functional. An erosion channel has formed on the slope at the northwest corner of the pond. The pond is dry and it appears that it has been quite some time since it has held water. A fence, constructed of natural rough cut tree limbs, surrounds the pond. The fencing material consists of wire mesh with one strand of barb wire at the top. The fence is in dilapidated condition.

Feature 8. Well. The description of this feature has been updated from the Valley Engineering (1980) report. This well is located approximately 20 yards north of the stock pond (Feature 6). A 6 foot by 8 foot wide wood shed set on a concrete slab surrounds the well casing. The well appears to be abandoned. Piping extending from the well head has been disconnected. The overhead power line from the nearby power pole has been cut. A portion of this line dangles from the power pole.

Feature 9. Farm Lands. The description of this feature has been updated from the Valley Engineering (1980) report. These lands are part of the ranch (Feature 1) and are located to the south and east of the ranch buildings. The area is fenced on all four sides with a center fence dividing the upper third from the lower two thirds. Although the field was historically planted with hay and grasses, it appears that the area has not been actively farmed for numerous years. A 12 foot by 16 foot by 10 inch thick concrete pad for a new irrigation pivot is installed on the southwestern corner of the farm lands.

Feature 10. Irrigation Ditch. The description of this feature has been updated from the Valley Engineering (1980) report. This earthen ditch is located approximately 50 to 75 yards north of the stock pond (Feature 6). The ditch, at the photo location, is cut through a small rise in the terrain and its banks are approximately 6 to 7 feet tall. Both upstream and downstream from the photograph, the ditch shallows to about 1.5 feet in depth. The irrigation ditch is dry. Underground irrigation piping and pivots are being installed in the farm land that this ditch feeds with water. After completion of the pressurized irrigation system, this ditch will likely be abandoned.

Feature 11. Unimproved Dirt Road. The description of this feature remains unchanged from that described in the Valley Engineering (1980) report, which states the following: "This two-track, single lane dirt road is a typical example of the many dirt roads that are in the survey area. Most of the roads, including this one, have natural clay surfaces, while a few have some shale as part of the surface material."

Feature 15. Pond. The description of this feature has been updated from the Valley Engineering (1980) report. The pond, constructed of earthen berms, is roughly circular in shape with a diameter of approximately 100 feet. The floor of the pond slopes from northwest to southeast. The deepest part of the pond is approximately 3 feet in depth. The east bank has been breached. Sagebrush and native plants are growing in the pond at the approximate plant density

as the surrounding area outside the pond. The pond is dry and its current condition indicates that it has been quite some time since it has been used.

Feature 17. Barbed Wire Fence. The description of this feature has been updated from the Valley Engineering (1980) report. This feature no longer exists. It was removed for expansion of the farm land (Feature 32). Many additional barbed wire fences exist throughout the survey area and are described in other features listed in this report.

Feature 22. Dry Wash. The description of this feature has been updated from the Valley Engineering (1980) report. This wash is typical of the many larger washes in the area. The average depth of the wash is approximately 20 feet deep and its width is approximately 20 to 30 feet in width.

Feature 23. Grassy Area. The description of this feature has been updated from the Valley Engineering (1980) report. This area is in a surface depression that is approximately 3 to 4 feet below the surrounding terrain. It is bordered by sagebrush on all sides. During rainy periods, this low lying area collects enough water to support grasses. Water exits the east end of this area, draining into several dry washes.

Feature 24. Irrigation Ditch Junction. The description of this feature remains essentially unchanged from that described in the Valley Engineering (1980) report, which states the following: "In this area, a small earthen ditch divides to become two smaller ditches each about 1½ feet to 2 feet wide and 6 inches to 12 inches deep." This irrigation ditch junction is dry. Underground irrigation piping and pivots are being installed in the farm land that these irrigation ditches feed with water. After completion of the pressurized irrigation system, these ditches will likely be abandoned.

Feature 25. Grassy Area. The title and description of this feature have been updated from the Valley Engineering (1980) report. Although the Valley Engineering report identified this area as "wetlands" and listed three possible water sources, "from a small natural creek, from irritations ditches, and possibly some natural springs", no active water sources were identified. This grassy area has been heavily grazed over the summer. Alkaline salt deposits in a low lying area immediately east of the grassy area provides evidence that drainage flows from west to east.

Feature 26. PVC Pipe Water Depth Gauge. The title of and description of this feature have been updated from the Valley Engineering (1980) report. There are two PVC pipe water depth gauges located in the large wash just to the southwestern corner of the settlement pond. Each PVC pipe water depth gauge consists of a 5 foot long by 2 inch diameter PVC pipe with thread caps installed on both ends and attached vertically to a sawed 4 inch square wood post buried in the earth. The lower end of the pipe is mounted approximately 6 inches above soil level. The caps have drilled holes to allow entry of water into the pipe. As water enters the holes in the PVC pipe, a square wood board located inside the PVC pipe, marked with feet and inches, becomes saturated below the top of water. Peak water levels are then read by removing the wood board from the PVC pipe and taking a direct reading. A roof bolt installed in the soil near the north gauge likely serves as a reference elevation.

Feature 27. Area Roads. The description of this feature has been updated from the Valley Engineering (1980) report. The first photo shows where the road crosses Quitchupah Creek. Erosion and lack of maintenance have led to steep muddy banks in this area, making the road essentially impassable at this location. The second photo looks north along another portion of the same road located approximately 2,800 feet south of the Quitchupah Creek crossing. A deep wash, just south of this location, cuts across the road. There are many cattle hoof print marks covering the road in this photo, indicating its lack of recent vehicular use. This single lane double track road, at one time, was passable across the southern half of the permit area, but the

Quitchupah Creek crossing and several large washes cutting through the road make the road un-travelable.

Feature 32. Irrigation Ditch and Farm Land. The description of this feature has been updated from the Valley Engineering (1980) report. The farm land has been expanded in size to the north and east. The freshly plowed ground has been regraded, eliminating portions of the ditch on the west and south side of this farm land. Underground irrigation piping and an irrigation pivot have been installed in the center of this farm land. A 16 foot by 12 foot by 10 inch thick concrete slab foundation installed in 2017, as evidenced by names and a date scratched into the concrete surface on a corner of the pad, and underground power conduits have been installed in preparation for another pivot on the eastern border of this farm land. A six strand barb wire fence with rough cut 4x6 inch timbers extends east/west along the northern margin of this farm land. This fence intersects the Highway 10 right-of-way fence at its western edge. This fence is in good shape.

Feature 33. Irrigation Ditch. The description of this feature has been updated from the Valley Engineering (1980) report. A section of this feature is located within a buffer zone, depicted on Figure 1 and Plate V-5, where subsidence is not anticipated. The section of this irrigation ditch that traversed the farm land (Feature 32) has been eliminated. This ditch used to traverse the farm land (Feature 32) and continue on to feed the farm lands (Feature 9) located approximately ½ mile southeast of this location. It is our understanding that the farm lands identified in Features 9 and 32 will be watered with pressurized underground piping and pivot irrigation systems. The photo shows where the ditch was cut through at the north end of the farm land (Feature 32).

Feature 34. Culinary Well. The description of this feature has been updated from the Valley Engineering (1980) report. This feature is located within a buffer zone, depicted on Figure 1 and Plate V-5, where subsidence is not anticipated. The well, shown on Plate VI-4 as

the Lewis Well, formerly provided water for a ranch house and buildings (Feature 35) located to the north. Water is currently provided to this ranch house by Emery Town municipal water. The concrete slab poured around the well casing and which supports the small well house covering the well casing has experienced differential settlement of several inches. The slab slopes from north to south. The worst settlement has occurred at the well casing. The concrete slab surrounding the casing has cracked, separated, and dropped in elevation approximately 4 inches.

Feature 35. Ranch House and Buildings. The description of this feature has been updated from the Valley Engineering (1980) report. This feature is located within a buffer zone, depicted on Figure 1 and Plate V-5, where subsidence is not anticipated. The ranch house and buildings consists of five structures:

- A double wide manufactured home installed after the 1980 report. This home is installed on a concrete foundation that is intact with only two small cracks that are typical of cracks found in most residential home foundations. Overall, the home appears to be in good condition.
- Metal shed on a concrete slab. The metal shed is in good condition. The concrete slab is in fair condition with some cracking observed. Four elevated fuel tanks are located on the east side of the shed.
- Wood outhouse constructed of natural rough cut logs. This structure appears to be in fair condition.
- Ranch house constructed of rough sawn logs and adobe brick. The adobe walls have fallen down, exposing the north end of the house to outside elements. It is dilapidated and unlivable. A concrete structure located near the ranch house appears to be an old septic tank.
- Wood building constructed of natural rough cut logs. Intermittently placed sandstone rocks serve as a foundation for the structure. The structure is in dilapidated condition.

Feature 36. Utility Power Line. The description of this feature has been updated from the Valley Engineering (1980) report. A portion of this feature is located within a buffer zone, depicted on Figure 1 and Plate V-5, where subsidence is not anticipated. The electrical power line is a single line that supplies electricity to the ranch house and buildings (Feature 35). The poles are typical power line poles, approximately 35 feet tall and in good condition. The eastern most pole in this line, which also forms a part of the north/south power line (Feature 5) that this line ties into, leans to the south and west.

Feature 37. Feed Pens and Fence Line. The description of this feature has been updated from the Valley Engineering (1980) report. The feed pens are constructed of painted steel, are semi-portable, and are in good condition. The fence in the background of the photograph is a barbed wire fence with natural cut log posts. A portion of the fence is located within a buffer zone, depicted on Figure 1 and Plate V-5, where subsidence is not anticipated. The fence is fairly new and in excellent condition.

Feature 39. Log Cabins. The title and description of this feature have been updated from the Valley Engineering (1980) report. The corrals mentioned in the 1980 report have been removed. There are two log cabins at this location. The cabins are made of rough cut wood logs and are founded on wood or stacked rocks. Both cabins are in dilapidated condition.

Feature 40. Section Corner Marker. This feature description remains essentially the same as described in the Valley Engineering (1980) report, which states the following: "The marker is a metal cap attached to a short steel pipe. It marks the corners of Sections 29, 30, 31, and 32 of Range 6 East, Township 22 South. The marker was established in 1978." In addition to the 1980 description, there is a vertical rough cut square wood post installed approximately 1 inch south of the marker. The letters "WC" are stamped into the metal cap just beneath the "UNLAWFUL TO DISTURB" marking. The "WC", an abbreviation for Witness Corner, indicates that this marker is not installed at the exact location of the Section Corner, but is rather

an offset to the section corner. The east/west line separating Sections 30 & 29 from Sections 31 & 32 has an arrow at its west end, indicating that the actual corner is located west of this location. A check of the Public Land Survey System reveals that the actual section corner is located approximately 132 feet west. This Witness Corner was likely set because the actual Section Corner would rest in the bottom of the pond, described as Feature 41.

Feature 41. Pond. The description of this feature has been updated from the Valley Engineering (1980) report. The pond was constructed by installing an approximately 8 foot tall berm between two small hills. The berm is approximately 250 feet long and approximately 6 feet wide at its crest. The berm is located approximately 100 yards north of the section corner marker (Feature 40). A 25 foot long by 3 foot deep path has been worn through the western end of the berm. Water flows out of the pond via a 16" PVC riser. The pond was dry at the time of the survey.

Feature 43. Corrals and Grain Silo. The description of this feature has been updated from the Valley Engineering (1980) report. This feature is located within a buffer zone, depicted on Figure 1 and Plate V-5, where subsidence is not anticipated. The corrals and feeding areas are constructed of rough cut lumber, timber posts, and railroad ties and are in good condition. The gates to the corrals are made of steel pipes and are in good condition. The galvanized steel grain silo, located approximately 180 yards west of the southwestern corner of the corrals, rests on a concrete pad and is in good condition.

Feature 44. Pond, Livestock Waterer, and Water Line Air Vent. The title and description of this feature have been updated from the Valley Engineering (1980) report. The small pond observed in the area is still intact. However, the two corrals identified in the Valley Engineering report have been removed. The circular pond has a diameter of approximately 100 feet and is currently dry. A stock watering device (MiraFount 3465) installed on a 16 foot square unformed concrete pad is located roughly a 100 yards southwest of the pond. A 15" diameter corrugated

metal pipe valve box is located approximately 4 feet west of the concrete pad. A nearby water line air vent (Wade Rain PRVC 300) is installed on the underground water line feeding the farm land (Feature 32) irrigation pivot.

Feature 119. Quarter Section Corner Marker. This feature description remains the same as described in the Valley Engineering (1980) report, which states the following: "This marker is located in Range 6 East Township 22 South. It is a typical marker with a metal cap on top of a short steel pipe. This quarter section corner marker indicates the dividing point between Section 32 and 5."

Feature 120. Steel Pipes. This feature description remains essentially the same as described in the Valley Engineering (1980) report, which states the following: "These pipes are approximately 6 inches in diameter with steel caps. The pipes extend about 2½ feet to 3 feet out of the ground. There were three pipes found in this area. The purpose of these pipes is unknown." Two additions to the above description are added in this document: the steel caps are threaded and only two of the three pipes were found.

Feature 121. Section Corner Marker. This feature description remains essentially the same as described in the Valley Engineering (1980) report, which states the following: "This corner marker is located in Range 6 East Township 22 South/Township 23 South. The marker is a short steel pipe with a metal cap. It marks the intersection of Sections 32 and 33 of Township 22 S and Sections 4 and 5 of Township 23 S.". One addition to the above description is added in this document: Four pieces of rebar are installed in the ground at the north, south, east, and west quadrants. Each is approximately 15 feet away from the section corner. The rebar pieces were likely installed to anchor enhanced survey markings over the section corner for reference during an aerial survey.

Feature 126. Sinkhole. This feature was not identified in the Valley Engineering (1980) report. The sinkhole measures approximately 10 foot long by 2 foot wide by 8 feet deep. The length of the opening trends northeast/southwest. No obvious water sources feed this feature.

Feature 127. Sprinkler Pivot Foundation. This feature was constructed after the Valley Engineering (1980) report was written. The current landowner is in the process of converting from an open ditch irrigation system to a more efficient pressurized irrigation system consisting of underground buried pipe and irrigation pivots. Newly constructed pivots, pivots under construction, miscellaneous piping and piping supplies, and evidence of recent trenching were encountered in numerous farm land locations within the pre-subsidence survey area.

Feature 128. Water Line Air Vent. This feature was constructed after the Valley Engineering (1980) report was written. A water line air vent (Wade Rain PRVC 300) is installed on an underground water line. It is protected from livestock damage by metal tee posts and heavy gauge galvanized wire mesh. The current landowner is in the process of converting from an open ditch irrigation system to a more efficient pressurized irrigation system consisting of underground buried pipe and irrigation pivots. Newly constructed pivots, pivots under construction, miscellaneous piping and piping supplies, and evidence of recent trenching were encountered in numerous locations near this feature.

Feature 129. Underground Electrical Feed. This feature was constructed after the Valley Engineering (1980) report was written. Power in the utility power line (Feature 5) was tapped by installing a transformer and branch power lines on the existing pole to feed a new a power pole to the east. Power routed to the eastern pole runs down the pole, through a meter, and then enters an underground electrical conduit. A scar in the vegetation that extends west toward a new irrigation pivot suggests that power is feed to the pivot from this location.

Feature 130. Irrigation Ditch Sinkhole. This feature was disco vered by the current land owner, William Boyd Stansfield Jr., after the Valley Engineering (1980) report was written. The closest underground mining activity to this location, 2 West Submains, is located 2,665 feet away. At that distance, it is not possible that historic mining activity caused this feature to form. In addition, future mining activity is very unlikely to affect this feature, because it is located within a buffer zone, depicted on Figure 1 and Plate V-5, where subsidence is not anticipated. Per Mr. Stansfield, a sinkhole opened up across the ditch line in 2015 while the ditch contained flowing irrigation water. The hole measured approximately 5 feet in diameter with an unknown depth. The entire ditch (trapezoidal in shape, measuring roughly 4 feet wide at the top, 1.5 feet wide at the bed, and 2 feet tall) of flowing irrigation water disappeared into this hole and did not surface, he attempted to plug off the hole by installing up to 15 cubic yards of soil into the opening. It became saturated and disappeared into the hole. After turning water out of this ditch, he placed enough soil in the hole to fill it to the surface and installed a 16 inch diameter by 15 feet long length of HDPE piping to cross over the sinkhole. Since that time water has flowed through the 16 inch HDPE pipe, however, he has not exceeded approximately one half of the quantity of water in the ditch that was flowing on the day the sinkhole opened up.

Feature 131. Mine Discharge Pond No. 1. This feature was constructed after the Valley Engineering (1980) report was written. The rectangular pond measures approximately 800 feet x 130 feet x 11 feet deep. This pond is described on Plate VI-14 of the mine reclamation plan.

CHAPTER 3
CONCLUSIONS

This report summarizes pre-subsidence surface conditions for the following areas at Bronco's Emery Mine, Emery County, Utah, that will be accessed through the Emery 2 portal:

- Boxcut
- Mains
- Sub-Panel-01
- Panel-01 through Panel-03
- Panel-04-Rt through Panel-07-Rt
- The southern ¾ of Panel-13-Rt
- The area south of the Mains up to the Permit Boundary, excluding the southern portion of the Sitla Lease ML 51745-0BA

Surface features were inspected and surveyed in November 2017 prior to full extraction. Although the damage due to subsidence is generally expected to be limited, the greatest potential for adverse effects would likely be disturbances to surface drainages, ponds, roads, and utilities. A planned barrier with minimal coal extraction rates underlying the ranch house and buildings (Feature 35) will minimize potential subsidence impacts for this feature. By detailing pre-subsidence conditions in this report, it will be easier to both identify and mitigate negative impacts caused by future subsidence.

CHAPTER 4

REFERENCES

Consolidation Coal Company, 1990. Emery Mine Permit Act 015/015 Renewal. Chapter VI Volume 1 Section VI.A.3. Submitted to Division of Oil, Gas, and Mining September 9, 1990.

Valley Engineering, Inc., 1980. Consolidation Coal Company, Emery Mine, Presubsidence Survey, Structure and Renewable Resources Descriptions. Division of Oil, Gas, and Mining, Emery Permit 015/015. Chapter V, Vol. 2 of 3.

FIGURE 1

SITLA LEASE ML 51745-OBA

FED LEASE U-5237

Panel-10-L
Panel-09-L
Panel-08-L
Panel-07
Panel-06
Panel-05-L
Panel-04-L
Panel-03-L
Panel-02-L
Panel-01
SUB-NE-01
Panel-01-R
Panel-02-R
Panel-03-R
Panel-04-R
Panel-05-R
2nd Right
1st Right
Mains
1st Left
BLD2

LEGEND

- PROPERTY OWNERSHIP
- PERMIT AREA BOUNDARY
- ADJACENT AREA FOR NON-WATER RESOURCES. FOR THE AREA OF HYDROLOGIC EVALUATION, SEE PLATE VI-4
- PROJECTED MINE WORKINGS
- 2017 EMERY MINE WORKINGS
- SEALED EMERY MINE OLD WORKS
- AVF BUFFER ZONES
- STREAM BUFFER ZONES (NO FULL EXTRACTION)
- STRUCTURAL BUFFER ZONES

LEGEND-VALLEY ENGINEERING PRE-SUBSIDENCE SURVEY (1980)

- SECONDARY, HARD SURFACE
- LIGHT DUTY ROAD, HARD OR IMPROVED SURFACE
- UNIMPROVED SURFACE
- T UG — UNDERGROUND TELEPHONE LINE
- OH E — OVERHEAD POWER LINE
- JEEP TRAILS
- NATURAL STREAMS
- DRY WASHES
- IRRIGATION DITCHES
- FENCE LINE
- POND
- CORRAL AREA
- CATTLE GUARD
- BRIDGE
- WELLS
- BUILDINGS
- 52 FEATURE

LEGEND-EARTHFAX ENGINEERING PRE-SUBSIDENCE SURVEY (2017)

- SURVEY AREA BOUNDARY
- PAVED COUNTY ROAD (MAPPED 2017)
- FENCE LINE (SURVEYED 2017)
- OH E — OVERHEAD POWER LINE (SURVEYED 2017)
- 25 FEATURE (MAPPED 1980/UPDATED 2017)
- 128 FEATURE (MAPPED 2017)
- 17 FEATURE REMOVED
- BUILDINGS (MAPPED 2017)
- WELL (MAPPED 1980/SURVEYED 2017)
- NON-VERTICAL POWER POLE (SURVEYED 2017)

NOTES:

1. IN 1980, VALLEY ENGINEERING WAS COMMISSIONED TO PERFORM A PRE-SUBSIDENCE SURVEY COVERING THE ENTIRE EMERY MINE PERMIT AREA. FEATURES SUCH AS: ROADS, FENCES, STREAMS, IRRIGATION DITCHES, BRIDGES, WELLS, AND OTHER ITEMS WERE RECORDED IN THE FIELD AND DEPICTED ON HAND DRAWN MYLAR MAPS. FOR THIS UPDATE, THE INFORMATION CONTAINED ON THE 1980 MAPS WAS DIGITIZED AND OVERLAIN ON THE AERIAL IMAGE. THE ALIGNMENT AND LOCATION OF SOME FEATURES DO NOT EXACTLY MATCH THE UNDERLYING AERIAL BECAUSE OF THE INHERENT IMPRECISION IN HAND DRAWINGS AND MINOR INACCURACIES INTRODUCED DURING THE DIGITIZING PROCESS. THE ALIGNMENT AND LOCATION OF THESE FEATURES WERE NOT UPDATED TO REFLECT THE AERIAL IMAGE, BUT WERE LEFT WHERE THEY WERE ORIGINALLY MAPPED TO MAINTAIN THE INTEGRITY OF THE 1980 PRE-SUBSIDENCE SURVEY.
2. FEATURES MAPPED IN 1980 AND THAT WERE NOT PRESENT IN 2017 HAVE BEEN REMOVED FROM THE MAP.
3. YELLOW HALO TEXT IDENTIFIES FEATURES THAT WERE MAPPED IN THE 1980 PRE-SUBSIDENCE SURVEY BUT WHOSE DESCRIPTIONS HAVE BEEN UPDATED TO REFLECT CURRENT CONDITIONS.
4. GREEN HALO TEXT IDENTIFIES FEATURES THAT WERE ADDED SINCE THE 1980 PRE-SUBSIDENCE SURVEY.

EarthFax

BASE MAP:

COORDINATE SYSTEM:
STATE PLANE COORDINATES.
NAD 83 CONUS
ZONE 4302--UTAH, CENTRAL -- US FEET
VERTICAL DATUM -- NAVD 88--US FEET

EXTERNAL REFERENCE:

REVISIONS	NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION

0' 500'
SCALE: 1" = 500'

DRAWN BY: SWF
CHECKED BY: JAG
ORIGINAL DATE: 12/17
RE-DRAWN DATE:
APPROVED BY: JAG
DWG DATA: G:\UC1665\02 EMERY MINE SUB-SIDENCE REPORTS\ 2017 PRE-SUBSIDENCE SURVEY\DWG\FIG-1NEW.DWG
PERMIT NO. ACT015/015

EMERY MINE
EMERY COUNTY, UTAH

BRONCO UTAH OPERATIONS, LLC
P.O. BOX 527
PRICE, UT 84522

APPENDIX V-8, FIGURE 1
PRE-SUBSIDENCE SURVEY PRIOR TO FULL EXTRACTION
EMERY 2, SOUTH OF QUITCHUPAH CREEK

ATTACHMENT A

Site Photographs

Feature 1. Ranch House, Buildings, and Corrals. Feature overview, looking east.

Feature 1. Ranch House, Buildings, and Corrals. Corrals.

Feature 1. Ranch House, Buildings, and Corrals. Corrals.

Feature 1. Ranch House, Buildings, and Corrals. Corrals.

Feature 1. Ranch House, Buildings, and Corrals. Ranch House.

Feature 1. Ranch House, Buildings, and Corrals. Ranch House.

Feature 1. Ranch House, Buildings, and Corrals. Ranch House.

Feature 1. Ranch House, Buildings, and Corrals. Buildings.

Feature 1. Ranch House, Buildings, and Corrals. Buildings. Cinder block building in foreground.

Feature 1. Ranch House, Buildings, and Corrals. Buildings.

Feature 2. Irrigation Ditch and Bridge. Looking east.

Feature 3. Ranch Fence Line. Looking north along gated entrance to Feature 1.

Feature 3. Ranch Fence Line. Looking north.

Feature 4. Ranch Access Road. Looking east.

Feature 4. Ranch Access Road. Photo is taken farther east at split to Feature 11.

Feature 5. Utility Power Lines. Looking north.

Feature 5. Utility Power Lines. Looking south.

Feature 6. Pond. A well (Feature 8.) is in the background.

Feature 6. Pond. Bank erosion at far corner of pond.

Feature 6. Pond. Disintegrated pond liner.

Feature 8. Well. Power line from pole to pump-house is disconnected.

Feature 8. Well. Piping is disconnected from wellhead.

Feature 9. Farm Lands.

Feature 9. Farm Lands.

Feature 9. Farm Lands. Piping supplies for future sprinkler pivot lying on ground.

Feature 10. Irrigation Ditch. Looking west.

Feature 11. Unimproved Dirt Road. Looking east. This road loads to the ranch house, buildings, and corrals identified as Feature 1.

Feature 15. Pond. Breached berm in foreground.

Feature 22. Dry Wash. Looking east.

Feature 23. Grassy Area. Looking east.

Feature 23. Grassy Area. Looking west.

Feature 24. Irrigation Ditch Junction.

Feature 25. Grassy Area. Looking east.

Feature 25. Grassy Area. Looking west.

Feature 26. PVC Pipe Water Depth Gauge.

Feature 26. PVC Pipe Water Depth Gauge. *Rotate photo clockwise.*

Feature 26. PVC Pipe Water Depth Gauge. *Rotate photo clockwise.* Graduated scale located in PVC tube.

Feature 26. PVC Pipe Water Depth Gauge. *Rotate photo clockwise.* Close up photo of graduated scale.

Feature 27. Area Roads. Looking south. Road is impassable and bisected by Quitchupah Creek.

Feature 27. Area Roads. Looking north. Road disappears south of this location.

Feature 32. Irrigation Ditch and Farm Land. Ditch replaced with pivot sprinklers.

Feature 32. Irrigation Ditch and Farm Land. Foundation for pivot sprinklers.

Feature 32. Irrigation Ditch and Farm Land. Southern edge of farmland. Return irrigation ditch in foreground. Field has been regraded, eliminating need for irrigation ditch, background.

Feature 32. Irrigation Ditch and Farm Land. Underground water line feeding pivot sprinklers.

Feature 33. Irrigation Ditch. Photo taken at north end of farm land (Feature 32.). The farm land was expanded and regraded, eliminating need for irrigation ditch.

Feature 34. Culinary Well.

Feature 34. Culinary Well. Concrete pad surrounding wellhead is cracked and separated from rest of pad.

Feature 34. Culinary Well.

Feature 34. Culinary Well. Concrete pad near conduit is cracked and offset.

Feature 34. Culinary Well. Looking north. Concrete pad is cracked and offset.

Feature 34. Culinary Well. The corner of the cracked concrete pad surrounds the wellhead located in the well house.

Feature 35. Ranch House and Buildings. Overview looking east.

Feature 35. Ranch House and Buildings. Overview looking northeast.

Feature 35. Ranch House and Buildings. Overview looking north.

Feature 35. Ranch House and Buildings. Manufactured home looking east.

Feature 35. Ranch House and Buildings. Manufactured home looking west.

Feature 35. Ranch House and Buildings. Manufactured home. Small cracks in foundation.

Feature 35. Ranch House and Buildings. Manufactured home. Small foundation cracks, close-up.

Feature 35. Ranch House and Buildings. Manufactured home. Looking north.

Feature 35. Ranch House and Buildings. Metal shed. Looking northeast.

Feature 35. Ranch House and Buildings. Metal shed. Looking outside through overhead door. Cracks in concrete floor.

Feature 35. Ranch House and Buildings. Outhouse.

Feature 35. Ranch House and Buildings. Metal shed (right) and ranch house (left).

Feature 35. Ranch House and Buildings. Front view of ranch house.

Feature 35. Ranch House and Buildings. Side view of ranch house. Adobe wall crumbled. Sagging roof.

Feature 35. Ranch House and Buildings. Rear view of ranch house. Adobe walls have crumbled.

Feature 35. Ranch House and Buildings. Wood building.

Feature 35. Ranch House and Buildings. Wood building. View of foundation.

Feature 35. Ranch House and Buildings. Wood building.

Feature 35. Ranch House and Buildings. Inside view of wood building.

Feature 35. Ranch House and Buildings. Concrete structure. This may be an old septic tank.

Feature 35. Ranch House and Buildings. Elevated fuel tanks located on east side of metal shed.

Feature 36. Utility Power Line. Looking southeast.

Feature 36. Utility Power Line. Looking northwest. Top of pole in foreground leans slightly left.

Feature 37. Feed Pens and Fence Line. Looking north.

Feature 39. Log Cabins. Overview looking south. Cabin 1 in foreground.

Feature 39. Log Cabins. Looking east along power line. Top of pole in foreground leans to left.

Feature 39. Log Cabins. Cabin 1 looking south.

Feature 39. Log Cabins. Inside view of cabin 1.

Feature 39. Log Cabins. Concrete structure outside cabin 1. Likely a septic tank.

Feature 39. Log Cabins. Cabin 2 founded on rock pieces.

Feature 40. Section Corner Marker. Top view of maker. Top of photo to north.

Feature 40. Section Corner Marker. Looking east.

Feature 41. Pond. Looking southwest at face of earthen dam. This dam situated between two small hills forms the north side of the pond.

Feature 41. Pond. Water exits this pond through a 16" PVC riser near the dam.

Feature 43. Corrals and Grain Silo. Looking north from center of corral.

Feature 43. Corrals and Grain Silo. Looking east from center of corral.

Feature 43. Corrals and Grain Silo. Looking west from center of corral.

Feature 43. Corrals and Grain Silo. Looking south at grain silo.

Feature 44. Pond, Livestock Waterer, and Water Line Air Vent. Pond.

Feature 44. Pond, Livestock Waterer, and Water Line Air Vent. Livestock waterer on concrete slab.

Feature 44. Pond, Livestock Waterer, and Water Line Air Vent. Water line air vent.

Feature 119. Quarter Section Corner Marker. Top view of maker. Top of photo to north.

Feature 119. Quarter Section Corner Marker. Looking east.

Feature 120. Steel Pipes. Top view of 1st pipe.

Feature 120. Steel Pipes. Side view of 1st pipe.

Feature 120. Steel Pipes. Side view of 2nd pipe.

Feature 121. Section Corner Marker. Top view of maker. Top of photo to north.

Feature 121. Section Corner Marker. Looking east.

Feature 126. Sinkhole. Looking east.

Feature 126. Sinkhole. Top view. Minimum depth is 8 foot.

Feature 127. Sprinkler Pivot Foundation. 1st location.

Feature 127. Sprinkler Pivot Foundation. 2nd location.

Feature 128. Water Line Air Vent.

Feature 129. Underground Electrical Feed. Looking north. Underground electrical conduit stub-up is attached to pole at right.

Feature 129. Underground Electrical Feed. Looking west. Disturbed soil where underground electrical line was recently installed to feed a future sprinkler pivot.

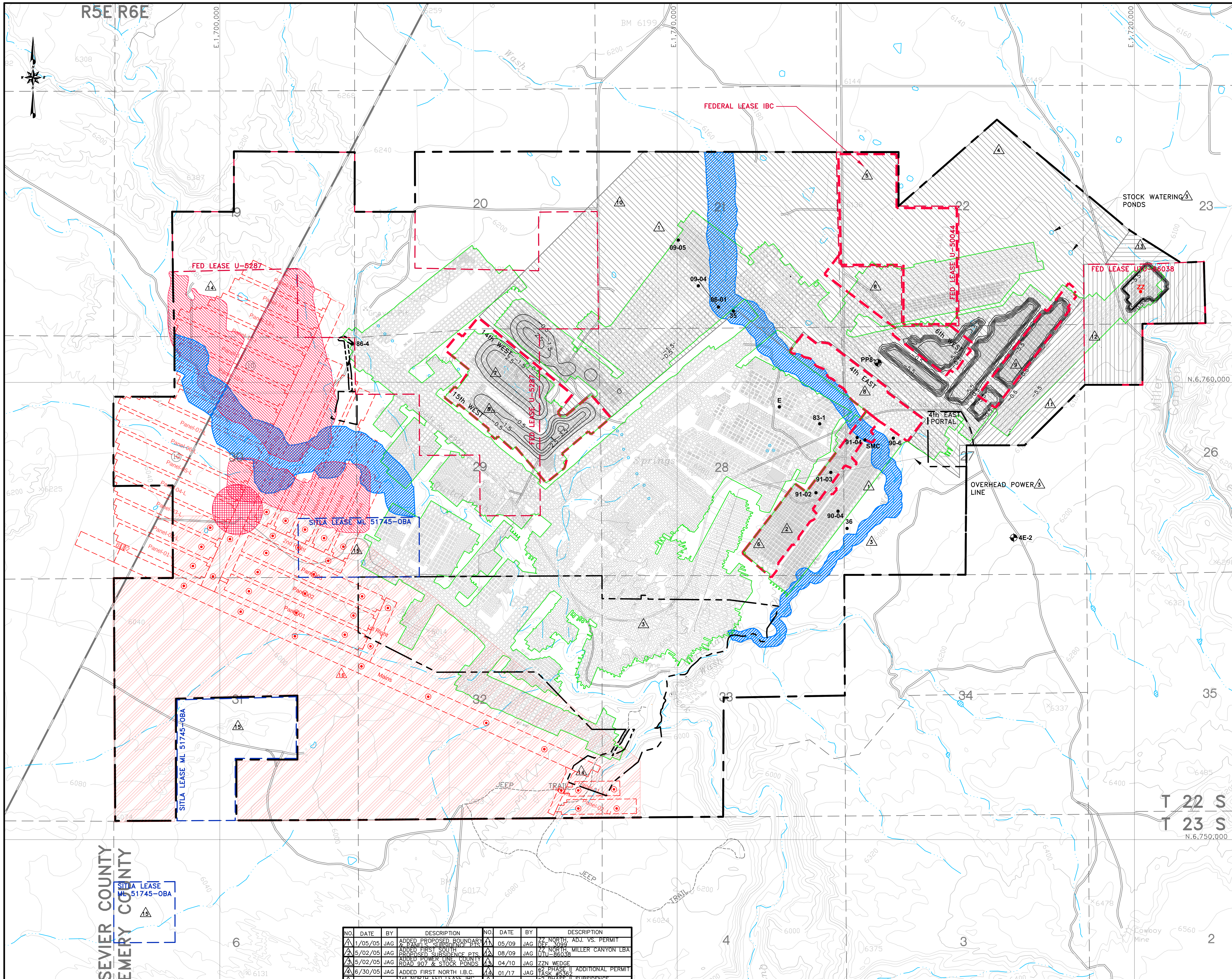
Feature 130. Irrigation Ditch Sinkhole. Looking southeast at HDPE pipe installed over sinkhole.

Feature 131. Mine Discharge Pond No. 1. Looking northeast at empty pond.

Reserved

Chapter V pages 28 through 35 have been removed as they do not pertain to any future mining area.

Inserted 10/2018



LEGEND

11	PERMIT AREA BOUNDARY
11	ADJACENT AREA FOR NON–WATER RESOURCES. FOR THE AREA OF HYDROLOGIC EVALUATION, SEE PLATE VI–4
	AVF BUFFER ZONES (NO FULL EXTRACTION)
	STREAM BUFFER ZONES (NO FULL EXTRACTION)
	STRUCTURAL BUFFER ZONES (NO FULL EXTRACTION)
15 • 85-2	SUBSIDENCE MONITORING POINT (CURRENTLY BEING MONITORED)
16	SUBSIDENCE MONITORING POINT (PROPOSED)
15 4E-2	SURVEYED CONTROL POINT
	PREVIOUSLY APPROVED FULL EXTRACTION
15	SEALED EMERY MINE OLD WORKS
10, 11, 12, 13, 16	PREVIOUSLY APPROVED AREA TO BE FULLY EXTRACTED
	PREDICTED DEPTH OF SUBSIDENCE ISOPACHS (FT.)
16	PROJECTED MINE WORKINGS
16 • ZZ	SUBSIDENCE MONITORING POINT ZZ (INSTALLED DEC 2017)

REVISIONS

NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION
1	1/05/05	JAG	ADDED PROPOSED BOUNDARY & PANELS, SUBSIDENCE PTS.	11	05/09	JAG	ZZ NORTH, ADJ. VS. PERMIT DEF. 3099
2	5/02/05	JAG	ADDED FIRST SOUTH PROPOSED SUBSIDENCE PTS.	12	08/09	JAG	ZZ NORTH, MILLER CANYON LBA UTU-86038
3	5/02/05	JAG	ADDED POWER LINE, COUNTY ROAD 907 & STOCK PONDS	13	04/10	JAG	ZZN WEDGE
4	6/30/05	JAG	ADDED FIRST NORTH I.B.C.	14	01/17	JAG	e2 PHASE II ADDITIONAL PERMIT TASK #5362
5	2/07/07	JAG	1st NORTH FED LEASE IBC FULL EXTRACTION	15	01/18	JAG	e2 PHASE II SUBSIDENCE MONITORING PLAN REVISION TASK #5567
6	09/05	JAG	1st SOUTH FULL EXTRACTION				
7	04/07	JAG	14th WEST FULL EXTRACTION PLAN	16	05/18	JAG	e2 FULL EXTRACTION
8	07/07	JAG	15th WEST, 6th WEST, AND 4th EAST FULL EXTRACTION				
9	03/08	JAG	ADDITIONAL FULL EXTRACTION				
10	09/08	JAG	LIFE OF MINE FULL EXTRACTION				

EarthFax

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 FLATE 1968, PHOTO REVISED 1978.

COORDINATE SYSTEM:
STATE PLANE COORDINATES.
NAD 83 CONUS
ZONE 4302–UTAH, CENTRAL – US FEET
VERTICAL DATUM – NAVD 88–US FEET

EXTERNAL REFERENCE:
G:\UC982\XREF-CURRENT\XREF-USGSMAP.DWG
G:\UC982\XREF-CURRENT\XREF-WORKS-EM2.DWG
G:\UC982\XREF-CURRENT\XREF-SECTION.DWG
G:\UC982\XREF-CURRENT\XREF-COORDS.DWG
G:\UC982\XREF-CURRENT\XREF-LOM.DWG
G:\UC982\XREF-CURRENT\XREF-14THWESTEX.DWG
G:\UC982\XREF-CURRENT\XREF-HATCH-WEDGE.DWG
G:\UC1665\05\XREF\EMERY FINAL PERMIT-e2P2-FEB 17

0' 1000'
SCALE: 1" = 1000'
CONTOUR INTERVAL = 40'

DRAWN BY: SWF | CHECKED BY: JAG | ORIGINAL DATE: 1/03 | RE-DRAWN DATE: 12/05

APPROVED BY: JAG | 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

REGISTERED PROFESSIONAL ENGINEER
No. 168246
RICHARD B. WHITE
NOT VALID WITHOUT A SIGNATURE
STATE OF UTAH