C/025/005 Incoming

Alton Coal Development, LLC
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July 3, 2014

Daron R. Haddock
Coal Program Manager
Oil, Gas & Mining
1594 West North Temple, Suite 1210
Salt Lake City, UT 84114-5801

Subject: **Amendment to MRP for addition of Underground Mining, Alton Coal Development, LLC, Coal Hollow Mine, Kane County, Utah, C/025/0005**

Dear Mr. Haddock,

Alton Coal Development, LLC is providing this submittal to amend the Coal Hollow MRP to include underground mining. The changes proposed to the existing Coal Hollow Mine MRP will add underground mining activities with in the current permit boundary. The total acreage currently permitted for surface mining is 421 acres. The proposed amendment will add 62 acres of subsurface disturbance, which is less than a 15% increase in the disturbed area under the approved permit. Therefore, this amendment meets the criteria under R645-303-224.100 to allow processing as a minor permit amendment. In addition, the proposed underground mining activities are located within the current permit boundaries and will not result in operations outside of the existing CHIA cumulative impact area or affect hydrologic basins beyond those addressed in the current MRP and mine permit. R645-303-224.200 and .300.

Please find enclosed 1 (one) redline copies of the revised text for review and 2 (two) clean copies of text and drawings for insertion into the MRP. Please do not hesitate to contact me if you have any questions 435-691-1551.

Sincerely

B. Kirk Nicholes
Environmental Specialist

RECEIVED
JUL 08 2014
DIV. OF OIL, GAS & MINING

APPLICATION FOR COAL PERMIT PROCESSING

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

Permittee: Alton Coal Development, LLC
Mine: Coal Hollow Mine **Permit Number:** C/025/0005
Title: Underground Coal Mine Amendment
Description, Include reason for application and timing required to implement:

Instructions: If you answer yes to any of the first eight 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?
☐ Yes ☒ No 24. Does the application include confidential information and is it clearly marked and separated in the plan?

Please attach three (3) review copies of the application. If the mine is on or adjacent to Forest Service land please submit four (4) 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.

B. Kirk Nicholes	Environmental Specialist	05/30/2014	B. Kirk Nicholes
Print Name	Position	Date	Signature (Right-click above choose certify then have notary sign below)

Subscribed and sworn to before me this 3 day of July, 2014

Notary Public: [signature], state of Utah.

My commission Expires: 9-11-17
Commission Number: 670359
Address: 1670 E Millstone Cir
City: Enoch State: UT Zip: 84721

} ss:

Notary Public
MARTY NICHOLES
Commission #670359
My Commission Expires
Sept 11, 2017
State of Utah

For Office Use Only:	Assigned Tracking Number:	Received by Oil, Gas & Mining
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APPLICATION FOR COAL PERMIT PROCESSING
Detailed Schedule Of Changes to the Mining And Reclamation Plan

Permittee: Alton Coal Development, LLC
Mine: Coal Hollow Mine
Permit Number: C/025/0005
Title: Underground Coal Mine Amendment

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	Vol. 2 Chapter 3, Page 3-43
☐ Add	☒ Replace	☐ Remove	Vol. 3 Chapter 5, TOC Page v
☐ Add	☒ Replace	☐ Remove	Vol. 3 Chapter 5, Pages 5-8 through 5-85
☒ Add	☐ Replace	☐ Remove	Vol. 3 Chapter 5, Appendix 5-9
☐ Add	☒ Replace	☐ Remove	Vol. 3 Chapter 5, Drawings 5-3, 5-9A, 5-10A and 5-15
☒ Add	☐ Replace	☐ Remove	Vol. 3 Chapter 5, Drawing 5-3A
☐ Add	☒ Replace	☐ Remove	Vol. 6 Chapter 6, Pages 6-10,6-19 through 6-21
☐ Add	☒ Replace	☐ Remove	Vol. 7 Chapter 7, Pages 7-22,7-52,7-54,7-64,7-70,7-77,7-78,7-95 and 7-97
☐ Add	☒ Replace	☐ Remove	Vol. 8 Chapter 8, Page 8-2
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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
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332. **SUBSIDENCE**

~~Because mining in the Coal Hollow Project area will be a surface operation, either open pit or highwall mining, and subsidence is usually associated more with underground mining, it is not considered a factor for the Coal Hollow Project. The alternate Highwall mining is designed such that subsidence does not occur to the surface with nonyieldable webs and barriers.~~Mining in the Coal Hollow project area will be a combination of surface mining, either open pit or highwall mining and underground mining. Both the highwall mining and underground mining are designed such that subsidence is not expected to occur or have a negative impact on renewable resource lands. This is further discussed in Section 525 of Chapter 5.

However, current elevation of the existing topography may be slightly altered in the mining and reclamation operations with open pit mining. The alternate Highwall mining or underground mining will have only the disturbance associated with the trench for placement of the highwall miner or portals and will have no impact on the surface above the highwall panels

Reclamation has been planned to minimize the impact to the renewable resources identified in this section by promptly reclaiming each mine segment contemporaneously by controlling erosion and re-seeding with a mixture of native plant species that will re-establish the plant communities to vegetative cover that will be diverse, effective, permanent, and consistent with the postmining land use. More details regarding postmining land and topography have been provided in Chapter 4 and Chapter 5 of this document, respectively.

The mine plan is not expected to negatively impact the plants and wildlife in the Coal Hollow Project area. Onsite revegetation research and sage-grouse mitigation plans have been designed. Details of this work have been made available to DOGM specialists for their comments and participation in the process.

APPENDICES

DRAWINGS

General

Facilities (5-3 to 5-8C)

Coal Recovery (5-9 to 5-14)

Overburden Handling (5-15 to 5-19)

515.300. Temporary Cessation

515.311

During a temporary cessation of the Underground operations, surface access openings to underground operations and facilities in areas in which there are no current operations, but in which operations are to be resumed under an approved permit will be effectively secured.

515.312.

During a temporary cessation, surface facilities in areas in which there are no current operations, but in which operations are to be resumed under an approved permit will be effectively secured.

515.320.

Before temporary cessation of coal mining and reclamation operations for a period of 30 days or more, or as soon as it is known that a temporary cessation will extend beyond 30 days, a notice of intention to cease or abandon operations will be submitted to the division. This notice will include:

- A statement of the exact number of acres which have been affected in the permit area prior to such temporary cessation,
- The extent and kind of reclamation of those areas which has been accomplished, and
- Identification of the backfilling, regrading, revegetation, environmental monitoring, and water treatment activities that will continue during the temporary cessation.

516. PREVENTION OF SLIDES

The moderate topography in the area of the planned Coal Hollow Mine will minimize the potential for unplanned slides. A natural barrier will, however, be left undisturbed except as necessary for roads, sedimentation control, temporary topsoil and spoil storage and similar features, beginning at the elevation of the coal seam and extending from the outslope for a distance of at least 50 ft. The barrier will be retained in place to prevent slides and erosion.

520. OPERATION PLAN.

521. GENERAL.

The proposed Coal Hollow Mine is located approximately 2.5 miles south of Alton, Utah. In order to maximize the use and conservation of the coal resource, coal will be recovered using large hydraulic excavators, front end loaders, off-road trucks, underground miner and highwall miner. Mined coal will be hauled to a central coal area for crushing and placement into a stockpile. Coal from the stockpile will be transferred into a bin and loaded into over the road trucks for transport.

The plan, with Drawings, cross sections, narrative, descriptions, and calculations indicates how the relevant requirements will be met. The lands subject to coal mining and reclamation operations over the estimated life of the operations are identified and briefly described. All appropriate information is located in the subsequent sections and Drawings 5-1 through 5-44 and Appendices 5-1 through 5-89. Topsoil piles and removal sequencing is shown on Drawing 2-2.

521.100. Cross Sections and Drawings.

The application includes cross sections, Drawings and plans showing all the relevant information required by the Division. Appropriate information is provided in Drawings and cross sections 5-1 through 5-44.

521.110. Previously Mined Areas.

Historically, there has been some underground mining of coal within the Alton Amphitheater. The following underground mines are known to have historically existed within the Amphitheater:

- Seaman Mine
- Smirl Mine
- Alton Mine
- Johnson Mine
- Silver Mine

There are not any known mines that existed or currently exist within the permit area or the adjacent area as defined in R645-100-200. There is also not any active coal mining operations in the area.

521.120. Existing Surface and Subsurface Facilities and Features.

521.121. Buildings

The location of all buildings in and within 1,000 feet of the proposed permit area, with identification of the current use of the buildings is shown on Drawings 1-5 and 1-6.

If a circumstance occurs where mining of the permit area is complete and ACD has acquired the federal lease but permit approval has not yet been acquired to continue mining in the federal coal reserves; ACD requests that the Division consider a temporary cessation of operations at that time rather than requiring implementation of the alternate reclamation scenario. This temporary cessation could be granted for a sufficient period of time to allow ACD to acquire approval for transitioning mining operations into the adjacent federal coal reserves. The Division does have the authority to grant such an allowance based on R645-301-515.300. Should the alternative reclamation scenario be implemented prematurely, reclamation along the western side and south end of the permit area will either be excavated to recover coal or these coal reserves beneath and adjacent to the reclamation will be unrecoverable. Also, an additional excess spoil structure will have be constructed for the boxcut for the federal reserves. A detailed description of the two reclamation scenarios and how each scenario would apply is provided in Section 528.200 Overburden and 553 Backfilling and Grading of this Chapter.

If ACD does not acquire the federal coal lease by the time that the final pit is complete, ACD will then immediately transition the reclamation plan to the alternative scenario.

Additionally, two options are provided for surface mining of the permit area. The Preferred option is shown on Drawings 5-2, 5-9, 5-10, and 5-16. The anticipated time schedule for this option is shown on Drawing 5-38. This option shows coal recovery through traditional open pit operations with coal being recovered by hydraulic excavators or loader and off-road trucks. ~~In the case that ACD acquires a highwall mining system, an optional plan is provided in Drawing 5-2A, 5-9A, 5-10A and 5-16A~~The second option for surface mining is the highwall mining system as shown in Drawing 5-2A, 5-9A, 5-10A and 5-16A. The estimated time schedule for this option is shown on Drawing 5-38A. This option shows coal recovery through traditional open pit operations with coal being recovered by a highwall mining system, loader and off-road trucks. Under this option surface disturbance will be considerably less.

Underground mining is also proposed for this site. Mine portals will be within an existing pit and coal will be loaded within the pit and hauled in the same manner as with the surface mining. Underground mining plans are shown in Drawing 5-3B and 5-10A.

~~The optional plan is provided with the anticipation that a highwall mining system will be employed. The stage at which it begins will be determined by the arrival date of the highwall miner and conditions favorable to highwall mining.~~

521.142

Drawing 5-10A show the underground workings. All underground coal mining will be first mining only. Subsidence will be prevented by following the recommendations provided in the Norwest Corporation letter report found in Appendix 5-9.

521.143 The proposed disposal sites for placing excess spoil generated at surface areas affected by surface operations, underground operations and facilities for the purposes COAL MINING and RECLAMATION ACTIVITIES according to:

- *R645-301-211: The applicant will present a description of the premining soil resources as specified under R645-301-221. Topsoil and subsoil to be saved under R645-301-232 will be separately removed and segregated from other material.*

  The soil resources for the proposed excess spoil disposal area are described in Appendix 2-1. A plan has been developed for removal of topsoil and suitable subsoil based on the soil descriptions in this appendix. The handling plan can be viewed on Drawing 2-2. Topsoil and acceptable subsoil will be separately removed and segregated from other material prior to placement of any spoil.

- *R645-301-212: After removal, topsoil will be immediately redistributed in accordance with R645-301-242, stockpiled pending redistribution under R645-301-234, or if demonstrated that an alternative procedure will provide equal or more protection for the topsoil, the Division may, on a case-by case basis, approve an alternative;*

  Excess spoil will have topsoil and subsoil redistributed in an approximately uniform, stable thickness with the approved post mining land use, contours and surface water drainage systems. Material handling practices will prevent excess compaction of these materials. Handling practices will also protect the materials from wind and water erosion before and after seeding and planting.

- *R645-301-412.300: Criteria for Alternative Postmining Land Uses.*

  The MRP does not contemplate alternative postmining land uses.

- *R645-301-512.210: Excess Spoil. The professional engineer experienced in the design of earth and rock fills will certify the design according to R645-301-535.100.*

  A professional engineer experienced in the design of earth and rock fills with assistance from a geotechnical expert has certified the design according to R645-301-535.100. These certifications can be viewed on Drawings 5-35, 5-36 and 5-17 through 5-19.

- *R645-301-512.220: Durable Rock Fills*

  No durable rock fills are planned.

- *R645-301-514.100: Excess Spoil. The professional engineer or specialist will be experienced in the construction of earth and rock fills and will periodically*

*All strip ratios are bank cubic yards of overburden to tons of coal
**All coal tons are based on a 95% recovery factor

A detailed mine plan has been developed for the proposed permit area and the following table along with Drawing 5-9A summarize the coal extraction for the permit area for the alternate option, highwall mining and underground mining:

Description	Extraction Status	Average Coal Thickness (ft)	Average Strip Ratio* (yd^3/Ton)	Quantity (**Ton)
Total Coal within Permit Boundary	N/A	16.3	7.7	12,092,000
High Strip Ratio Area (NE corner of permit area)	Not Mined	16.0	13.5	~~4,268~~2,930,000
Coal under highwalls and sedimentation structures	Not Mined	17.2	4.8	~~900~~2,305,000
Coal under Robinson Creek Diversion	Not Mined	15.5	3.9	~~2,305~~172,000
Highwall & Underground	Not Mined	16.0	0	2,662,000
Recoverable Coal (Surface)	Mined	16.3	6.4	3,~~066~~298,000
Recoverable Coal (Underground)	Mined	16.0	0	725,000

*All strip ratios are bank cubic yards of overburden to tons of coal
**All coal tons are based on a 95% recovery factor for open pit mining and 45% for highwall mining and the underground mining.

Once approval is received to progress with mining on the adjacent federal coal reserves, an additional 57% of the coal under the highwalls will be recovered as part of the progression into these adjacent reserves.

With open pit mining, the application of highly flexible, open pit truck/shovel techniques will minimize losses of coal due to pit geometry or spoil support requirements, allowing the maximum possible exposure of the coal resource. The full seam section will be loaded primarily using large hydraulic backhoes. The backhoes, which can work from the top of the seam, provide the ability to efficiently and cleanly excavate the lower part of the coal seam without disturbing the pit floor. This, along with the machine's high degree of bucket horizon control will minimize floor losses. The backhoes can also work safely from the top of the seam to oversteepen the loading face along the pit walls, thus recovering the maximum amount of coal.

Where pit geometry or operational factors preclude the use of backhoes for loading, a large rubber tire front end loader will be used. These machines provide similar horizon control, can operate on the floor of the pit or on an intermediate bench, and can recover coal from confined areas such as the ends of the pits.

With the alternative surface option, the application of a highwall mining system will be employed to recover coal from the exposed face. In this method of mining, an unmanned cutter module is driven underground and operated in front of the highwall. The highwall mining machine stands on the pit floor or on a bench, directly in front of the exposed seam and makes long parallel rectangular drives into the coal seam. A remote-operated cutter module is pushed into the seam by a string of push beams (unmanned coal-conveying elements) that transport the mined coal back to the entry of the drive onto a stockpile.

The underground mining will utilize standard extraction methods. These will include a continuous miner, shuttle cars and a conveyor system to the surface. The mine plan calls for first mining only to prevent subsidence. Coal brought to the surface will flow to a stacking conveyor and stockpile as shown on Drawing 5-3B.

Rear dump haul trucks, loaded by the backhoes or front end loader, will be used to move the coal from the pit via inpit roads and the primary haulroad to the crusher and stockpile. The trucks will be equipped with "combo" beds suitable for hauling both coal and overburden, and configured to minimize coal spillage.

A net recovery of 95% (including the effects of in-pit coal losses and out-of-seam dilution) of the coal exposed in the open pit is anticipated. A net recovery of 45% of the coal mined by the alternative highwall system as well as the underground mining is anticipated. Normal coal losses are expected due to cleaning of the top of the seam, loading losses at the seam floor, and coal oxidation near the outcrop.

No coal washing is contemplated at this time, thus there will be no coal processing losses.

Maps and cross sections providing detailed information related to coal recovery activities can be viewed on Drawings 5-9 through 5-14.

523. MINING METHOD(s).

The Coal Hollow Mine will be a surface coal mining operation using open pit mining methods to produce up to 2 million tons of coal per year. Primary mining equipment will include hydraulic excavators, a highwall miner and end-dump mining trucks. The coal will be crushed at the mine site, and hauled to market in over-the-road coal trucks.

The mine is planned to produce approximately 4.64 million tons of coal over a life of approximately 6 years for the preferred option and approximately 3.0 million tons of coal over a life of approximately 5 years for the alternate option. The estimated production schedule is summarized below for the two options:

Preferred option		
		Tons Produced
Year		(000)
1		542
2		505
3		750
4		1,000
5		1,000
6		844
Total		4,641

Alternative option		
		Tons Produced
Year		(000)
1		542
2		505
3		568
4		~~598~~685
5		~~816~~762
6		431
Total		3,~~029~~493

Initial mine development will involve removal and storage of topsoil from mine infrastructure locations. Facilities for equipment maintenance/warehouse, coal handling, and offices will be constructed. During the development and initial mining period, facilities temporary in nature may be used until permanent facilities can be built. Construction of sedimentation ponds, diversion ditches, and mine roads accessing the initial mining areas will also be ongoing.

Mining will employ typical open pit methods using truck/loader type equipment to remove overburden and recover the coal. Mining will advance across the property in successive cuts approximately 250 ft. in width and 800 to 1,300 ft. long (generally equal to the width of the property less property barriers). Layout of these pits can be viewed on Drawing 5-10. The overburden will be removed in layers or lifts approximately 20 to 40 feet deep. In practice, these overburden lifts are mined in a stairstep fashion ahead of the coal removal operation to provide adequate working room for the equipment and stable advancing slopes. Once mining is complete, excavated overburden (spoil) from a successive cut is used to backfill the excavation. General cross sections of this process can be viewed on Drawings 5-11 and 5-12.

Prior to beginning mining, the area will be cleared of vegetation, and the topsoil will be recovered and either stockpiled or live hauled to regraded areas. It is not anticipated that blasting of the overburden will be necessary based on drilling data. Should this process become necessary, this is the phase where it would be implemented. Overburden will then be removed using large hydraulic excavator(s) or front end loaders and off-road trucks which will haul the spoil and place it in parts of the pit where the coal has been removed, or in the excess spoil area shown on Drawings 5-3, 5-35 and 5-36. Overburden is removed in successively deeper benches until the coal seam is exposed. Some overburden in lower lifts may be moved by direct dozing into the mined out pit by large bulldozers.

When overburden removal is finished in a particular pit, the top of the coal will be cleaned (removal of any roof rock or other non-coal material on top of the seam) using a motor grader, dozer or front end loader. The material removed will be placed in the adjacent mined out pit. For the open pit mined coal, if necessary, the coal seam will be loosened by drilling and blasting or ripping prior to loading. Drilling and blasting of the coal is not expected to be necessary. The cleaned, exposed coal is then excavated by backhoe or front end loader and placed into off-road rear dump trucks. Coal mined with a highwall miner would not require blasting.

Once the coal is removed, the pit will be backfilled by spoil from adjacent mine pits. Spoil will be placed in lifts and spread with a dozer. Once the pit is backfilled to the planned final surface contour, suitable topsoil and subsoil will be replaced, and the area reseeded. Revegetation work will proceed seasonally as appropriate for planting.

Overburden excavation and coal mining at Coal Hollow will begin near the subcrop of the coal seam at the western end of the permit area in the NW ¼ NE ¼ of Section 30, T39S, R5W. Topsoil will be removed and stored separately in topsoil stockpiles as shown on Map 2-2. Overburden from the initial pits will be hauled to the excess spoil pile east of the mining area. Once the initial pits are established, as much spoil as possible will be placed directly in the pit backfill, allowing reclamation to closely follow mining. This initial phase includes pits 1 through 8 as shown on Drawing 5-10. The mining and reclamation process for this phase can be viewed on Drawing 5-17.

From the initial mining area, operations will proceed eastward through the NE ¼ of Section 30 to the NW ¼ of Section 29 (as shown on Drawing 5-10) and from the southeast ¼ of Section 30, beginning with pit 28 and proceeding north. The mining and reclamation process for this phase can be viewed on Drawing 5-18. As shown on Drawing 5-19, pit 9 will not be backfilled at this stage. The proposed method for filling this pit back to approximate original contour will be accomplished by utilizing overburden from the pit(s) in the adjacent federal reserves located immediately southwest or north of this area. Alton Coal Development, LLC is currently in the process of an Environmental Impact Study for these reserves with the intent of acquiring the rights to mine. It is expected that these rights will be acquired prior to the completion of the final phase in the proposed Permit Area. The final landform for the Permit Area is shown on Drawings 5-35 and 5-36.

In the case that Alton Coal Development, LLC is not successful with acquiring the rights to the adjacent federal coal reserves, spoil will be rehandled from the excess spoil and variance from the approximate original contour to fill the remaining pits. The final landform for this alternate scenario is shown on Drawing 5-37 and 5-37A.

Two other mining methods will be employed at the Coal Hollow Mine.

1. Highwall mining, where an unmanned cutter is driven underground and operated in front of the highwall; and

2. Standard underground mining utilizing a continuous miner, shuttle cars and underground conveyor system.

These mining methods were previously described in Section 522. It should be noted that each of these mining operations are located within an existing pit from the surface mining operation.

An estimate of the primary mining equipment planned for use at the Coal Hollow Mine is listed below:

Diesel - Hydraulic Excavators (15 to 38 cu. yd. capacity)
Highwall Mining System (CAT HW300 or equivalent)
Rubber Tired Front End Loaders (8 to 20 cu. yd. capacity)
End Dump Trucks (100 to 240 ton capacity class)
Track Dozers (Caterpillar D7 through D11 Class)
Motor Graders (Caterpillar 16H to 24H Class)
Water Trucks (8,000 to 20,000 Gallon Class)
Underground miner and associated equipment

A variety of other equipment will also be used to support the mining operation.

Proposed engineering techniques for meeting the proposed mining methods will include:

- Design support for roads, pits, sediment impoundments etc…
- Field staking of designs utilizing high precision GPS survey systems.
- Weekly field engineering support to view and provide guidance related to designs and environmental controls.
- Ongoing geotechnical support for ensuring highwall stability
- As additional information becomes available, update geological models to ensure full recovery of resource.
- Weekly mine plans that specify appropriate engineering and environmental specifications.

There are no known underground mines within 500 feet of the permit boundary~~;~~. ~~therefore, n~~No surface mining or reclamation activities ~~will~~ are proposed to take place within 500 feet of ~~any~~ the underground mine.

524. BLASTING AND EXPLOSIVES

As a result of the 2005 drilling program and overburden characterization, it was determined that the soil over the coal seam is void of any solid structure and that the overburden is extremely homogenous consisting of soft clay and soft shale. As results of this cursory investigation, it is anticipated that there would be no need to drill and blast the overburden to facilitate the removal of the spoil above the coal seam. Also, due to the fact that the coal will have to be mined from on top of the seam due to wet clay zone

for each blast. The method for the analysis of the predominant frequency contained in the blasting records will be approved by the Division before application of this alternative blasting criterion.

524.690. Standards not Applicable

The maximum airblast and ground-vibration standards of 524.620 through 524.632 and 524.640 through 524.680 will not apply at the following locations: At structures owned by Alton Coal Development LLC and not leased to another person; and at structures owned by Alton Coal Development LLC and leased to another person, if a written waiver by the lessee is submitted to the Division before blasting.

524.700 Records of Blasting Operations:

Blasting records will be maintained at the mine site for at least three years and upon request, records will be available for inspection by the Division or the public. A blasting record will contain the name of Alton Coal Development LLC; location, date, and time of the blast; name, signature, and Utah certification number of the blaster conducting the blast. It will also include the identification, direction, and distance, in feet, from the nearest blast hole to the nearest dwelling, public building, school, church, community or institutional building outside the permit area, except those described in 524.690 and weather conditions, including those which may cause possible adverse blasting effects.

The blasting record will include: The type of material blasted; sketches of the blast pattern including number of holes, burden, spacing, decks, and delay pattern; diameter and depth of holes; types of explosives used; total weight of explosives detonated in an eight-millisecond period; initiation system; type and length of stemming; and mats or other protection used.

If required, a record of seismographic and airblast information will include: type of instrument, sensitivity, and calibration signal or certification of annual calibration; exact location of instrument and the date, time, and distance from the blast; name of the person and firm analyzing the seismographic record; and the vibration and/or airblast level recorded; and the reasons and conditions for each unscheduled blast.

524.800 Use of Explosives:

Alton Coal Development LLC will comply with all appropriate Utah and federal laws and regulations in the use of explosives.

525. SUBSIDENCE CONTROL PLAN

The underground mining has limited extraction with no subsidence. Refer to Appendix 5-9 (Norwest Report) for geotechnical and design information. Do to the design and

will be used to supply electricity to the coal conveying, sizing, stockpiling and loading system. The anticipated layout of the electrical system is shown on Drawing 5-8B.

- Dust Control Structures: A water system will be constructed to provide water for non-potable uses at the facilities and also for fugitive dust control measures. This system will consist of a water well, 6" water transport pipe, and two 16,000 gallon water tanks. The first water tank will be placed near the mining area and will be used specifically to load the water truck which will spray water on the active roads within the permit area to control dust. The second tank is located at the facilities area to provide a water supply to the facilities for non-potable uses (cleaning equipment, restrooms, etc…). Further details related to this water system can be viewed on Drawing 5-8C.
- Underground Mining Facilities: Mine fan, portable generator, stacking conveyor. The generator and stacker are mobile and considered tempory. The mine fan is a single unit that is mounted, but easily removed. All of these facilities are in an existing pit, and shown on Drawing 5-3B.

During mine development and the initial mining period, some facilities of a temporary nature such as mobile buildings and crusher/stacking conveyors may be utilized.

Support facilities to provide lighting at night will be kept to a minimum but will need to be sufficient enough to provide safe operating conditions in the dark. The following lighting equipment is anticipated to be used to provide safe working conditions:

- Two to three mobile light plants: Each light plant will have up to four 1,000 watt lights.
- Four to six exterior lights at the facilities area for lighting walkways and miscellaneous work areas: Each of these is expected to be 250 watt lights.
- Lights on mobile mining equipment, support vehicles and building lights

The support facilities will be located, maintained, and used in a manner that prevent or control erosion and siltation, water pollution, and damage to public or private property; and to the extent possible use the best technology currently available to minimize damage to fish, wildlife, and related environmental values; and minimize additional contributions of suspended solids to stream flow or runoff outside the mine permit area. Any such contributions will not be in excess of limitations of Utah or Federal law.

The facilities will be fully reclaimed at the end of mining operations with the exception of the water well. The final contour for this area can be viewed on Drawing 5-35 and 5-37 and an anticipated timetable is shown on Drawing 5-38.

526.300 Water Pollution Control Facilities:

Water pollution associated with mining and reclamation activities within the permit areas will be controlled by:

Mine development work will include a temporary diversion of Lower Robinson Creek away from the mining area. This diversion has been designed for a flow capacity of a 100 year, 24 hour storm event. The sides will be graded to a 3h:1v slope and rip-rap will be appropriately placed to minimize erosion of the channel beyond current channel conditions. All specifications required to meet the requirements for such a diversion have been included in this diversion design. Appendix 5-2 details the analysis/specifications for this diversion and Drawings 5-20 and 5-21 show the details of this design.

As part of the reclamation process, Lower Robinson Creek will be reconstructed to its approximate original location. The design for this reconstruction is shown on Drawings 5-20A and 5-21A. This design includes considerable improvements to the channel compared to the channel's current condition. The current condition is such that less than 25% of the channel within the disturbed area has a flood plain present and most of the slopes are near the angle of repose with fair to poor vegetative cover. The reconstructed channel includes stable slope angles that will be revegetated with a flood plain on both sides of the channel for the entire length reconstructed. Sharp corners in the original alignment have been rounded to sinuous curve shapes and rip-rap will be installed in the bottom section of the channel to minimize erosion. The flood plain will seeded and covered with erosion matting to control erosion until a natural vegetative condition can be attained.

527.230 Road Maintenance

All roads will be maintained on an as needed basis using motor graders, water trucks for dust suppression, and other equipment as necessary. Crushed stone and/or gravel will be used as a surface course for primary roads outside the active mining area, and may be used as needed for ramps and travelways within the pit. Should the roads be damaged by a catastrophic event, such as an earthquake or a flood, repairs will be made as soon as possible after the damage has occurred or the road will be closed and reclaimed.

527.250. Geotechnical Analysis

No alternative specifications or steep cut slopes associated with roads are anticipated outside the active mine area. A report of appropriate geotechnical analysis will be provided should such alternative specifications or steep cut slopes where approval of the Division is required, become necessary.

528. HANDLING AND DISPOSAL OF COAL, OVERBURDEN, EXCESS SPOIL, AND COAL MINE WASTE:

528.100. Coal removal, handling, storage, cleaning, and transportation areas and structures;

Coal handling activities are confined to the active pit/ Underground Portal, and the coal sizing/loading areas located north of the pit. All areas and facilities will be designed and constructed, utilized and maintained in conformance with industry standards and all

The Preferred scenario for overburden removal will minimize overall disturbance and maximize resource recovery by providing a transition into the adjacent federal reserves with minimal effect to existing reclamation and backfill in the Permit Area. This scenario will also minimize variances from approximate original contour on the federal lands by eliminating the need for an excess spoil structure from the initial boxcut once operations are transitioned into these reserves.

During the course of mining, some additional excavated overburden may be placed temporarily on mined over and backfilled areas due to operational considerations. This material will be re-excavated and moved to it's final placement location as operations allow.

The underground mining will be accessed through portals in an existing pit. There will be no additional overburden removal associated with the underground mining; however, cross sections of the portal area are show on Drawing 5-3B. Cover or overburden depths for the underground mining are described in Section 627.

All maps related to the overburden removal process can be viewed on Drawings 5-15 through 5-19.

528.300. Spoil, coal processing waste, mine development waste, and noncoal waste removal, handling, storage, transportation, and disposal areas and structures;

528.310. Excess Spoil. Excess spoil will be placed in designated disposal areas within the permit areas, in a controllable manner to ensure mass stability and prevent mass movement during and after construction. Excess spoil will meet the design criteria of R645-301-535. For the purposes of SURFACE COAL MINING AND RECLAMATION ACTIVITIES, the permit application must include a description of the proposed disposal site and the design of the spoil disposal structures according to R645-301-211, R645-301-212, R645-301-412.300, R645-301-512.210, R645-528.310, R645-301-535.100 through R645-301-535.130, R645-301-535.300 through R645-301-535.500, R645-536.300, R645-301-542.720, R645-301-553.240, R645-301-745.100, R645-301-745.100, R645-301-745.300, and R645-301-745.400.

Excess spoil will be placed in the area designated on Drawing 5-3 and 5-35. This fill will be placed in lifts not to exceed 4 feet in thickness. The material will be transported from the overburden removal area to the fill by end dump haul trucks and a dozer(s) will spread the spoil to this lift thickness. The fill will meet at minimum 85% compaction as related to the standard Procter. Final slopes will be regraded to a maximum slope of 3h:1v. The top of the fill will be sloped to approximately 2% to prevent pooling of water and to reestablish drainage similar to original flow patterns. The excess spoil placed on the non-mined areas is approximately 32 acres and varies in height from 35 to 120 feet. The area of excess fill over mined out areas (variance from approximate original contour) is an extension of the fill placed on the non-mined area and is approximately 35 acres. Combined acreage of the excess fill placed on mined and non-mined areas

553.600, R645-301-553.900, and R645-301-747. Appropriate measures will be implemented to preclude sustained combustion of such materials; and

528.400. Dams, embankments and other impoundments.

Plans do not include using dams, embankments or other impoundments for disposal of coal, overburden, excess spoil or coal mine waste

529. **MANAGEMENT OF MINE OPENINGS.**

When no longer required, underground mine openings will be closed in accordance with MSHA approved requirements and backfilled.

Each entry to the Underground mine if temporarily inactive, but having further projected useful service will be secured by barricades or other covering devices and posted with signs, to prevent access into the entry and identify the hazardous nature of the openings.

Alternative highwall mining will produce openings (holes) in the coal at the bottom of trenches specifically constructed for highwall mining. Trench depth to the holes range from 60 feet to 200 feet. After highwall mining is completed in a given trench, that trench will be completely backfilled, burying any openings made by highwall mining.

All wells will be managed to comply with R645-301-748 and R645-301-765. Water monitoring wells will be managed on a temporary basis according to R645-301-738.

Wells constructed for monitoring groundwater conditions in the proposed Coal Hollow Mine permit and adjacent area, including exploration holes and boreholes used for water wells or monitoring wells, will be designed to prevent contamination of groundwater and surface-water resources and to protect the hydrologic balance. A diagram depicting typical monitoring well construction methods is shown in Drawing 7-11. Monitoring wells will include a protective hydraulic seal immediately above the screened interval, an annular seal plugging the borehole above the hydraulic seal to near the ground surface, and a concrete surface seal extending from the top of the hydraulic seal to the ground surface which is sloped away from the well casing to prevent the entrance of surface flows into the borehole area. Well casings will protrude above the ground surface a sufficient height so as to minimize the potential for the entrance of surface water or other material into the well. A steel surface protector with a locking cover will be installed at monitoring wells to prevent access by unauthorized personnel. Where there is potential for damage to monitoring wells, the wells will be protected through the use of barricades, fences, or other protective devices. These protective devices will be periodically inspected and maintained in good operating conditions. Monitoring wells will be locked in a closed position between uses.

Noncoal mine wastes including, but not limited to, grease, lubricants, paints, flammable liquids, garbage, abandoned mining machinery, lumber and other combustible materials generated during mining activities will be temporarily stored in appropriate containers and removed from the permit area and will be properly disposed of according to applicable State and Federal regulations.

528.332.

Final disposal of noncoal mine wastes will be in a State-approved solid waste disposal site not located within the permit area. One exception to the removal of all noncoal mine waste from the permit area is perforated piping used in the construction of Alluvial Ground Water Drains will be left in place as mining advances. This perforated piping will be covered in place approximately 20' to 30' below the final reclaimed surface. All other waste materials (ie. metal culvert) associated with the Alluvial Ground Water Drains will be removed and disposed of in a State-approved solid waste disposal site.

528.333.

At no time will any noncoal mine waste be deposited in a refuse pile or impounding structure, nor will any excavation for a noncoal mine waste disposal site be located within eight feet of any coal outcrop or coal storage area.

528.334.

Notwithstanding any other provision to the R645 Rules, any noncoal mine waste defined as "hazardous" under 3001 of the Resource Conservation and Recovery Act (RCRA) (Pub. L. 94-580, as amended) and 40 CFR Part 261 will be handled in accordance with the requirements of Subtitle C of RCRA and any implementing regulations.

528.340

As development of the Underground workings originates in the existing Surface mining Pit, development wastes have been stored in the excess spoils pile. Once all mining is complete spoils will be returned to the mined out Pit following the surface mining regulations.

528.350. Acid-Forming and Toxic Materials

If coal, having qualities that make it unmarketable, are to be left in the pit backfill in quantities greater than 5,000 tons: a minimum of 1 composite sample per 5,000 Tons of coal will be analyzed for the parameters list in Table 3 and 7 of the "Soil and Overburden Guidelines". A record of the volume of coal remaining and laboratory analytical results will be kept onsite. Debris, acid-forming, toxic-forming materials and materials constituting a fire hazard will be identified and disposed of in accordance with R645-301-528.330, R645-301-537.200, R645-301-542.740, R645-301-553.100 through R645-301-

There are no rock chimneys or drainage blankets proposed.

5) *A stability analysis including, but not limited to, strength parameters, pore pressures and long-term seepage conditions. These data will be accompanied by a description of all engineering design assumptions and calculations and the alternative considered in selecting the specific design specifications and methods.*

The stability analysis and all supporting data are available in Appendix 5-1.

- *If for the purposes of SURFACE COAL MINING AND RECLAMATION ACTIVITIES, under R645-301-535.112 and R645-301-535.113, rock-toe buttresses or key-way cuts are required, the will include the following:*

Neither rock-toe buttresses or key-way cuts are required under R645-301-535.112 or R645-301-535.113.

535.200. Disposal of Excess Spoil: Valley Fills/Head-of-Hollow Fills.

The MRP does not contemplate disposal of excess spoil as valley fill or head-of-hollow fills.

535.300. Disposal of Excess Spoil: Durable Rock Fills.

The MRP does not contemplate disposal of excess spoil as durable rock fill.

535.400. Disposal of Excess Spoil: Preexisting Benches.

The MRP does not contemplate disposal of excess spoil on preexisting benches.

535.500 Disposal of Excess Spoil: At Drift Entries.

The MRP does not comptemplate disposal of spoils resulting from face-up operations at the drift entries. Drift entries will originate from the existing Pit, excess spoil for which are stored in the approved Excess Spoils Pile.

536. Coal Mine Waste.

The MRP does not contemplate processing of coal that would produce coal mine waste.

537 **REGRADED SLOPES**:

537.100 Geotechnical Analysis:

The excess spoil structure and fill above approximate original contour are the only alternative specifications proposed. A geotechnical analysis has been completed for this proposal and can be viewed in Appendix 5-1. All other mined areas, for surface or underground will be restored to approximate original contour.

540 RECLAMATION PLAN:

541.100 - 400 General

When coal mining is completed, all pits will be backfilled and reclaimed in accordance with the R645 rules and this permit. All equipment, structures, and other facilities, unless approved by the Division as suitable for the postmining land use or environmental monitoring, will be removed and the affected land reclaimed.

Underground mine portals will be closed in accordance with approved MSHA plans and backfilled.

When no longer needed for monitoring or other use approved by the Division upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well under R645-301-731.100 through R645-301-731.522 and R645-301-731.800, each well will be capped, sealed, backfilled, or otherwise properly managed, as required by the Division in accordance with R645-301-529.400, R645-301-631.100, and R645-301-748. Permanent closure measures will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters.

If a water well is exposed by coal mining and reclamation operations, it will be permanently closed unless otherwise managed in a manner approved by the Division.

Permanent closure and abandonment of water wells greater than 30 feet in depth will be in accordance with the requirements of "Administrative Rules for Water Well Drillers", State of Utah, Division of Water Rights or other applicable state regulations. Abandonment of wells will be performed by a licensed water well driller. The wells to be abandoned will be completely filled using neat cement grout, sand cement grout, unhydrated bentonite, or bentonite grout, or other materials approved by the Utah State Engineer's office. Alternatively, the well may be abandoned using a different procedure upon approval from the Utah State Engineer's office.

Abandonment materials will be introduced at the bottom of the well or required sealing interval and placed progressively upward to the top of the well. The casing will be severed a minimum of 2 feet below the ground surface. A minimum of 2 feet of compacted native material will be placed above the abandoned well upon completion.

Within 30 days of the completion of well abandonment procedures, a report will be submitted to the State Engineer by the responsible licensed driller giving data related to the abandonment of the well. This shall include the name of the licensed driller or other

subsoil layers will be dozed to a consistent thickness. Approximately 8 inches of topsoil is expected to be removed ahead of mining and replaced over the regraded area. Subsoil removed and replaced will average 40 inches thick and will be placed between the topsoil layer and run of mine spoil. The total profile thickness of topsoil and subsoil in mined areas will average 48 inches. Once in place, the area will be fine graded to remove small erosion features and depressions.

- Revegetation. Following replacement of topsoil the area will be revegetated by seeding. Mulch will be placed on the seedbed surface once soil amendments have been incorporated and seeding has been accomplished in areas that will be reclaimed to native plant communities. The mulch should control erosion by wind and water, decrease evaporation and seed predation, and increase survivability of the seeded species. Like the seeding methods, mulch will be applied with a variety of techniques and materials depending on the reclaimed area.

Generally, mined areas will be backfilled and graded within approximately 180 days following coal removal, or 1,500 feet of the active coal removal face. One exception to this standard is during mining and backfilling of the Highwall Trench south of Pit 9. During this phase of mining, Pit 9 will be left open for access to the Highwall Trench and underground mine. A detailed description of the reason for this variation are fully described in section 528 (Overburden) and the major steps can be viewed on Drawings 5-17 through 5-19. Areas needed for in-pit roads, ramps, drainage controls or areas which must be left open temporarily for operational reasons will be backfilled and graded when they are no longer needed. The rate of backfilling will depend on the availability of mined out pit areas for backfilling, and the rate of production at the mine. Based on anticipated production rates, Drawing 5-38, or Drawing 5-38A if the alternative highwall mining is selected, provides an estimated sequence and timing for reclamation.

Topsoil will be replaced on the graded areas as soon as operationally practicable. This work will depend on weather and soil conditions in the removal and replacement areas, but is generally anticipated to occur within 90 days of completion of regrading.

Revegetation activities will be seasonal in nature. As currently planned, initial seeding will occur at the first planting opportunity following replacement of topsoil. Supplemental seeding may be done subsequently as needed.

Some delay is unavoidable in reclamation of the initial mining areas due to the time required to establish the initial working pit and backfill area, and to achieve a steady state excavation/backfill operation. As currently planned the initial mining areas will be backfilled to the planned post mining contour, graded, and the topsoil replaced by late in the first year or in the first half of the second year of mining. Reclamation activities will proceed at the regular planned rate thereafter. Proposed final reclamation contours and cross sections can be viewed on Drawings 5-35 and 5-36.

The location of these roads is shown on Drawings 5-35 and 5-37 along with the post mining topography.

- Removal of Water Control Structures. All sedimentation control structures, including ditches, berms and sedimentation ponds not retained as part of the approved post-mining land use will be removed, the areas regraded, topsoiled, and revegetated. All water control structures will be removed at final reclamation.

Final pit backfilling, removal of buildings, roads and other facilities, along with replacement of topsoil is expected to require approximately 15 months after the last coal is removed. In the alternate reclamation scenario (Drawing 5-37), the bulk of this period will be required to backfill the final pits.

542.700. Final Abandonment of Mine Openings and Disposal Areas.

Final abandonment of alternative mined highwall panels will be at the time when completed panels are backfilled as described in Section 529.

Underground mine openings will be closed in accordance with approved MSHA requirements and backfilled.

When no longer needed for monitoring or other use approved by the Division upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well under R645-301-731.100 through R645-301-731.522 and R645-301-731.800, each well will be capped, sealed, backfilled, or otherwise properly managed, as required by the Division in accordance with R645-301-529.400, R645-301-631.100, and R645-301-748. Permanent closure measures will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters.

If a water well is exposed by coal mining and reclamation operations, it will be permanently closed unless otherwise managed in a manner approved by the Division.

Permanent closure and abandonment of water wells greater than 30 feet in depth will be in accordance with the requirements of "Administrative Rules for Water Well Drillers", State of Utah, Division of Water Rights or other applicable state regulations. Abandonment of wells will be performed by a licensed water well driller. The wells to be abandoned will be completely filled using neat cement grout, sand cement grout, unhydrated bentonite, or bentonite grout, or other materials approved by the Utah State Engineer's office. Alternatively, the well may be abandoned using a different procedure upon approval from the Utah State Engineer's office.

Abandonment materials will be introduced at the bottom of the well or required sealing interval and placed progressively upward to the top of the well. The casing will be severed a minimum of 2 feet below the ground surface. A minimum of 2 feet of compacted native material will be placed above the abandoned well upon completion.

542.740. Disposal of Noncoal Mine Wastes.

Noncoal mine waste including, but not limited to grease, lubricants, paints, flammable liquids, garbage, abandoned mining machinery, lumber and other combustible materials generated during mining activities will be placed and temporarily stored in a controlled manner in a designated portion of the permit area and hauled offsite to a state approved recycling or solid waste disposal site. Final disposal of noncoal mine waste will not take place within the permit area. With the exception of removal of perforated piping used in the construction of Alluvial Ground Water Drains that will be left in place as mining advances. This perforated piping will be covered in place approximately 20' to 30' below the final reclaimed surface. All other waste materials (ie. metal culvert) associated with the Alluvial Ground Water Drains will be removed and disposed of in a State-approved solid waste disposal site.

542.800. Reclamation Cost.

The amount of the bond will depend upon the requirements of the ***approved*** permit and reclamation plan (R645-830.120).

A preliminary estimate of reclamation costs is included in Appendix 8-1. This estimate is based upon the proposed plan of open pit mining. The cost for the alternative plan of highwall mining will be considerably less because of reduced surface disturbance with this mining operation. Therefore the cost estimate will remain based on the proposed plan of open pit mining. A final bond estimate will be provided by the applicant to the Division upon completion of the approved permit and reclamation plan.

550. RECLAMATION DESIGN CRITERIA AND PLANS

551. SEALING AND CASING OF UNDERGROUND OPENINGS

When no longer required, underground mine openings will be closed in accordance with MSHA approved requirements and backfilled. When no longer needed for monitoring or other use approved by the Division upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well under R645-301-731.100 through R645-301-731.522 and R645-301-731.800, each well will be capped, sealed, backfilled, or otherwise properly managed, as required by the Division in accordance with R645-301-529.400, R645-301-631.100, and R645-301-748. Permanent closure measures will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters.

the excess spoil would likely be material removed from the Permit Area to access the coal beneath the Permit Area highwalls and provide the proper layback of the backfill material along the Permit boundary.

~~If the~~As alternative highwall mining is selected, highwall mining would begin in Pit 9.Then, once coal is removed from Pit 22, the coal east of Pits 22 and 23 will be mined using the highwall miner while Highwall Trench 1 (HWT1) is excavated. In this method of mining, an unmanned cutter module is driven underground and operated in front of the highwall. The highwall mining machine stands on the pit floor or on a bench, directly in front of the exposed seam and makes long parallel rectangular drives into the coal seam. A remote-operated cutter module is pushed into the seam by a string of push beams (unmanned coal-conveying elements) that transport the mined coal back to the entry of the drive onto a stockpile. Coal is then removed to the sizing/loading area. The miner is moved along the face making successive pushes into the coal face. Once coal is removed from the Pits/Highwall Trench, overburden from excavation of the next Highwall Trench is used to backfilled the mined out area continuing with the progression of the trench.

The anticipated coal removal sequence for the Highwall mining is shown on drawing 5-10A. As is depicted, each Pit/Highwall Trench consists of Panels, each panel consisting of 10 holes. The spacing between the holes and the spacing between the panels are dictated by the amount of overburden over the panels. The alternate Highwall mining is designed such that subsidence does not occur to the surface with nonyieldable webs and barriers. Specific information concerning these design are found in Appendix 5-8. Highwall mining will have only the disturbance associated with the pit/trench for placement of the highwall miner and will have no impact on the surface above the highwall panels.

The following tables summarizes the overburden and backfill balance for these two scenarios:

Alternate Scenario (Adjacent Federal Reserves Not Acquired)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,936,000	5,195,000	2,741,000	2,741,000
2	14,168,000	11,127,000	3,041,000	5,782,000
3	14,631,000	14,631,000	0	5,782,000
4 (Rehandle)	0	2,545,000	-2,545,000	3,237,000
Total	36,735,000	33,498,000	3,237,000	3,237,000

Alternate Scenario (Highwall mining)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,936,000	5,195,000	2,741,000	2,741,000
2	7,381,000	7,277,000	104,000	2,845,000
3	5,257,000	5,257,000	0	2,845,000
4 (Federal)	2,545,000	2,545,000	0	2,845,000
Total	23,119,000	20,274,000	2,845,000	2,845,000

In both scenarios (Preferred and Alternate), Rough backfilling and grading operations will follow coal removal by not more than 60 days or 1500 linear feet except for the exemption Pit 9. Pit 9 will be utilized for access to the Highwall Trench. Once mining is complete, the proposed plan for backfilling Pit 9 includes acquiring the right to mine the adjacent federal coal reserves, located immediately southwest or north of Pit 9. In the case that Alton Coal Development is not successful with acquiring the adjacent federal coal reserves, all the fill above approximate original contour and part of the excess spoil structure will be rehandled and placed back in the remaining backfill area. The underground mining will be accessed through portals in an existing pit. There will be no additional overburden removal associated with the underground mining.

Major steps in the backfilling and grading process are:

- Backfilling of the Mined Out Pit. Material from active pits will be used to backfill mined out pits as mining progresses. Material will be placed in the in-pit backfill in lifts, until the approximate planned final elevation is reached. Working stability in the backfill will be achieved by placement of the material, and control of the overall spoil face slope at stable angles. The mined out area will be filled to its planned post-mining elevation, which approximates the pre-mining land contour. The backfill will be inherently stable because the exposed surface will have shallow slopes, and the backfill surface will not be significantly higher than the surrounding undisturbed ground with the exception of the variance shown on Drawing 5-3.
- Backfilling of Ramps. Ramps and travelways within the active mining will be moved as necessary for safe operation and efficient hauling of overburden and coal. When a particular ramp or travelway is no longer needed, it will be backfilled with excavated overburden from the advancing pit.
- Grading. After backfilling is complete in each mined out area, the area will be graded using dozers and motor graders to achieve the planned post-mining contour, facilitate stable positive drainage patterns, and to blend in with the surrounding topography. Postmining slopes will not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long-term static

(materials with elevated SAR ratios or other physical or chemical characteristics that could cause appreciable adverse impacts on vegetation).

Several investigations involving reclamation of surface disturbed areas in the vicinity have been performed by other entities. These included the use of test plots to measure reclamation feasibility and success. The results of these investigations have been presented in published documents (Ferguson and Frischknecht 1985; USDI 1975). These investigations have demonstrated the feasibility of successful reclamation in the area.

623-300 Subsidence Control Plan

~~The proposed mining in the proposed Coal Hollow Mine permit area does not include underground coal mining activities. This section is not applicable.~~The underground mining has limited exaction with no subsidence. Refer to Appendix 5-9 (Norwest Report) for geotechnical and design information. Do to the design and mining method of underground mining in this plan, no subsidence is projected and no monitoring is planned.

624 GEOLOGIC DESCRIPTION

624.100 Regional and Structural Geology

The coal to be mined in the proposed Coal Hollow Mine permit area is of Cretaceous age and resides in the Alton Coal Field of southwestern Utah. The Alton Coal Field is a roughly horseshoe-shaped region that is situated between the Kaiparowits Coal Field to the east, and the Kolob Coal Field to the west.

The topography in the Alton Coal Field is marked by bench and slope topography. Topographic relief in the region is approximately 2,800 feet, with elevations ranging from about 9,300 feet on top of the Paunsaugunt Plateau, to about 6,500 feet in the valley bottoms. The economic coal seams are located primarily along the western and southern flanks of the Paunsaugunt Plateau.

The geologic history, geology, stratigraphy, and structure of the Alton Coal Field have been described by Doelling (1972) and Tilton (Appendix 6-3; 2001) and are summarized below. A map of geologic formations exposed at the surface in the proposed Coal Hollow Mine permit area is shown in Drawing 6-1. Cross-sections showing the regional geologic conditions in the Alton Coal Field are presented in Drawings 6-3 and 6-9.

Stratigraphy

Stratigraphic units present in the Alton Coal Field area are described in ascending order below. A stratigraphic column showing these geologic formations is shown in Drawing 6-3. A diagrammatic

624.230
Chemical analyses of the Smirl coal seam for acid- or toxic-forming materials including total sulfur and pyritic sulfur are presented in Appendix 6-1 (confidential binder).

624.300
~~The proposed mining in the proposed Coal Hollow Mine permit area does not include underground coal mining activities. This section is not applicable.~~Logs of drill holes are presented in Appendix 6-1. Chemical analysis of strata overlying and immediately below the coal seam are shown in Appendix 6-2. Chemical analysis of the coal seam for acid or toxic forming materials including total sulfur and pyritic sulfur are presented in Appendix 6-1 (Confidential binder).

624.400

Physical properties of the stratum immediately above and below the coal seam are shown in Appendix 6-1 (Confidential Binder)

627 OVERBURDEN THICKNESS AND LITHOLOGY

The planned mining in the proposed Coal Hollow Mine permit area does ~~not~~ include underground coal mining activities. Overburden thickness and lithology are shown in Appendix 6-1, and Drawing 5-15 and 6-3.

Overburden in planned mining areas in the proposed Coal Hollow Mine permit area consists of the following.

Alluvium

Alluvial sediments are present at the surface in most areas proposed for mining. These sediments consist primarily of clays, silts, and fine-grained sands. The thickness of the alluvium in proposed mining areas ranges from a thin veneer to about 50 feet. The alluvial sediments in most areas are not well sorted and are derived largely from weathering of the Tropic Shale in adjacent upland areas.

Tropic Shale

In all proposed mining areas, the lower portion of the Tropic Shale overlies the Dakota Formation Smirl coal zone to be mined. The thickness of the Tropic Shale overlying the coal seam in proposed mining areas ranges from a few feet up to about 200 feet. The lower Tropic Shale consists predominantly of soft shales, silty shales, and claystones, with occasional thin layers of siltstone and bentonite-like clay layers up to about 1 foot in thickness. Strong, competent rock strata were not

Permanent closure and abandonment of water wells greater than 30 feet in depth will be in accordance with the requirements of "Administrative Rules for Water Well Drillers", State of Utah, Division of Water Rights or other applicable state regulations. Abandonment of wells will be performed by a licensed water well driller. The wells to be abandoned will be completely filled using neat cement grout, sand cement grout, unhydrated bentonite, or bentonite grout, or other materials approved by the Utah State Engineer's office. Alternatively, the well may be abandoned using a different procedure upon approval from the Utah State Engineer's office.

Abandonment materials will be introduced at the bottom of the well or required sealing interval and placed progressively upward to the top of the well. The casing will be severed a minimum of 2 feet below the ground surface. A minimum of 2 feet of compacted native material will be placed above the abandoned well upon completion.

Within 30 days of the completion of well abandonment procedures, a report will be submitted to the State Engineer by the responsible licensed driller giving data related to the abandonment of the well. This shall include the name of the licensed driller or other person(s) performing abandonment procedures, name of well owner at the time of abandonment, the address or location of the well by section, township, and range, abandonment materials and equipment used, water right or file number covering the well, the final disposition of the well, and the date of completion.

Exploration holes and boreholes will be backfilled, plugged, cased, capped, sealed, or otherwise managed to prevent acid or toxic contamination of water resources and to minimize disturbance to the prevailing hydrologic balance. Exploration holes and boreholes will be managed to ensure the safety of people, livestock, fish and wildlife, and machinery.

If a water well is exposed by coal mining and reclamation operations, it will be permanently closed unless otherwise managed in a manner approved by the Division.

Boreholes will be backfilled to within 1 foot of the land surface with concrete or other materials approved by the Division as necessary to prevent contamination of groundwater or surface-water resources or to protect the prevailing hydrologic balance. The upper approximately 1 foot will be backfilled with native materials to facilitate reclamation (see Drawing 6-11). Exploration holes and boreholes that may be uncovered during mining and reclamation activities will be permanently closed unless approved for water monitoring or otherwise managed in a manner approved by the Division.

632 SUBSIDENCE MONITORING

The underground mining has limited extraction with no subsidence. Refer to Appendix 5-9 (Norwest Report) for geotechnical and design information. Do to the design and mining method of underground mining in this plan, no subsidence is projected and no monitoring is planned. ~~The proposed mining in the proposed Coal Hollow Mine permit area does not include underground coal mining activities. This section is not applicable.~~

permit (which is considered unlikely), Alton Coal Development, LLC may when necessary and with the approval of the Utah Division of Oil, Gas and Mining construct supplemental containment and settlement ponds in which mine discharge waters may be held for treatment (where necessary) and subsequent discharge through UPDES discharge points in compliance with the UPDES discharge permit.

Mining in the Coal Hollow project area will be a combination of surface mining, either open pit or highwall mining, and underground mining. Both the highwall mining and underground mining are designed such that subsidence is not expected to occur or have a negative impact on renewable resources lands.

724.700 Alluvial Valley Floor Determination

A field investigation has been performed in the proposed Coal Hollow Mine permit and adjacent area to provide to the Division the information required to make an evaluation regarding the existence of a probable alluvial valley floor in the proposed Coal Hollow Mine permit and adjacent area. The results of this field investigation and related information is provided in Appendix 7-1. Additional information regarding potential alluvial valley floors in the area is provided in Appendix 7-7.

A report detailing the findings of a previous field investigation performed by Water Engineering & Technology, Inc., entitled "Geomorphological and sedimentological characteristics of Sink Valley, Kane County, Utah" is included as Appendix 7-4.

725 BASELINE CUMULATIVE IMPACT AREA INFORMATION

Appendix 7-1 contains the results of a comprehensive investigation of groundwater and surface-water systems in the proposed Coal Hollow Mine permit and adjacent area (including the 85.88-acre Dame Lease IBC area). Appendix 7-1 also includes information regarding the probable hydrologic consequences of coal mining in the proposed Coal Hollow Mine permit area and recommendations for hydrologic monitoring. Appendix 7-1 also includes the results of a field investigation performed in the proposed Coal Hollow Mine permit and adjacent area to provide to the Division of Oil, Gas and Mining the information required to make an evaluation regarding the existence of a probable alluvial valley floor in the proposed Coal Hollow Mine permit and adjacent area. This Information together with the information submitted herein can be used to assess the probable cumulative hydrologic impacts of coal mining and reclamation operations in the proposed Coal Hollow Mine permit and adjacent area (including the 85.88-acre Dame Lease IBC area) as required by R645-301-729.

R645-301-726 Modeling

No numerical models have been created for the permit area nor are any planned.

730 OPERATION PLAN

Coal mining in the proposed Coal Hollow Mine permit area will occur using surface and underground mining techniques. All coal mining and reclamation operations will be conducted to minimize disturbance to the hydrologic balance within the permit and adjacent areas, to prevent material damage to the hydrologic balance outside the permit area and support approved postmining land uses in accordance with the terms and conditions of the approved permit and the performance standards of R645-301 and R645-302. Operations will be conducted to assure the protection or replacement of water rights in accordance with the terms and conditions of the approved permit and the performance standards of R645-301 and R645-302.

In order to maximize the use and conservation of the coal resource, coal will be recovered using a combination of large hydraulic backhoes or front end loaders and off-road trucks, highwall mining and underground mining. Mined coal will be hauled to a central coal processing area for crushing and placement into a stockpile. Coal from the stockpile will be transferred into a bin and loaded into over the road trucks for transport.

The plan, with Drawings, cross sections, narrative, descriptions, and calculations indicates how the relevant requirements will be met. The lands subject to coal mining and reclamation operations over the estimated life of the operations are identified and briefly described. All appropriate information is located in the subsequent sections and Drawings 5-1 through 5-39 and Appendices A5-1 through A5-3.

731 GENERAL REQUIREMENTS

Operations will be conducted to assure protection or replacement of water rights in accordance with the terms and conditions of the approved permit and the performance standards of R645-301 and R645-302.

Groundwater and Surface-Water Protection

To protect the hydrologic balance, coal mining and reclamation operations will be conducted to handle earth materials and runoff in a manner that minimizes acid, toxic, or other harmful infiltration to the groundwater system. Additionally, excavations, and disturbances will be managed to prevent or control discharges of pollutants to the groundwater.

Products including chemicals, fuels, and oils used in the mining process will be stored and used in a manner that minimizes the potential for these products entering groundwater systems. Concrete oil and fuel containments will be constructed as shown on Drawings 5-3 and 5-8.

mining promulgated by the U.S. Environmental Protection Agency set forth in 40 CFR part 434. Discharge of mine waters will be regulated by a Utah UPDES discharge permit.

Water pollution associated with mining and reclamation activities within the permit areas will be controlled by:

- Construction of berms and/or diversion ditches to control runoff from all facilities areas.
- Roads will be constructed with ditches to capture runoff
- Diversion ditches will be constructed as necessary around active mining and reclamation areas to capture runoff from those areas.
- Sedimentation impoundments will be constructed to control discharges
- In areas where impoundments or diversions are not suitable to the surrounding terrain, silt fence or straw bales will be utilized to control sediment discharge from the permit area.

In order to accomplish these objectives, watershed analysis of the permit and adjacent areas has been completed and specific designs are established for each water pollution control structure. Primary control structures include four sediment impoundments, four diversion ditches and miscellaneous berms. The locations of these structures can be viewed on Drawing 5-3. The detailed analysis for these structures and specific designs can be viewed on Drawings 5-25 through 5-34. In addition, a geotechnical analysis of the impoundments to ensure stability can be viewed in Appendix 5-1. The watershed and structure sizing analysis can be viewed in Appendix 5-2. In addition to these primary structures, temporary diversions and impoundments may also be implemented, as necessary, in mining areas to further enhance pollution controls.

Sediment control measures will be located, maintained, constructed and reclaimed according to plans and designs given under R645-301-732, R645-301-742 and R645-301-760. Siltation structures and diversions will be located, maintained, constructed and reclaimed according to plans and designs given under R645-301-732, R645-301-742 and R645-301-763. Storm water and snow melt that occurs within the facilities area will be routed to an impoundment that will contain sediment. This impoundment will have a drop-pipe spillway installed that will allow removal of any oil sheens that may result from parking lots or maintenance activities by using absorbent materials to remove the sheen. Details for this impoundment can be viewed on Drawings 5-28.

There are ~~four~~five sediment impoundments proposed for the permit area. These structures will be constructed using a combination of dozers and backhoes. The structures have been designed to contain the required storm events as specified in Appendix 5-2. The structures will have sediment removed as necessary to ensure the required capacities. Details for these structures can be viewed on Drawings 5-25, 5-26 and 5-28 through 5-32. Calculations and supporting text can be viewed in Appendix 5-2.

732 Sediment Control Measures

Sediment control measures have been designed, constructed and maintained to prevent additional contributions of sediment to streamflow or to runoff outside the permit area.

732.100 Siltation Structures

Siltation structures within the permit area are described in Section 732.200

732.200 Sedimentation Ponds

Four diversion ditches along with ~~four~~ five sediment impoundments are proposed for the permit area. In addition, miscellaneous controls such as silt fence and berms are also proposed for specific areas. The proposed locations for these structures are shown on Drawing 5-3. Details associated with these structures can be viewed on Drawings 5-25 through 5-34 and Appendix 5-2.

Sedimentation ponds have been designed in compliance with the requirements of R645-301-356.300, R645-301-356.400, R645-301-513.200, R645-301-742.200 through R645-301-742.240, and R645-301-763.

No sedimentation ponds or earthen structures that will remain open are planned.

The sedimentation plan has been designed to comply with the MSHA requirements given under R645-301-513.100 and R645-301-513.200.

732.300 Diversions

The runoff control plan is designed to isolate, to the maximum degree possible, runoff from disturbed areas from that of undisturbed areas. Where possible, this has been accomplished by allowing up-stream runoff to bypass the disturbed area, and routing any runoff from undisturbed areas that enter the disturbed area into a sediment control system.

Four diversion ditches along with ~~four~~ five sediment impoundments are proposed for the permit area. In addition, miscellaneous controls such as silt fence, berms and temporary diversion ditches are also proposed for specific areas. The proposed locations for these structures are shown on Drawing 5-3. Details associated with these structures can be viewed on Drawings 5-25 through 5-34 and Appendix 5-2. All temporary ditches will meet the design requirements of Diversion Ditch 4 (designed for the 100-year, 24 hour storm) and will be adjusted within the permitted active mining area in relation to the active pit, currant spoils pile configuration and reclamation.

The excess spoil is planned to be placed in an area where natural grades range from 0 to 5%. This is one of the most moderately sloping locations in the Permit Area. Stability of this structure is estimated to be 1.6 to 1.7 based on the Appendix 5-1.

Geotechnical borings were completed in the foundation of the proposed disposal area. Laboratory analysis of these borings has also been completed. Details of this analysis can be viewed in Appendix 5-1.

Permanent slopes for the proposed excess spoil will not exceed 3h:1v (33 percent), therefore no keyway cuts have been proposed in the design. Appendix 5-1 details the stability analysis for the proposed structure.

Excess spoil will not be disposed of in underground mine workings.

Horizontal lifts will not exceed four feet in thickness unless otherwise approved by the Division. The lifts will be concurrently compacted to meet 85% of the standard Procter. The geotechnical analysis (Appendix 5-1), provides information showing that these construction standards will provide mass stability and will prevent mass movement during and after construction. The excess spoil will be graded to provide drainage similar to original flow patterns. Topsoil and subsoil as designated in Chapter 2 will be removed and separated from other materials prior to placement of spoil.

A description of the character of the bedrock and any adverse geologic conditions in presented in Appendix 5-1.

Spring and seep survey information is provided on Drawing 7-1. There are no springs or seeps identified in the excess spoil area.

There are no historical underground mining operations in the proposed excess spoil area. There are ~~also no~~ future underground operations proposed.

There are no rock chimneys or drainage blankets proposed.

A stability analysis including strength parameters, pore pressures and long-term seepage conditions is presented together with all supporting data in Appendix 5-1.

Neither rock-toe buttresses nor key-way cuts are required under R645-301-535.112 or R645-301-535.113.

No valley fills or head-of-hollow fills are proposed.

No durable rock fills are proposed.

No disposal of waste on preexisting benches is planned

The diversions ditches will be utilized to direct runoff from disturbed areas to the sediment impoundments. The channel sizing for the four proposed diversion ditches has been evaluated using the TR-55 method to determine peak flows and the Manning's Equation (ME) to determine appropriate dimensions. The TR-55 method of analysis is the same method used to size impoundments and was utilized in this case to provide a peak flow for each diversion during a 100 year, 24 hour storm event. This peak flow was then input into the ME to determine an appropriate open channel design for minimizing the effects of erosion during peak flows. Similar to the impoundment sizing, the Carlson Software Hydrology module was utilized to perform these calculations. The ditch locations, designs and cross sections can be viewed on Drawings 5-33 and 5-34.

The following table summarizes the inputs and results for each diversion based on flows during a 100 year, 24 hour storm event:

Diversion Ditch Summary							
Ditch	*Base (ft)	Manning's n	Average Slope (%)	Peak Flow (cfs)	Flow Depth (ft)	Velocity (fps)	Freeboard (ft)
1	3.0	0.020	2.8	14.8	0.5	6.8	0.3
2	2.5	0.020	3.5	6.9	0.4	6.0	0.3
3	4.5	0.020	2.4	16.7	0.5	6.3	0.3
4	5.0	0.020	1.8	19.8	0.6	5.4	0.3

*All side slopes are 2h:1v

The sedimentation plan has been designed to comply with the MSHA requirements given under R645-301-513.100 and R645-301-513.200.

These structures will retain sediment within the disturbed area. The diversion ditches are designed in manner that will minimize erosion of the channels and will divert runoff from disturbed areas to the impoundments. These sediment control measures are designed to meet the effluent limitations under R645-301-751.

742.126

Water encountered underground will be stored and treated as needed in underground sumps. It is anticipated most or all of such water would be utilized in the underground mining operation. Excess water would only be discharged after meeting applicable UPDES standards.

742.200 Siltation Structures

Siltation structures have been designed in compliance with the requirements of R645-301-742.

Miscellaneous controls such as silt fence and berms are proposed for specific areas. The proposed locations for these structures are shown on Drawing 5-26. Details associated with these structures can be viewed on Drawings 5-25 through 5-34 and Appendix 5-2.

742.210 General Requirements

Additional contributions of suspended solids and sediment to streamflow or runoff outside the permit area will be prevented to the extent possible using the best technology currently available. Siltation structures for an area will be constructed before beginning any coal mining and reclamation operations in that area and, upon construction, will be certified by a qualified registered professional engineer to be constructed as designed and as approved in the reclamation plan. Any siltation structures which impounds water will be designed, constructed and maintained in accordance with R645-301-512.240, R645-301-514.300, R645-301-515.200, R645-301-533.100 through R645-301-533.600, R645-301-733.220 through R645-301-733.224, and R645-301-743.

The primary controls for limiting suspended solids and sediment to stream flow and runoff outside the permit area is sediment impoundments and diversions ditches. The proposed system described in section 742.110 is designed to control storm water/runoff discharges from the disturbed areas. Discharges from this system are expected to be minimal and infrequent. Discharges that may occur will comply with R645-301-751.

The impoundment and ditch system will be inspected regularly and discharges will be sampled for water quality purposes.

742.214

Water encountered underground will be stored and treated as needed in underground sumps. It is anticipated most or all of such water would be utilized in the underground mining operation. Excess water would only be discharged after meeting applicable UPDES standards.

742.220 Sedimentation Ponds.

742.221.1 The proposed sediment ponds are designed to be used individually

742.221.2 The locations for the sediment ponds were selected to be as near as possible to the disturbed areas and are not located in perennial streams

742.221.3 The ponds are designed and will be constructed and maintained to:

742.221.31 The ponds have been designed with excess capacity by at least 15% to allow for adequate sediment storage volume. The following table provides the design capacities in relation to a 24 hour duration, 100 year storm event:

Sedimentation Impoundment Capacities				
Structure	Storage Required	Design Storage*	Percent of	Additional

A geotechnical analysis has been completed for the proposed excess spoil structure. This analysis estimates the long-term safety factor to be 1.6 to 1.7 based on the proposed design. Following proper construction practices of building the structure in maximum four foot lifts and meeting 85% compaction based on the standard Procter will ensure that the structure will be stable under all conditions of construction. This construction will occur only in the designated excess spoil area as shown on Drawing 5-3 and 5-35. The fill will be placed with end dump haul trucks and lifts will be constructed using dozers. High precision GPS systems will be regularly utilized to check grades and appropriate lift thickness. The geotechnical analysis for this structure can be viewed in Appendix 5-1.

The excess spoil is planned to be placed in an area where natural grades range from 0 to 5%. This is one of the most moderately sloping locations in the Permit Area. Stability of this structure is estimated to be 1.6 to 1.7 based on the Appendix 5-1.

Geotechnical borings were completed in the foundation of the proposed disposal area. Laboratory analysis of these borings has also been completed. Details of this analysis can be viewed in Appendix 5-1.

Permanent slopes for the proposed excess spoil will not exceed 3h:1v (33 percent), therefore no keyway cuts have been proposed in the design. Appendix 5-1 details the stability analysis for the proposed structure.

Excess spoil will not be disposed of in underground mine workings.

Horizontal lifts will not exceed four feet in thickness unless otherwise approved by the Division. The lifts will be concurrently compacted to meet 85% of the standard Procter. The geotechnical analysis (Appendix 5-1), provides information showing that these construction standards will provide mass stability and will prevent mass movement during and after construction. The excess spoil will be graded to provide drainage similar to original flow patterns. Topsoil and subsoil as designated in Chapter 2 will be removed and separated from other materials prior to placement of spoil.

A description of the character of the bedrock and any adverse geologic conditions in presented in Appendix 5-1.

Spring and seep survey information is provided on Drawing 7-1. There are no springs or seeps identified in the excess spoil area.

There are no historical underground mining operations in the proposed excess spoil area. There are ~~also no~~ future underground operations proposed.

There are no rock chimneys or drainage blankets proposed.

A stability analysis including strength parameters, pore pressures and long-term seepage conditions is presented together with all supporting data in Appendix 5-1.

746.330. Drainage control.

No coal mine waste and associated drainage control is anticipated.

746.400. Return of Coal Processing Waste to Abandoned Underground Workings.

No coal mine processing waste is anticipated~~, nor are any underground workings planned~~ to be placed in underground workings.

747. DISPOSAL OF NONCOAL WASTE

747.100

Noncoal mine waste, including but not limited to grease, lubricants, paints, flammable liquids, garbage, machinery, lumber and other non combustible materials generated during coal mining and reclamation operations will be temporarily placed in covered dumpsters. This waste will be regularly removed from the project area and disposed of at a state approved solid waste disposal site outside the project area.

747.200

Noncoal mine waste will be stored in a metal, covered dumpster which will prevent storm precipitation or runoff from coming in contact with the waste.

747.300

No noncoal mine waste will be disposed of within the permit area with the exception perforated piping used in the construction of Alluvial Ground Water Drains. This will be left in place as mining advances. This perforated piping will be covered in place approximately 20' to 30' below the final reclaimed surface. All other waste materials (ie. metal culvert) associated with the Alluvial Ground Water Drains will be removed and disposed of in a State-approved solid waste disposal site.

748. Casing and Sealing of Wells.

Wells constructed for monitoring groundwater conditions in the proposed Coal Hollow Mine permit and adjacent area, including exploration holes and boreholes used for water wells or monitoring wells, will be designed to prevent contamination of groundwater and surface-water resources and to protect the hydrologic balance. A diagram depicting typical monitoring well construction methods is shown in Drawing 7-11. Monitoring wells will include a protective hydraulic seal immediately above the screened interval, an annular seal plugging the borehole above the hydraulic seal to near the ground surface, and a concrete surface seal extending from the top of the hydraulic seal to the ground surface which is sloped away from the well casing to prevent the entrance of surface

830.140 Detailed Estimated Costs

The bonding amount for final reclamation will depend upon the approved permit and reclamation plan (R645-301-830.120). The alternative highwall mining and underground mining will reduce surface disturbance. Mining disturbance to the surface will be reduced along with reclamation needs. Thus, estimates have been completed for the individual mining phases shown in Drawings 5-17, 5-18 and 5-19 ,the mining that will generate the largest disturbance and require the larger bond. These estimates are provided as Appendix 8-1. These cost calculations are based on the specific details shown on these drawings. As requested by the Division, a separate bond estimate is completed for all three phases shown in the drawings and in general, each stage is representative of the expected reclamation liability for Phase 1, 2 and 3, respectively. ~~If the alternative highwall mining is selected the bond will be reduced as appropriate for the area of disturbance generated.~~Based on the existing highwall mining and proposed underground mining, which reduce the disturbed area, the present posted bond is more than adequate. The bond estimate by Phase, escalated for the 2017 (anticipated end of mining) is the following:

Phase 1:	$5,346,000
Phase 2:	$9,888,000
Phase 3:	$6,624,000

A summary and supporting calculations for these cost estimates is provided in Appendix 8-1.

840. GENERAL TERMS AND CONDITIONS OF THE BOND

General terms and conditions of the bond as stated at R645-301-840 through R645-301-840.520 will be met by Alton Coal Development, LLC

850. BOND REQUIREMENTS FOR UNDERGROUND COAL MINING

Not Applicable

860. FORM OF BOND

860.100 Surety Bond

The applicant will submit a surety bond as defined under R645-100-200 and meet all the requirements under R645-301-860.110 to .120.

870. REPLACEMENT OF BONDS

Equivalent bond coverage will be provided if Alton Coal Development, LLC replaces the surety bond.

880. REQUIREMENT TO RELEASE PERFORMANCE BONDS

18

19

20

29

30

31

32

Township 39 South

Range 6 West
Range 5 West

COUNTY RD 136

COUNTY RD INTERSECTION

TEMPORARY REROUTE COUNTY RD136

DIVERSION DITCH 3

STORAGE CONTAINERS
OIL/FUEL STORAGE

PROPOSED WASHBAY

EQUIP. AREA
HOT START

DEICE PARKING AREA

WATER TANKS

RUN COAL

SCALE

ROADWAY
18" Culvert 13
18" Culvert 12
18" Culvert 1
18" Culvert 2
18" Culvert 3
18" Culvert 4
Pond 1
24 INCH DROP PIPE SPILLWAY
TOP OF RISER 6918'
BOTTOM OF RISER 6917'
24 INCH PIPE
OUTLET 6915'
Pond 1B
24 INCH INLET PIPE
24 INCH DROP PIPE SPILLWAY
Straw Bale
(Sediment Control)
COUNTY ROAD 136
CLOSURE POINT
24 INCH CULVERT
OUTLET 6897'
24 INCH CULVERT
INLET 6901'

Berm

18" Culvert 7
36" Culvert 8
18" Culvert 6
12" Culvert 5
96" Culvert 9
Outfall Diversion Ditch 2B
2B
2A
DIVERSION DITCH 2
24' Culvert 10
Pond 2
24" Culvert 11

Lower Robinson Creek

Robinson Creek
to be Reconstructed
after mining

Robinson Creek
Temporary Diversion

Primary Haulroad

DIVERSION DITCH 4
(Configuration will change
as mining progresses)

DIVERSION DITCH 4

Pond 3

DITCH TO BE
PLACED IN FILL

EXCESS SPOIL
1

PHASE
3

PHASE
2

UNDERGROUND
PORTALS

Diversion Ditch 1

Pond 4

COUNTY ROAD 136
CLOSURE POINT

PHASE 1 = 289 acres
PHASE 2 = 40 acres
PHASE 3 = 89 acres

NOTES:
Refer to drawing 2-2 for topsoil placement.

LEGEND:
- PERMIT BOUNDARY
- PRIVATE COAL OWNERSHIP
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER
- DIVERSION DITCHES
- PROPOSED SEDIMENT IMPOUNDS
- BERM
- CENTERLINE
- WATER LINE
- WATER TANK / WELL

DRAWN BY: C. McCOURT G. Grossman	CHECKED BY: LWJ
DRAWING: 5-3	DATE: 11/10/08
	SCALE: 1" = 500'
JOB NUMBER: 1400	SHEET

REVISIONS

DATE:	BY:
8/13/13	KN
10/18/13	LWJ
02/26/14	KN
07/02/14	KN

FACILITIES & STRUCTURES

LAYOUT

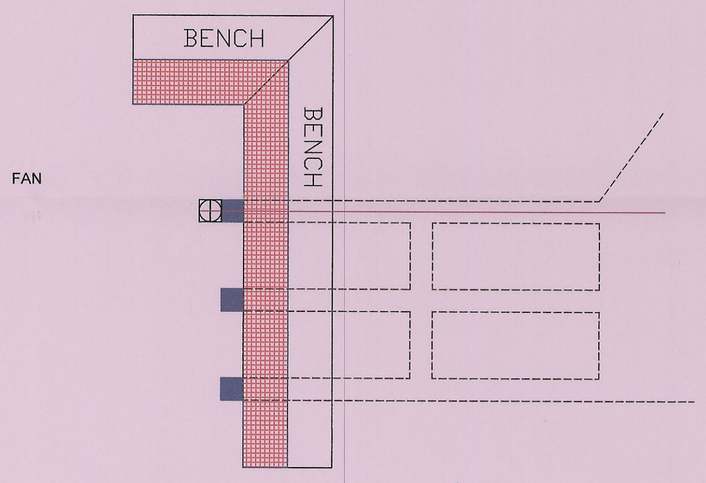
COAL HOLLOW
PROJECT
ALTON, UTAH

DRAWING: 5-3

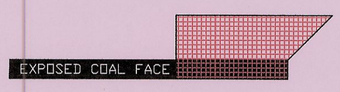
STATE OF UTAH REGISTERED #154168 DAN W. GUY PROFESSIONAL ENGINEER 7/7/14

Alton Coal Development
Coal Hollow Project
463 North 100 West, Suite 1
Cedar City, Utah 84721
Phone (435)867-5331
Fax (435)867-1192

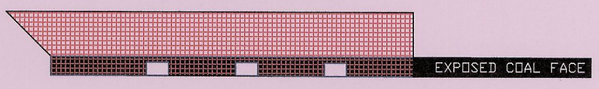
PLAN VIEW
UP IS NORTH



LOOKING TOWARDS THE NORTH
FROM GROUND LEVEL



LOOKING TOWARDS THE EAST
FROM GROUND LEVEL

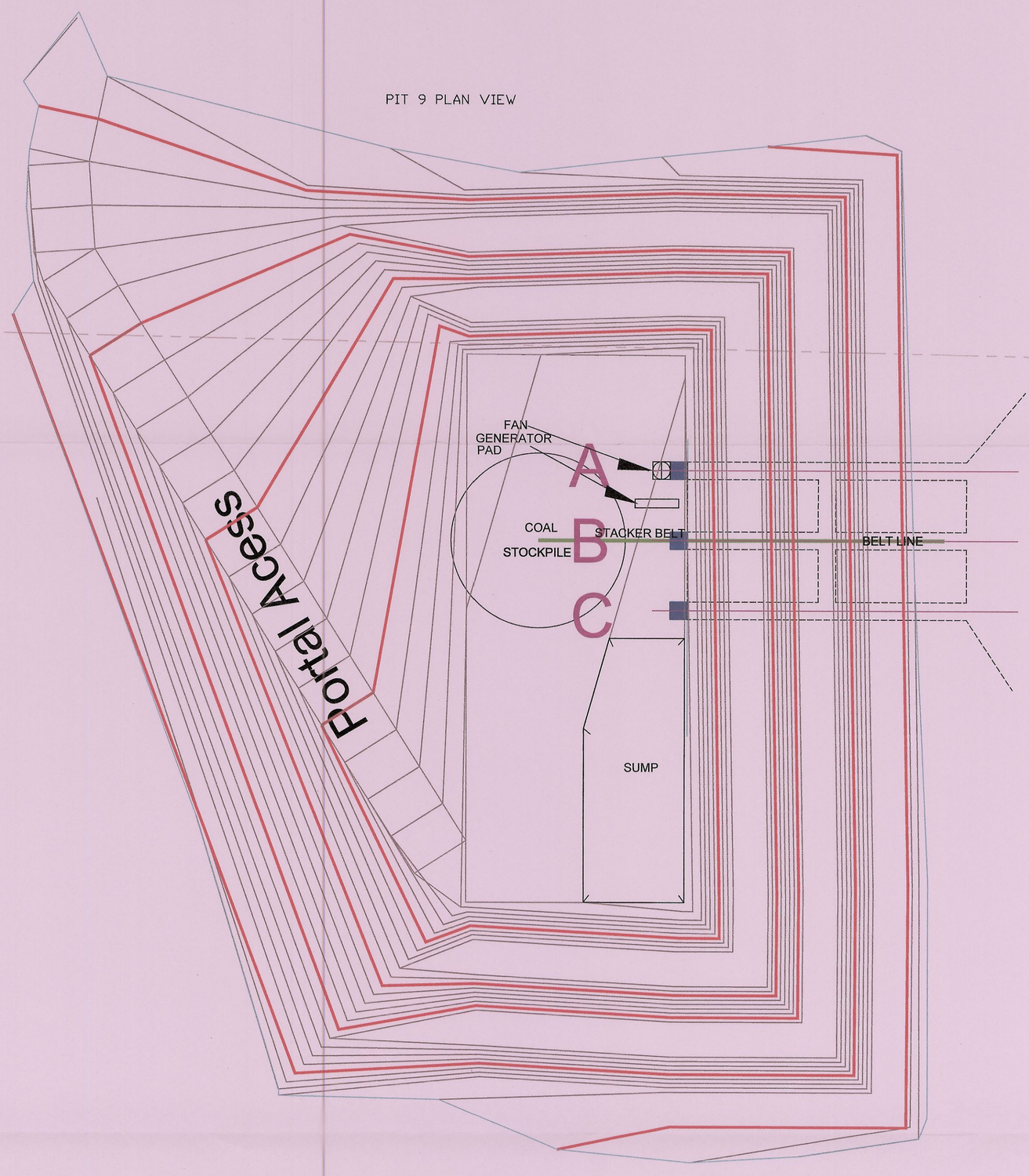


SHOTCRETE AREA

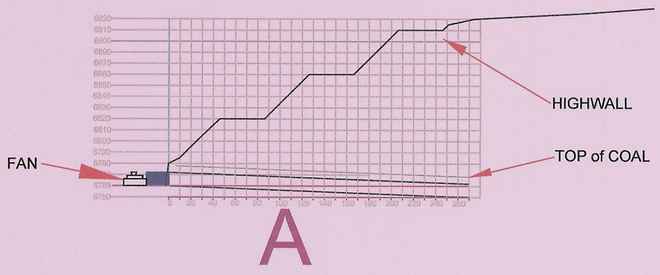
UNDERGROUND PORTALS

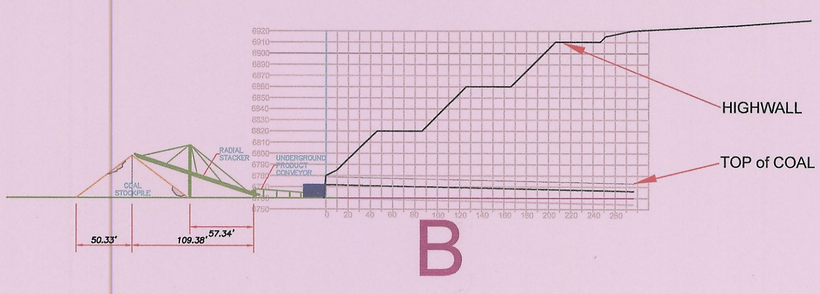
EXPOSED PORTALS

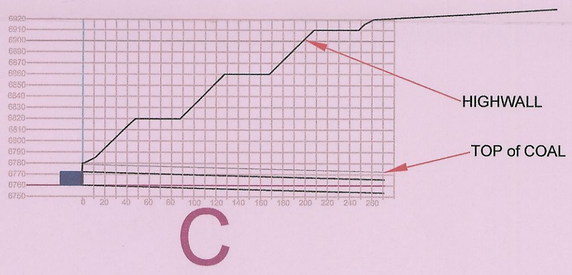
PIT 9 PLAN VIEW



PROFILE OVER PORTALS







LEGEND:

SECTION LINE

FOUND SECTION CORNER

FOUND PROPERTY CORNER

DRAWN BY: C. McCOURT G. Grossman	CHECKED BY: LWJ
DRAWING: 5–3B	DATE: 11/10/08
	SCALE: 1" = 100'
JOB NUMBER: 1400	SHEET

REVISIONS

DATE:	BY:
07/02/14	KN

UNDERGROUND FACILITIES & STRUCTURES

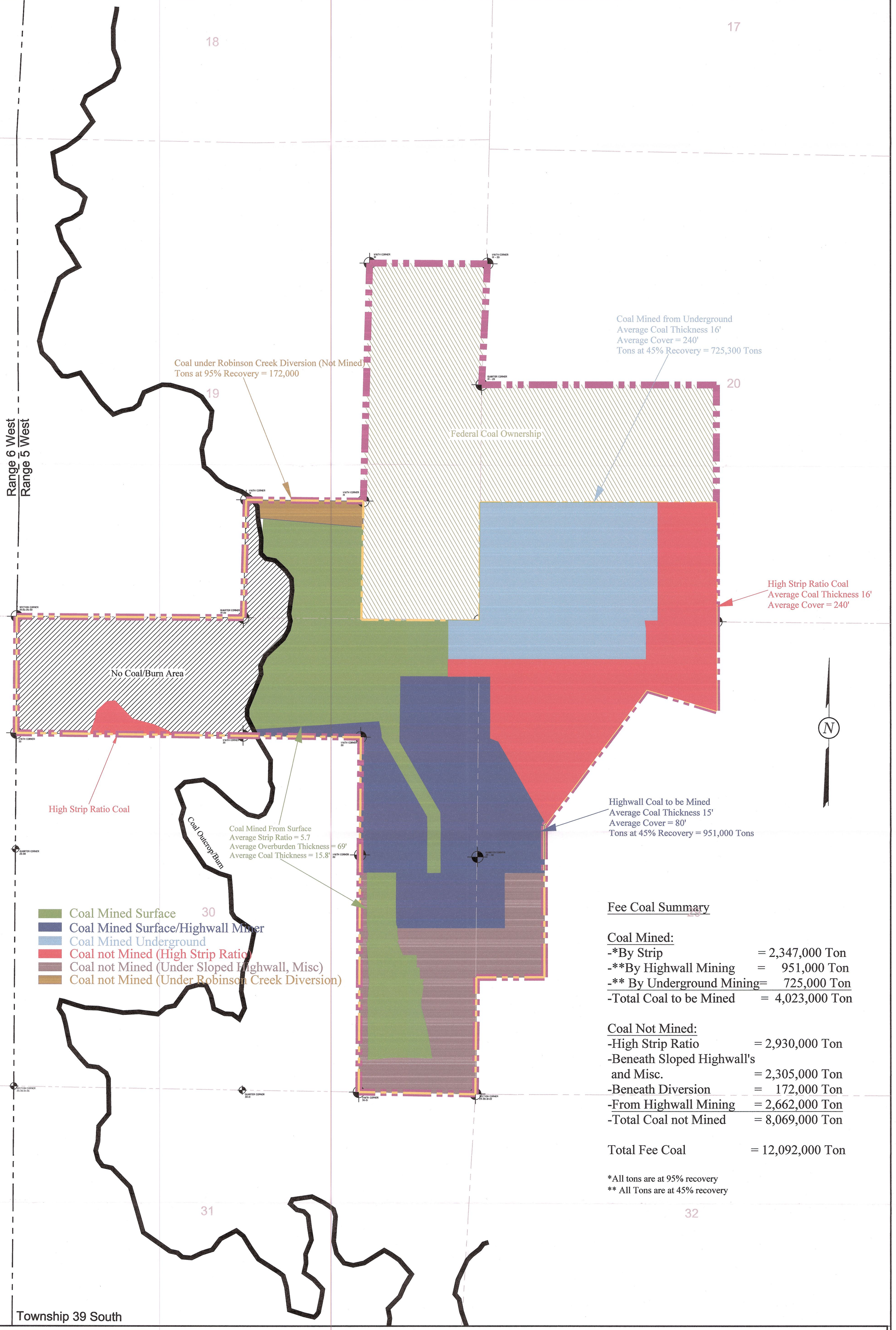
LAYOUT

COAL HOLLOW
PROJECT
ALTON, UTAH

DRAWING: 5-3B

STATE OF UTAH REGISTERED #154168 DAN W. GUY 7/7/14 PROFESSIONAL ENGINEER

Alton Coal Development
Coal Hollow Project
463 North 100 West, Suite 1
Cedar City, Utah 84721
Phone (435)867-5331
Fax (435)867-1192



Fee Coal Summary

Coal Mined:	
-*By Strip	= 2,347,000 Ton
-**By Highwall Mining	= 951,000 Ton
-** By Underground Mining	= 725,000 Ton
-Total Coal to be Mined	= 4,023,000 Ton
Coal Not Mined:	
-High Strip Ratio	= 2,930,000 Ton
-Beneath Sloped Highwall's and Misc.	= 2,305,000 Ton
-Beneath Diversion	= 172,000 Ton
-From Highwall Mining	= 2,662,000 Ton
-Total Coal not Mined	= 8,069,000 Ton
Total Fee Coal	= 12,092,000 Ton

*All tons are at 95% recovery
** All Tons are at 45% recovery

LEGEND:
- PERMIT BOUNDARY
- PRIVATE COAL OWNERSHIP
- COAL LINE BOUNDARY
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER

DRAWN BY: C. McCOURT	CHECKED BY: LWJ
DRAWING: 5–9A	DATE: 4/20/07
	SCALE: 1" = 500'
JOB NUMBER: 1400	SHEET

REVISIONS	
DATE:	BY:
9/16/08	CRM
1/14/13	KN
10/01/13	LWJ
05/09/14	KN
07/03/14	KN

COAL EXTRACTION OVERVIEW

SURFACE & HIGHWALL MINING

COAL HOLLOW PROJECT
ALTON, UTAH

DRAWING: 5-9A

UTAH REGISTERED #154168 DAN, W. GUY PROFESSIONAL ENGINEER 7/7/14

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18

17

19

20

Range 6 West
Range 5 West

1/16TH CORNER 19

1/16TH CORNER 19 - 20

QUARTER CORNER 19-20

SECTION CORNER 19-24-25-30

QUARTER CORNER 19-30

1/16TH CORNER 30

1/16TH CORNER 30

QUARTER CORNER 25-30

QUARTER CORNER 20-29

PROPERTY CORNER

Pit 1
Pit 2
Pit 3
Pit 4
Pit 5
Pit 6
Pit 7
Pit 8
Pit 9
Pit 10
Pit 11

Underground Pit 1

Pit 9 Panel 3
Pit 9 Panel 2
Pit 9 Panel 1
Pit 9 Panel 5

HWT 1
Panel 1
Panel 2
Panel 4
Panel 3

HWT 2
Panel 1
Panel 2
Panel 4
Panel 3

HWT 3
Panel 1
Panel 2

Pit 22
Pit 23
Pit 24
Pit 25
Pit 26
Pit 27
Pit 28

Panel 1
Panel 2
Panel 3

Coal Outcrop/Burn

2011 (542,200 Ton)
2012 (505,000 Ton)
2013 (567,600 Ton)
2014 (684,800 Ton)
2015 (761,600 Ton)
2016 (430,800 Ton)

Note 1: Mining may occur in adjacent pits simultaneously.

Note 2: Permit was issued Nov. 10, 2010. First coal was mined early Feb. 2011.

Note 3: Drawing 5-10A is an estimate of the locations of highwall and underground mining locations. Underground portals could be installed in Pit 10 and Pit 11 coal not mined from the surface

30

29

31

32

Township 39 South

N

LEGEND:			
PERMIT BOUNDARY	DRAWN BY: C. McCOURT	CHECKED BY: LWJ	
PRIVATE COAL OWNERSHIP	DRAWING: 5–10	DATE: 4/20/07	
COAL LINE BOUNDARY		SCALE: 1" = 500'	
COAL RECOVERY	JOB NUMBER: 1400	SHEET	
SECTION LINE			
FOUND SECTION CORNER			
FOUND PROPERTY CORNER			

REVISIONS	
DATE:	BY:
1/30/14	KN
5/7/14	KN
7/3/14	KN

COAL REMOVAL SEQUENCE

COAL HOLLOW PROJECT
ALTON, UTAH

DRAWING: 5-10A

UTAH REGISTERED #154168 DAN W. GUY 7/9/14 PROFESSIONAL ENGINEER

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Coal Hollow Project

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18

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Range 6 West
Range 5 West

1/16TH CORNER 19

1/16TH CORNER 19

1/16TH CORNER 19 - 20

QUARTER CORNER 19 - 20

SECTION CORNER 19-24-25-30

QUARTER CORNER 19-30

SECTION CORNER 19-20-29-30

PROPERTY CORNER

QUARTER CORNER 20-29

1/16TH CORNER 30

1/16TH CORNER 30

1/16TH CORNER 30

1/16TH CORNER 30

QUARTER CORNER 29 - 30

Coal Outcrop/Burn

QUARTER CORNER 29-30

SECTION CORNER 29-30-31-30

QUARTER CORNER 30-31

1/16TH CORNER 30-31

SECTION CORNER 29-30-31-32

100

200

300

N

30

29

31

32

CONTOURS ARE SHOWN AT 10' INTERVALS.

Township 39 South

LEGEND:

- PERMIT BOUNDARY
- PRIVATE COAL OWNERSHIP
- COAL LINE BOUNDARY
- COAL RECOVERY LINE
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER

DRAWN BY:	CHECKED BY:
C. McCOURT	GG
DRAWING: 5-15	DATE: 4/20/07
	SCALE: 1" = 500'
JOB NUMBER: 1400	SHEET

REVISIONS	
DATE:	BY:
9/16/08	CRM
6/26/14	KN

OVERBURDEN ISOPACH

COAL HOLLOW PROJECT
ALTON, UTAH

DRAWING: 5-15

UTAH REGISTERED #154168 DAN W. GUY PROFESSIONAL ENGINEER 7/7/14

ALTON COAL DEVELOPMENT
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