C/025/005 Incoming
#4254
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Alton Coal Development, LLC
463 North 100 West, Suite 1
Cedar City, Utah 84720
Phone (435) 867-5331 • Fax (435) 867-1192

February 11, 2013

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

Subject: **Change in Mining Sequence, Task ID # 4198 Coal Hollow Project, Kane County, Utah, C/025/0005**

Dear Mr. Haddock,

Alton Coal Development, LLC is providing this submittal to change the order in which the coal panels are mined. This change in sequence allows equipment and man power to remain the same while panels of similar strip ratios are mined, then increase as greater strip ratios are encountered later in the mine life.

Please find enclosed 3 (three) redline strikeout paper copies of additions and revisions and 2 (two) clean copies for insertion into the MRP. Please do not hesitate to contact me if you have any questions. Sequence

Sincerely

B. Kirk Nicholes
Environmental Specialist

File in:
☐ Confidential
☐ Shelf
☒ Expandable
Date Folder 02/13 C/025/0005
Incoming

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APPLICATION FOR COAL PERMIT PROCESSING

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

Permittee: Alton Coal Development, LLC
Mine: Coal Hollow **Permit Number:** C/025/0005
Title: Change in Mining Sequence
Description, Include reason for application and timing required to implement:
Change in mining sequence to allow for more efficient use of manpower and equipment

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

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

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

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

B. Kirk Nicholes
Print Name

B. Kirk Nicholes, Envi. Specialist, 2/11/13
Sign Name, Position, Date

Subscribed and sworn to before me this 11 day of Feb., 2013

Lorna Reese
Notary Public

My commission Expires: 3-18, 2013
Attest: State of Utah } ss:
County of Sevier }

NOTARY PUBLIC
LORNA REESE
578215
COMMISSION EXPIRES
MARCH 18, 2013
STATE OF UTAH

For Office Use Only:	Assigned Tracking Number:	Received by Oil, Gas & Mining
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Form DOGM- C1 (Revised March 12, 2002)

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

Permittee: Alton Coal Development, LLC
Mine: Coal Hollow **Permit Number:** C/025/0005
Title: Change in Mining Sequence

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. 3 Chapter 5 Pages 5-17, 5-18, 5-20 through 5-22, 5-35, 5-38 through 5-40, 5-61, and 5-65 through 5-68
☐ Add	☒ Replace	☐ Remove	Vol. 8 Chapter 8 Page 8-2
☐ Add	☒ Replace	☐ Remove	Vol. 8 Chapter 8 Appendix 8-1Page 3 and 4
☐ Add	☒ Replace	☐ Remove	Vol. 8 Chapter 8 Appendix 8-1 Phase 2 - Reclamation Estimate (Estimate Detail) Page 1-3
☐ Add	☒ Replace	☐ Remove	Vol. 8 Chapter 8 Appendix 8-1 Phase 2 - Reclamation Estimate (Pit Backfill -Truck and Shovel, Fleet Production and Cost Analysis) All
☐ Add	☒ Replace	☐ Remove	Vol. 8 Chapter 8 Appendix 8-1 Phase 3 - Reclamation Estimate (Estimate Detail) Page 1-3
☐ Add	☒ Replace	☐ Remove	Vol. 8 Chapter 8 Appendix 8-1 Phase 3 - Reclamation Estimate (Pit Backfill -Truck and Shovel, Fleet Production and Cost Analysis) All
☐ Add	☒ Replace	☐ Remove	Vol. 3 Chapter 5 Drawing 5-2
☐ Add	☒ Replace	☐ Remove	Vol. 3 Chapter 5 Drawing 5-3
☐ Add	☒ Replace	☐ Remove	Vol. 3 Chapter 5 Drawing 5-9
☐ Add	☒ Replace	☐ Remove	Vol. 3 Chapter 5 Drawing 5-10
☐ Add	☒ Replace	☐ Remove	Vol. 4 Chapter 5 Drawing 5-16
☐ Add	☒ Replace	☐ Remove	Vol. 4 Chapter 5 Drawing 5-17
☐ Add	☒ Replace	☐ Remove	Vol. 4 Chapter 5 Drawing 5-18
☐ Add	☒ Replace	☐ Remove	Vol. 4 Chapter 5 Drawing 5-19
☐ Add	☒ Replace	☐ Remove	Vol. 5 Chapter 5 Drawing 5-38
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Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.

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detail the designs and specifications for each one of the proposed facilities. The following is a description of each facility and a reference for the associated drawings:

- Roads: Two primary mine haul roads are planned within the permit area. The first road extends from the coal unloading area to the first series of pits along the west side of the property. This road will be utilized for access to pits ~~1 through 15~~ (pits shown on Drawing 5-10). This road will be approximately ~~2,600~~2,800 feet in length and will be utilized ~~mainly during the first two years of~~throughtout mining. There will be three culverts installed along this road all sized for a 100 year, 24 hour storm event. The first culvert will be across a tributary of Lower Robinson Creek and will be a 36 inch corrugated steel pipe. The second culvert is the main crossing over Lower Robinson Creek and is a 96 inch corrugated steel pipe. Both of these culverts have been sized based on analysis of the Lower Robinson Creek watershed. This analysis can be viewed in Appendix A5-3. The third culvert is crossing over a diversion ditch that will route water mainly from disturbed areas along the south side of Lower Robinson Creek to a sediment impoundment. This culvert will be a 24 inch corrugated steel pipe.

  The second road extends from an intersection with the first road, located just south of the Lower Robinson Creek crossing, and proceeds southeast to ~~approximately pit 25~~long term topsoil stockpile 2 and subsoil stockpile pile 1 . This road is approximately ~~2,500~~1,300 feet in length ~~and will be used for the south pits 16 through 30~~. There is one culvert crossing along this road to cross a diversion ditch. This culvert will be a 24 inch culvert sized for maximum anticipated flows in the diversion.

  The following specifications apply to these Primary mine haul roads:
  1) Roads will be approximately 80' in width
  2) Approximately a 2% crown
  3) Approximately one foot deep cut ditches along shoulders for controlling storm water
  4) 18" of crushed rock or gravel for road surfacing
  5) Cut and fill slopes of 1.5 h:1v
  6) Minimum fill over each culvert will be 2 times diameter of culvert
  7) Berms placed as necessary along fills

  The ancillary roads will have similar specifications except surfacing will occur only as needed and may be narrowed to a 40 foot road width. A typical cross section for the ancillary roads can be viewed on Drawing 5-24.

  The location and details for Primary Mine Haul roads can be viewed on Drawings 5-3 and 5-22 and 5-23.

  In addition to the two roads primary Mine Haul roads, the road located within the facilities area is also classified as a primary road. This road is planned to be 24 feet wide with 24 inches of compacted sub base and 8 inches of compacted 1 inch minus

gravel as surfacing. This road is referred to as "Facilities Roadway" and more details are described in 527.200 along with Drawings 5-22A and 5-22B.

In addition to the primary roads that will be present during active mining, four additional roads are planned to exist postmining and are also classified as primary roads for this reason.

Roads that will remain postmining are the following:

- Road to Water Well with details shown on Drawing 5-22D
- Road to east C. Burton Pugh property (K3993) with details shown on Drawing 5-22C. Kane County has claimed this road as County Road K3993.
- County Road 136 (K3900) with details on Drawing 5-22E, 5-22F and 5-22H. This County road will be reconstructed within the permit area by Kane County. This reconstruction will occur concurrently with the final stage of reclamation as scheduled on Drawing 5-38 and is expected to be completed by ~~the end of Year 4~~2017.
- Road to Swapp Ranch (same specification as the Water Well Road)

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

The ramps, benches and equipment travel paths within the active surface mining area are temporary in nature and will be relocated frequently as mining progresses. These temporary travelways are considered part of the pit due to their short term use, and are not individually designed nor engineered. They will be built and maintained to facilitate safe and efficient mine and reclamation operations.

- Conveyors: A conveyor system will be used to stockpile coal and to load highway approved haul trucks for transportation to market. The first conveyor is mainly a stacker system for the coal stockpile which will be located at the coal unloading area and will be approximately 451' in length. This conveyor is estimated to be a 48" solid frame system.

  The second conveyor is a coal reclaim belt that will be loaded by an above ground reclaim feeder from the coal stockpile and will convey coal to the loadout chute which will load the highway approved coal haulage trucks. This section will be approximately 290' in length. Similar to the first section, this conveyor is estimated to be a 48" solid frame system.

  Drawings of this system can be viewed on Drawings 5-3 through 5-5.

521.180. Support facilities.

Description of the support facilities is provided in Section 526.220. Drawings 5-3, 5-4, 5-5, 5-6, 5-7, 5-8, 5-8A, 5-8B, and 5-8C provide the maps, appropriate cross sections,

may be recovered in the future when adjacent property rights are secured. Current plans are for a planned maximum mining depth of approximately 200 ft. and a strip ratio of 10:1; however, the ultimate mining depth will depend on cost related factors.

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

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	9,159,000
High Strip Ratio Area (NE corner of permit area)	Not Mined	16.5	13.5	2,764,000
Coal under highwalls and sedimentation structures	Not Mined	17.2	4.8	1,~~207~~582,000
Coal under Robinson Creek Diversion	Not Mined	15.5	3.9	172,000
Recoverable Coal	Mined	16.3	6.4	~~5,016~~4,641,000

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

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.

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.

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 pit 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 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 ~~5,024~~4.64 million tons of coal over a life of approximately ~~3~~6 years. The estimated production schedule is summarized below:

		Tons Produced
Year		(000)
1		~~2,000~~542
2		~~2,000~~505
3		~~1,016~~750
4		1,000
5		1,000
6		844
Total		~~5,0~~4,641

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. 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.

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 southwest 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. ~~The pit will then turn south, and advance to the north edge of Section 31 T39S, R5W. This mining and reclamation phase can be viewed on Drawing 5-19.~~ As shown on Drawing 5-19, the final pits, pit 17 through 21, will not be backfilled at this stage. The proposed method for filling these pits back to approximate original contour will be accomplished by utilizing overburden from the pit(s) in the adjacent federal reserves located immediately west 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

All other roads planned for construction within the permit area will be classified as ancillary. These will include temporary ramps, benches and equipment travel paths within the active mining area.

527.200 Description of Roads

Roads for the Coal Hollow Mine include seven primary roads, a conveyor system, and miscellaneous ancillary/temporary roads. Numerous drawings detail the designs and specifications for each one of the proposed facilities. The following is a description of each facility and a reference for the associated drawings:

- Roads: Two primary mine haul roads are planned within the permit area. The first road extends from the coal unloading area to the first series of pits along the west side of the property. This road will be utilized for access to pits ~~1 through 15~~ (pits shown on Drawing 5-10). This road will be approximately ~~2,600~~2,800 feet in length and will be utilized ~~mainly during the first two years of~~throughout mining. There will be three culverts installed along this road all sized for a 100 year, 24 hour storm event. The first culvert will be across a tributary of Lower Robinson Creek and will be a 36 inch corrugated steel pipe. The second culvert is the main crossing over Lower Robinson Creek and is a 96 inch corrugated steel pipe. Both of these culverts have been sized based on analysis of the Lower Robinson Creek watershed. This analysis can be viewed in Appendix A5-3. The third culvert is crossing over a diversion ditch that will route water mainly from disturbed areas along the south side of Lower Robinson Creek to a sediment impoundment. This culvert will be a 24 inch corrugated steel pipe.

  The second road extends from an intersection with the first road, located just south of the Lower Robinson Creek crossing, and proceeds southeast to ~~approximately pit 25~~long term topsoil stockpile 2 and subsoil stockpile 1. This road is approximately ~~2,500~~1,300 feet in length ~~and will be used for the south pits 16 through 30~~. There is one culvert crossing along this road to cross a diversion ditch. This culvert will be a 24 inch culvert sized for maximum anticipated flows in the diversion.

  The following specifications apply to these Primary mine haul roads:
  1) Roads will be approximately 80' in width
  2) Approximately a 2% crown
  3) Approximately one foot deep cut ditches along shoulders for controlling storm water
  4) 18" of crushed rock or gravel for road surfacing
  5) Cut and fill slopes of 1.5 h:1v
  6) Minimum fill over each culvert will be 2 times diameter of culvert
  7) Berms placed as necessary along fills

  The ancillary roads will have similar specifications except surfacing will occur only as needed and may be narrowed to a 40 foot road width. A typical cross section for the ancillary roads can be viewed on Drawing 5-24.

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, 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 applicable regulations. At the conclusion of mining, the facilities will be removed as part of final mine reclamation activities. Material from coal stockpile areas, and other areas of potential coal accumulation will be excavated and the excavated material placed in the final mined out pit.

528.200. Overburden;

Overburden will be excavated after the removal of topsoil and subsoil as defined in Chapter 2. The overburden excavation will be accomplished by utilizing hydraulic excavators with end dump haul trucks and dozers. This process will include excavating this material in a stairstep fashion that will include benches approximately every 40 feet in depth. These benches are planned to be approximately 40 feet in width and will create an overall 2h:1v slope for the highwalls to create a stable and safe working area. This is a conservative approach for initial mining and once mining begins, ongoing geotechnical studies and monitoring will be used to further define the proper slope angle to ensure slope stability while maximizing resource recovery.

Based on the overburden isopach map (Drawing 5-15), the overburden removal has been separated into three major stages. The first stage of overburden removal is the initial mining area, Pits 1-8. These pits have a relatively low strip ratio, approximately 5:1 (refer to Drawing 5-13). In order to efficiently remove overburden for this phase, spoil from the first three pits will be placed in an excess spoil area. This excess spoil structure will hold approximately 2.7 million loose cubic yards (LCY) of material. Once the excess spoil pile is filled, overburden from the next 4 pits can then be used as pit backfill as the mining progresses through Pit 8. The completion of this phase is shown on Drawing 5-17.

Phase 2 requires mining to occur in two areas of the permit alternatly. As mining progresses through Pits 9-~~15~~13, the isopach (Drawing 5-15) shows that the overburden significantly increases. This increase and the shape of the mining boundary for the Permit Area requires a fill above approximate original contour. Material from Pits 9-~~15~~ 13 significantly exceeds the backfill capacity available from the preceding pits (Pits 1-8). The fill above approximate original contour blends in with the excess spoil structure from Stage 1 and extends an additional 2,500 feet to the east as the mining sequence proceeds to Pit 15.

Also, mining begins with Pit 28 and proceeds alternately with Pits 9-13, north to Pit 23. The isopach shows that Pits 28 -23 have a relatively low strip ratio, approximately 4.2:1 increasing to 4.9:1 respectively. Overburden from Pit 28 will all be hauled to the excess spoil structure, with overburden from the successive pits to north back filling the previously mined. In this stage, the fill above original contour is approximately 5.8 million LCY. Drawing 5-18 (Stage 2) shows the details of this stage of the overburden removal and resulting landform.

Stage 3 overburden removal begins in Pit ~~16~~ 14 and proceeds alternately with Pit 22 coming from the south to meet at Pit 18, the last pit to be mined~~through Pit 30~~. During this stage, the strip ratio reduces significantly from Stage 2 as mining progresses ~~to the south end of the property~~to Pit 18. As the strip ratio reduces to the south, significant backfill capacity is available in the preceding pits. This results in the distance between the backfill and the active coal face increasing. At the end of mining, an area will not be completely backfilled that is approximately ~~2,000~~1,500 feet in length and 1,300 feet wide and will require 6.~~8~~ 3 million yards of fill to complete reclamation to approximate original contour. The backfill configuration at the end of this stage is shown in Drawing 5-19.

The proposed plan for backfilling these final pits includes acquiring the right to mine the adjacent federal coal reserves, located immediately west of this area. This plan provides an efficient method for transitioning operations into the federal reserves. At the time that this transition occurs, overburden will be removed from the federal reserves and placed in the final pits to approximate original contour. This final landform can be viewed on Drawing 5-35 and 5-36.

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 final landform for this scenario is shown on Drawing 5-37. This step requires rehandle of approximately ~~6.8~~6.3 million yards of spoil.

The following tables show the material balance during the different phases of overburden removal for each scenario:

Preferred Scenario (Adjacent Federal Reserves Acquired)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	~~7,945,000~~7,936,000	~~5,204,000~~5,195,000	2,741,000	2,741,000
2	~~15,145,000~~14,168,000	~~9,303,000~~8,326,000	5,842,000	8,583,000
3	~~15,447,000~~14,631,000	~~22,247,000~~20,931,000	0	8,583,000
4 (Federal)	~~6,300,000~~6,300,000	~~6,300,000~~6,300,000	0	8,583,000
Total	~~45,337,000~~43,535,000	~~36,754,000~~34,453,000	8,583,000	8,583,000

*Loose Cubic Yards is estimated based on an overall 22% swell factor (Caterpillar Performance Handbook)

Alternate Scenario (Adjacent Federal Reserves Not Acquired)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	~~7,945,000~~7,936,000	~~5,204,000~~5,195,000	2,741,000	2,741,000
2	~~15,145,000~~14,168,000	~~9,303,000~~8,326,000	5,842,000	8,583,000
3	~~15,447,000~~14,631,000	~~22,247,000~~20,931,000	0	8,583,000
4 (Rehandle)	0	~~6,800,000~~6,300,000	~~-6,800,000-~~ 6,300,000	~~1,783,000~~2,283,000
Total	~~38,537,000~~36,735,000	~~36,754,000~~34,453,000	~~1,783,000~~2,283,000	~~1,783,000~~2,283,000

*Loose Cubic Yards is estimated based on an overall 22% swell factor (Caterpillar Performance Handbook)

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.

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

revegetation. No permanent final pit impoundments are currently planned. The excess spoil structure will remain. All exposed coal seams, and acidic or toxic-forming strata will be covered with at least five feet of noncombustible material.

- Topsoil and Subsoil Replacement. 8 inches of topsoil underlain by 40 inches of subsoil will be placed on the backfilled pits and excess spoil. Other disturbed areas will have topsoil replaced (including facilities sites, roads etc.).

- Removal of Structures. Before abandoning the permit area or seeking bond release, all structures not needed for the approved post mining land use will be removed and reclaimed. The Lower Robinson Creek diversion is proposed to be temporary. Material from the coal stockpile base area and other areas where coal spillage may accumulate will be excavated and placed in a controlled manner in the final pit and covered with noncombustible material to prevent sustained combustion. The only structure planned to exist postmining is the water well with details shown in Drawing 5-8C and location shown on 5-3, 5-35 and 5-37.

- Removal of Roads. Roads not retained for use under an approved postmining land use will be reclaimed immediately after they are no longer needed for mining and reclamation operations. Roads that are not listed as postmining roads in this section, will be closed to traffic; and all bridges and culverts removed. Prior to reclamation, surface material that is incompatible with the postmining land use and revegetation requirements will be removed from the roads and properly disposed of at the mine site. The roadbeds will be scarified or ripped to break up the surface. Topsoil will be replaced on the roadbed and the surface revegetated in accordance with the standards set forth in R645.

  Roads that will remain postmining are the following:
  - Road to Water Well with details shown on Drawing 5-22D
  - Road to east C. Burton Pugh property (K3993) with details shown on Drawing 5-22C
  - County Road 136 (K3900) with details on Drawing 5-22E, 5-22F and 5-22G. This County road will be reconstructed within the permit area by Kane County. This reconstruction will occur concurrently with the final stage of reclamation as scheduled on Drawing 5-38 and is expected to be completed by ~~the end of Year 4~~2017.
  - Road to Swapp Ranch (same specification as the Water Well Road)

  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.

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.
If any exploration boreholes are to be used as monitoring wells or water wells, these will meet the provisions of R645-301-731

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.

552. PERMANENT FEATURES.

552.100

Small depressions may be constructed if they are needed to retain moisture, minimize erosion, create and enhance wildlife habitat, or assist revegetation.

552.200

All impoundments will be reclaimed, no permanent impoundments are proposed.

553 BACKFILLING AND GRADING:

Backfilling and Grading of the mined area will proceed in conjunction with coal recovery operations.

The planned mine will recover approximately ~~5.02~~4.64 million tons of coal, and remove approximately ~~31.6~~30.1 million Bank Cubic Yards (BCY) of overburden. The following is a description of the overburden removal and backfilling process:

Based on the overburden isopach map (Drawing 5-15), the overburden removal and backfilling process has been separated into three major stages. The first stage of this process is for the initial mining area, Pits 1-8. These pits have a relatively low strip ratio, approximately 5:1 (refer to Drawing 5-13). In order to efficiently remove overburden for this phase, spoil from the first three pits will be placed in an excess spoil area located immediately west of Pit 1. This excess spoil structure will hold approximately 2.7 million loose cubic yards (LCY) of material and is shown on Drawing 5-17. Once the excess spoil pile is filled, overburden from the next 4 pits can then be used as pit backfill as the mining progresses through Pit 8. The completion of this phase is shown on Drawing 5-17.

Phase 2 requires mining to occure in two areas of the permit alternately. As mining progresses through Pits 9-~~15~~13, the isopach (Drawing 5-15) shows that the overburden significantly increases. This increase and the shape of the mining boundary for the Permit Area require a fill above approximate original contour that is an extension of the excess spoil pile. Material from Pits 9-~~15~~13 significantly exceeds the backfill capacity available from the preceding pits (Pits 1-8). The fill above approximate original contour blends in with the excess spoil structure from Stage 1 and extends an additional 2,500 feet to the east as the mining sequence proceeds to Pit 15.

Also, mining begins with Pit 28 and proceeds alternately with Pits 9-13, north to Pit 23. The isopach shows that Pits 28 -23 have a relatively low strip ratio, approximately 4.2:1 increasing to 4.9:1 respectively. Overburden from Pit 28 will all be hauled to the excess spoil structure, with overburden from the successive pits to north back filling the previously mined. In this stage, the fill above original contour is approximately 5.8 million LCY. Drawing 5-18 (Stage 2) shows the details of this stage of the overburden removal and resulting landform.

Stage 3 overburden removal begins in Pit ~~16~~14 and proceeds alternately with Pit 22 coming from the south to meet at Pit 18, the last pit to be mined~~through Pit 30~~. During this stage, the strip ratio reduces significantly from Stage 2 as mining progresses to ~~the south end of the property~~Pit 18. As the strip ratio reduces to the south, significant backfill capacity is available in the preceding Pit 15. This results in the distance between the backfill and the active coal face increasing because there is a lack of spoil in the lower ratio pits as mining proceeds south to fill the preceding higher ratio area. At the end of mining this phase, an area will not be completely backfilled that is approximately ~~2,000~~1,500 feet in length and 1,300 feet wide and will require 6.~~8~~3 million yards of fill to complete reclamation to approximate original contour. This remaining pit provides an open pit adjacent to the federal coal reserves for backfilling of overburden so that a smooth transition can be made without developing another boxcut and an excess spoil area. The backfill configuration at the end of this stage is shown in Drawing 5-19.

The proposed plan (Preferred Scenario) for backfilling the final pits is based on the assumption that Alton Coal Development, LLC will be successful with acquiring the adjacent federal coal reserves, located immediately to the west of the project area. This Preferred scenario for backfilling 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 box cut as operations are transitioned into these reserves. In addition, this scenario provides a method for implementing concurrent reclamation during the project by eliminating temporary stockpiles of spoil that can not be reclaimed and have to be placed in backfilled areas at a later time. Use of temporary spoil stockpiles significantly delay reclamation and this plan eliminates the need for these type of temporary structures.

At the time that the transition occurs into the federal reserves, overburden will be removed from the federal reserves and placed in the final pits to approximate original contour. This final landform can be viewed on Drawings 5-35 and 5-36.

The following is an overburden and backfill balance for this scenario:

Preferred Scenario (Adjacent Federal Reserves Acquired)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	~~7,945,000~~7,936,000	~~5,204,000~~5,195,000	2,741,000	2,741,000
2	~~15,145,000~~14,168,000	~~9,303,000~~8,326,000	5,842,000	8,583,000
3	~~15,447,000~~14,631,000	~~22,247,000~~20,931,000	0	8,583,000
4 (Federal)	~~6,800,000~~6,300,000	~~6,800,000~~6,300,000	0	8,583,000
Total	~~45,337,000~~43,535,000	~~36,754,000~~34,453,000	8,583,000	8,583,000

*Loose Cubic Yards is estimated based on an overall 22% swell factor (Caterpillar Performance Handbook)

In the case that Alton Coal Development is not successful with acquiring the adjacent federal coal reserves, an alternate scenario has been developed. The Alternate scenario requires that all fill above approximate original contour and part of the excess spoil structure will be rehandled and placed in the remaining backfill area. The final landform for this scenario is shown on Drawing 5-37. This step requires rehandle of approximately 6.8 million yards of spoil. In this scenario, reclamation of the project area will be significantly delayed and the transition into adjacent federal coal reserves at a later date will disturb additional backfill along the west permit boundary approximately 2,000 feet in length by 230 feet wide (10 acres). An additional excess spoil structure would then need to be constructed on the federal lands to place spoil from the initial boxcut. Part of 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.

The following table summarizes the overburden and backfill balance for this scenario:

Alternate Scenario (Adjacent Federal Reserves Not Acquired)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	~~7,945,000~~7,936,000	~~5,204,000~~5,195,000	2,741,000	2,741,000
2	~~15,145,000~~14,168,000	~~9,303,000~~8,326,000	5,842,000	8,583,000
3	~~15,447,000~~14,631,000	~~22,247,000~~20,931,000	0	8,583,000
4 (Rehandle)	0	~~6,800,000~~6,300,000	- ~~6,800,000~~6,300,000	~~1,783,000~~2,283,000
Total	~~38,537,000~~36,735,000	~~36,754,000~~34,453,000	~~1,783,000~~2,283,000	~~1,783,000~~2,283,000

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 in the south end of the mining area (Pits ~~24~~ 17 through ~~30~~21), which is described above in a step by step manner in the Stage 3 overburden removal process, the above tables and Drawings 5-17 through 5-19. This exemption is expected to take place in the last ~~Y~~year ~~3~~ of the mining process.

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 safety factor of 1.3 and prevent slides. A geotechnical analysis has been completed for the excess spoil structure and can be found in Appendix 5-1.

Timing of backfilling and grading operations will depend on the rate of mine advance and the availability of backfill space and material. It is planned that mined areas will be backfilled and graded within approximately 60 days following coal removal, or 1,500 feet of the active coal removal face. As described in the previous text and shown on Drawing 5-19, there will be a variance from this standard in the final pits. 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 as they become available.

In the initial mining area, pits 1 through 8 (spoil from pit 2 and 3 will be permanently placed in the excess spoil area and pit 1. Part of Pit 3 is placed in the previous pit. All of the 4th pit is placed in the pit 3, beginning the sequential pit backfilling process. By the time coal recovery is complete, rough backfilling and grading will be complete through 7 pits. Rough backfilling and grading will continue and be completed through pit 8. Pits 1, 2, and 3 are defined on drawing 5-10. Pits 4 through 8 will be determined during the mining of pits 1, 2, and 3. At that time, an amendment to this permit reflecting the number and sequence of pits 4 through 8 will be submitted to the division.

830.140 Detailed Estimated Costs

The bonding amount for final reclamation will depend upon the approved permit and reclamation plan (R645-301-830.120). Estimates have been completed for the individual mining phases shown in Drawings 5-17, 5-18 and 5-19. 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 ~~years~~ Phase 1, 2 and 3, respectively. The bond estimate by year is the following:

Phase 1: $5,346,000
Phase 2: $~~10,859,000~~10,498,469
Phase 3: $~~10,889,000~~10,142,144

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

Upon completion of reclamation operations, the applicant will apply for bond release and meet the requirements of R645-301-880.

Specialized Reclamation Areas

The specialized reclamation areas include ponds 2, 3 and 4 along with the Lower Robinson Creek reconstruction. The calculations for these specific areas are provided separately and applied to each phase of development as appropriate. The overall cost estimate for these areas varies depending on the mine development phase.

Phase 1

The details for this phase of mine development is shown on Drawing 5-17. At this point of mine development, Pits 1 through 8 have been mined. A 2.7 million yard excess spoil pile has been constructed and pits 1 through 6 have been backfilled, subsoil/topsoil placed and the surface graded to the approximate original contour (AOC). This estimate includes rehandle of the entire excess spoil pile to backfill Pits 7 and 8 which are open at this point. This requires a combination of dozers and truck/shovel operations to backfill these pits to the AOC. Once the pit is backfilled, the subsoil and topsoil is then placed followed by seeding and mulching. RSMeans Cost Data is used for everything except material handling. The data supplied by RSMeans for material handling is mainly reflective of construction type projects and is not representative of the mass volumes of material handling required for this project. Therefore, this cost estimate utilizes dozer and truck/shovel simulations to develop production rate estimates. Cost data from CostMine's Coal Cost Guide and Mine/Mill Equipment Cost Data are then applied to the production rates to develop overall cost estimates. The software packages Dozsim and Fleet Production /Cost Analysis (FPC) are utilized to perform the necessary calculations.

Once the overall cost for the material handling is estimated using this process, contractor overhead/profit, engineering/supervision and mobilization costs are then added to the total.

The overall cost estimate for Phase 1 including facilities, specialized reclamation areas, and mine reclamation using this process is approximately $5,345,000.

Phase 2

The detail for this phase of mine development is shown on Drawing 5-18. At this point, Pits 1 through ~~15~~ 14 and Pits 23 through 28 have been mined. The excess spoil pile/fill above AOC now contains approximately 8.6 million cubic yards of spoil. Pits 1 through ~~14~~ 13 and Pits 24 through 28 have been backfilled and graded. The estimate for this phase includes rehandling of the excess spoil to backfill Pit~~s~~ ~~15~~ 14 and 28 which ~~is~~ are the open pit~~s~~ at this point. This requires material handling of approximately ~~7~~ 9.3 million yards by a combination of dozers and truck/shovel equipment to complete. Same methods described above in Phase 1 are also used in Phase 2 to calculate the cost estimate

The overall cost estimate for Phase 2 including facilities, specialized reclamation areas, and mine reclamation using this process is approximately $~~10,859,000~~10,498,469

Phase 3

The detail for this phase of mine development is shown on Drawing 5-19. At this point, Pits 1 through ~~30~~ 28 have been mined. Pits 1 through ~~23~~ 16 and 22 through 28 have been backfilled and graded. The excess spoil pile/fill above approximate original contour contains approximately 8.6 million yards of spoil. The estimate for this phase includes rehandling of the excess spoil to backfill pits ~~24~~ 17 through ~~30~~ 21 which are the open pits. This requires material handling of approximately ~~6.6~~6.3 million cubic yards by a combination of dozers and truck/shovel equipment to complete. The same methods described above in Phase 1 are also used in Phase 3 to calculate the cost estimate.

The overall cost estimate for Phase 3 including facilities, specialized reclamation areas, and mine reclamation using this process is approximately $~~10,559,000~~10,142,144.

The following documentation provides the details for each of these bond estimates.

Phase 2 Mine Reclamation Cost Estimate

Phase 2 Specialized Reclamation Areas

Item	*Unit	Quantity	Unit Cost ($)	Cost	**Cost Data Reference
Pond 2 backfill from embankment	yd^3	160	$1.88	$301	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 2 backfill from excess spoil	yd^3	7,122	$5.87	$41,806	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 2 topsoil	yd^3	860	$5.87	$5,048	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 2 seeding	M.S.F	35	$39.00	$1,365	RS Means Heavy Constr., 32 92 19.14 3700
Pond 2 mulching	M.S.F	35	$60.00	$2,100	RS Means Heavy Constr., 32 91 13.16 0350
Pond 2 Subtotal				**$50,620**	
Pond 3 backfill from embankment	yd^3	4,767	$1.88	$8,962	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 3 backfill from excess spoil pile	yd^3	6,107	$5.87	$35,848	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 3 topsoil	yd^3	3,011	$5.87	$17,675	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 3 seeding	M.S.F	122	$39.00	$4,758	RS Means Heavy Constr., 32 92 19.14 3700
Pond 3 mulching	M.S.F	122	$60.00	$7,320	RS Means Heavy Constr., 32 91 13.16 0350
Pond 3 Subtotal				**$74,563**	
Pond 4 backfill from embankment	yd^3	1,410	$1.88	$2,651	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 4 backfill from excess spoil pile	yd^3	14,692	$5.87	$86,242	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 4 topsoil	yd^3	2,055	$5.87	$12,065	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 4 seeding	M.S.F	188	$39.00	$7,332	RS Means Heavy Constr., 32 92 19.14 3700
Pond 4 mulching	M.S.F	142	$60.00	$8,520	RS Means Heavy Constr., 32 91 13.16 0350
Pond 4 Subtotal				**$116,810**	
Phase 2 Specialized Reclamation Areas Total				**$191,381**	

Phase 2 Mine Reclamation Cost Estimate

Phase 2 Pit Backfill and Land Reclamation

Item	*Unit	Quantity	Unit Cost ($)	Cost	**Cost Data Reference
Pit Backfill Rehandle Excess Spoil Pile - Dozer	yd^3 (Loose)	3,055,350	$0.93	$2,832,309	Production from Dozsim Software, Cost data from CostMine Coal Cost Guide 2009
Pit 14 Backfill Rehandle Excess Spoil Pile - Excavator	yd^3 (Loose)	3,101,696	$0.82	$2,543,991	Production from Fleet Production and Cost Analysis Software, Cost data from CostMine Coal Cost Guide 2009
Pit 23 Backfill Rehandle Excess Spoil Pile - Excavator	yd^3 (Loose)	775,424	$1.08	$833,727	Production from Fleet Production and Cost Analysis Software, Cost data from CostMine Coal Cost Guide 2009
Topsoil	yd^3 (Loose)	159,090	$0.80	$127,840	Production from Fleet Production and Cost Analysis Software, Cost data from CostMine Coal Cost Guide 2009
Subsoil	yd^3 (Loose)	343,619	$0.80	$276,122	Production from Fleet Production and Cost Analysis Software, Cost data from CostMine Coal Cost Guide 2009
Seeding	M.S.F	5,227	$39.00	$203,861	RS Means Heavy Constr., 32 92 19.14 3700
Mulching	M.S.F	5,227	$60.00	$313,632	RS Means Heavy Constr., 32 91 13.16 0350
Subtotal				$7,129,482	
Mobilization/Demobolization (5%)				$356,474	
Project Management/Engineering (5%)				$356,474	
Contractor Profit/Overhead (15%)				$1,069,422	
Phase 2 Mine Reclamation Total				$8,911,853	

Phase 2 Reclamation Bond Summary

Facilities Reclamation	$1,395,235
Specialized Areas Reclamation	$191,381
Mine Reclamation	$8,911,853
Phase 2 Overall Bond Total	$10,498,469

Phase 2 Mine Reclamation Material Handling Summary

Equipment Description	Production Rate (BCY)	Production Rate (LCY)	Cost/BCY	Cost/LCY	Total Volume (BCY)	Total Volume (LCY)	Total Cost
Rehandle with Dozer	138.8	184.6	$1.23	$0.927	2,297,256	3,055,350	$2,832,309
Rehandle with Truck/Shovel Pit 14	635	844.6	$1.09	$0.820	2,332,102	3,101,696	$2,541,991
Rehandle with Truck/Shovel Pit 23	484	643.7	$1.43	$1.075	583,026	775,424	$833,727
Topsoil PIT 23	541.0	666.5	$0.99	$0.80	129,131	159,090	$127,840
Subsoil	542.5	668.4	$0.99	$0.80	279,365	343,619	$276,122
Total Phase 2 Material Handling							$6,611,990

Rehandle with Dozer Quantity	3,055,350	Loose Cubic Yards
Rehandle with Truck/Shovel Quantity Pit 14	3,101,696	Loose Cubic Yards
Rehandle with Truck/Shovel Quantity Pit 23	775,424	Loose Cubic Yards
Total Rehandle Quantity	6,932,470	Loose Cubic Yards
Software Overburden Swell Factor	33%	
Software Topsoil Swell Factor	23%	
Software Subsoil Swell Factor	23%	
Topsoil Area Pit 23	120	acres
Subsoil Area (Open Pit)	52	acres

Phase 2 - Reclamation Estimate

Pit Backfill - Truck and Shovel
Fleet Production and Cost Analysis (FPC)

Fleet Production and Cost Analysis

Phase 2 Truck - Shovel | **Pit 14 Backfill Haul** | **FLEET**

Alton Coal Development, LLC | **Coal Hollow Mine** | **2/8/2013**

Cycle Times

Hauler Cycle Time

	5 769C
Load with Exchange (min)	1.25
Haul (min)	0.61
Dump and Maneuver (min)	1.2
Return (min)	0.5
Potential Cycle Time (min)	3.56
Wait on Slow Hauler (min)	0
Wait to Load (min)	2.69
Additional Bunching (min)	0
Wait to Dump (min)	0
TMPH Wait (min)	
Total Cycle Time (min)	6.25
Bunching	Avg
Haul Start mph	0
Haul End mph	0
Return Start mph	0
Return End mph	0

Loader Cycle Time

	5 769C
Loader Model	385C LME
Loader Quantity	1
Bucket Capacity (CY)	7.25
Loader Fill Factor (%)	100
Loose Density (Lbs/LCY)	2,107
Tons per Pass	7.64
System Passes per Hauler	3
Hauler Payload (Tons)	22.91
% of Max GVW	96.57
Hauler Volume (LCY)	21.75
% of Body Fill	70
Loader Cycle Time (min)	0.25
First Bucket Dump (min)	0.05
Hauler Exchange Time (min)	0.7

Fleet Production and Cost Analysis

Phase 2 Truck - Shovel | **Pit 14 Backfill Haul** | **FLEET**

Alton Coal Development, LLC | **Coal Hollow Mine** | **2/8/2013**

Fleet Production

Fleet Estimates

Operating Schedule		
Operator Efficiency	90	%
Schedule Period	Shift	
Scheduled Hours	2,000.00	
Fleet Estimates		
Fleet Availability	89.72	%
Production per Sched Hr	634.79	BCY
Total Production	775,424	BCY
Sched Hrs Required	1,221.55	
Total Cost ($)	845,687	
Cost per BCY ($)	1.091	
Production per Shift	1,269,575	BCY
Shifts Required	0.61	

Theoretical Production

	Quantity	Model	BCY per Hour	Cycles per Hour
1	1	385C LME	786	
2	5	769C	1,381	16.9

Actual Production

	Quantity	Model	Cycles per Hour	Payload in Tons	Tons per Hour
1	5	769C	9.6	22.91	1,099.85
Fleet Tons per Operating Hour					1,099.85
x 90.00% Operator Efficiency =					989.87
x 89.72% Fleet Availability =					888.07

Cost

	Qty	Model	Machine Code	Hourly Cost Each Unit	Operating Hours	Total $	$ per BCY
Loaders	1	385C LME		157.31	1,099	172,946	0.223
Haulers:	5	769C	C202	92.46	5,497	508,250	0.655
Totals	5				5,497	508,250	0.655
Support	1	5,000 Gal. Water Truck		62.58	1,099	68,800	0.089
	1	14 Grader		87.04	1,099	95,691	0.123
Totals	2				2,199	164,491	0.212
Fleet Totals	8				8,795	845,687	1.091

Fleet Production and Cost Analysis

Phase 2 Truck - Shovel | **Pit 14 Backfill Haul** | **FLEET**

Alton Coal Development, LLC | **Coal Hollow Mine** | **2/8/2013**

Haul Times

Bank Density: 2798 Lbs per CY	Loose Density: 2107 Lbs per CY		
Model:	769C	Gross Weigh	118,200 Lbs
Identifier:		Payload:	22.91 Tons
Tire Type:	E3 28P	Propulsion C	1
Tire Size:	18.00-33	Retarding Co	1
Speed Correction:	1		

	Distance (feet)	Nominal Rolling Resistance (%)	Grade Pct.	Total Effective Grade (%)	mph Limit	Potential Speed	Segment Max	End Speed	Cumulative Min	Segment Time (min)
1	100	4	0	3.61	15	27.9	13.5	13.5	0.13	0.125
2	650	4	2	5.52	25	19.1	17.02	0	0.61	0.482

Return Times

Bank Density: 2798 Lbs per CY	Loose Density: 2107 Lbs per CY		
Model:	769C	Gross Weigh	118,200 Lbs
Identifier:		Payload:	22.91 Tons
Tire Type:	E3 28P	Propulsion C	1
Tire Size:	18.00-33	Retarding Co	1
Speed Correction:	1		

	Distance (feet)	Nominal Rolling Resistance (%)	Grade Pct.	Total Effective Grade (%)	mph Limit	Potential Speed	Segment Max	End Speed	Cumulative Min	Segment Time (min)
1	100	4	0	3.52	15	41.34	15	15	0.11	0.108
2	650	4	2	5.67	25	30.27	24.3	0	0.5	0.394

Phase 2 Truck - Shovel
Alton Coal Development, LLC

Fleet Production and Cost Analysis
Pit 14 Backfill Haul
Coal Hollow Mine

FLEET
2/8/2013

Fleet Size Annual

Loader: 1 385C LMI Availability 90 % Operator Efficiency
Haulers: 5 769C Availability 2000 Sched Hours per Shift
Avg Bunching

Qty		Model	BCY per Sched Hr	Inc. BCY per Sched Hr	Sched Hrs Req.	$ per BCY	Total $	BCY per Shift	Shifts Required	Normal TMPHFront*	Normal TMPHRear*	Normal TMPHTrail*
1	1	769C	201	201	3,852	1.786	1,384,730	402,572	1.93	40	31	
2	2	769C	372	170	2,087	1.191	923,781	743,148	1.04	37	29	
3	3	769C	499	127	1,555	1.055	817,826	997,227	0.78	33	26	
4	4	769C	606	107	1,280	1.005	779,672	1,211,548	0.64	28	22	
5	5	769C	635	29	1,222	1.091	845,687	1,269,575	0.61	23	18	

Fleet Size Efficiency

Loader: 1 385C LMI Availability 90 % Operator Efficiency
Haulers: 5 769C Availability 2000 Sched Hours per Shift
Avg Bunching

Qty		Fleet Match	Fleet Avail	Mismatch	Bunching	Combined	BCY per 60 min Hour	BCY per Sched Hr	Inc. BCY per Sched Hr	$ per BCY	Normal TMPHFront *	Normal TMPHRear *	Normal TMPHTrail *
1	1	0.35	81	100	100	100	276	201	201	1.786	40	31	
2	2	0.7	81	100	92.3	92.3	552	372	170	1.191	37	29	
3	3	1.05	81	94.91	87	82.57	828	499	127	1.055	33	26	
4	4	1.4	88.26	71.18	97	69.05	1,104	606	107	1.005	28	22	
5	5	1.76	89.72	56.95	100	56.95	1,381	635	29	1.091	23	18	

Fleet Production and Cost Analysis

Phase 2 Truck - Shovel | **Pit 23 Backfill Haul** | **FLEET**

Alton Coal Development, LLC | **Coal Hollow Mine** | **2/8/2013**

Cycle Times

Hauler Cycle Time

	5 769C
Load with Exchange (min)	1.25
Haul (min)	2.19
Dump and Maneuver (min)	1.2
Return (min)	1.7
Potential Cycle Time (min)	6.34
Wait on Slow Hauler (min)	0
Wait to Load (min)	0
Additional Bunching (min)	1.07
Wait to Dump (min)	0
TMPH Wait (min)	
Total Cycle Time (min)	7.41
Bunching	Avg
Haul Start mph	0
Haul End mph	0
Return Start mph	0
Return End mph	0

Loader Cycle Time

	5 769C
Loader Model	385C LME
Loader Quantity	1
Bucket Capacity (CY)	7.25
Loader Fill Factor (%)	100
Loose Density (Lbs/LCY)	2,107
Tons per Pass	7.64
System Passes per Hauler	3
Hauler Payload (Tons)	22.91
% of Max GVW	96.57
Hauler Volume (LCY)	21.75
% of Body Fill	70
Loader Cycle Time (min)	0.25
First Bucket Dump (min)	0.05
Hauler Exchange Time (min)	0.7

Fleet Production and Cost Analysis

Phase 2 Truck - Shovel | **Pit 23 Backfill Haul** | **FLEET**

Alton Coal Development, LLC | **Coal Hollow Mine** | **2/8/2013**

Fleet Production

Fleet Estimates

Operating Schedule		
Operator Efficiency	90	%
Schedule Period	Shift	
Scheduled Hours	2,000.00	
Fleet Estimates		
Fleet Availability	81	%
Production per Sched Hr	483.69	BCY
Total Production	3,101,696	BCY
Sched Hrs Required	6,412.63	
Total Cost ($)	4,439,512	
Cost per BCY ($)	1.431	
Production per Shift	967,370	BCY
Shifts Required	3.21	

Theoretical Production

	Quantity	Model	BCY per Hour	Cycles per Hour
1	1	385C LME	786	
2	5	769C	775	9.5

Actual Production

	Quantity	Model	Cycles per Hour	Payload in Tons	Tons per Hour
1	5	769C	8.1	22.91	928.22
Fleet Tons per Operating Hour					928.22
x 90.00% Operator Efficiency =					835.4
x 81.00% Fleet Availability =					676.68

Cost

	Qty	Model	Machine Code	Hourly Cost Each Unit	Operating Hours	Total $	$ per BCY
Loaders	1	385C LME		157.31	5,771	907,894	0.293
Haulers:	5	769C	C202	92.46	28,857	2,668,105	0.86
Totals	5				28,857	2,668,105	0.86
Support	1	5,000 Gal. Water Truck		62.58	5,771	361,172	0.116
	1	14 Grader		87.04	5,771	502,340	0.162
Totals	2				11,543	863,512	0.278
Fleet Totals	8				46,171	4,439,512	1.431

Haul Times

Bank Density: 2798 Lbs per CY Loose Density: 2107 Lbs per CY
Model: 769C Gross Weight: 118,200 Lbs
Identifier: Payload: 22.91 Tons
Tire Type: E3 28P Propulsion Correction: 1
Tire Size: 18.00-33 Retarding Correction: 1
Speed Correction: 1

	Distance (feet)	Nominal Rolling Resistance (%)		Grade Pct.	Total Effective Grade (%)	mph Limit	Potential Speed	Segment Max	End Speed	Cumulative Min	Cumulative Fuel (Gallons)	Segment Time (min)
1	100		4	0	3.61	15	27.9	13.5	13.5	0.13	0	0.125
2	3,274		4	2	5.43	25	19.1	19.1	0	2.19	0	2.064

Return Times

Bank Density: 2798 Lbs per CY Loose Density: 2107 Lbs per CY
Model: 769C Gross Weight: 118,200 Lbs
Identifier: Payload: 22.91 Tons
Tire Type: E3 28P Propulsion Correction: 1
Tire Size: 18.00-33 Retarding Correction: 1
Speed Correction: 1

	Distance (feet)	Nominal Rolling Resistance (%)		Grade Pct.	Total Effective Grade (%)	mph Limit	Potential Speed	Segment Max	End Speed	Cumulative Min	Cumulative Fuel (Gallons)	Segment Time (min)
1	100		4	0	3.52	15	41.34	15	15	0.11	0	0.108
2	3,274		4	2	5.48	25	30.27	25	0	1.7	0	1.589

Phase 2 Truck - Shovel
Alton Coal Development, LLC

Fleet Production and Cost Analysis
Pit 23 Backfill Haul
Coal Hollow Mine

FLEET
2/8/2013

Fleet Size Annual

Loader: 1 385C LME Availability 90 % 90 % Operator Efficiency
Haulers: 5 769C Availability 90 % 2000 Sched Hours per Shift
Avg Bunching

Qty		Model	BCY per Sched Hr	Inc. BCY per Sched Hr	Sched Hrs Req.	$ per BCY	Total $	BCY per Shift	Shifts Required	Normal TMPHFront*	Normal TMPHRear*	Normal TMPHTrail*
1	1	769C	113	113	27,433	3.179	9,860,909	226,127	13.72	101	79	
2	2	769C	226	113	13,717	1.958	6,071,870	452,254	6.86	101	79	
3	3	769C	323	97	9,614	1.63	5,055,568	645,275	4.81	96	75	
4	4	769C	409	86	7,582	1.489	4,617,897	818,217	3.79	92	71	
5	5	769C	484	75	6,413	1.431	4,439,512	967,370	3.21	87	68	

Fleet Size Efficiency

Loader: 1 385C LME Availability 90 % 90 % Operator Efficiency
Haulers: 5 769C Availability 90 % 2000 Sched Hours per Shift
Avg Bunching

Qty	Fleet Match		Fleet Avail	Mismatch	Bunching	Combined	BCY per 60 min Hour	BCY per Sched Hr	Inc. BCY per Sched Hr	$ per BCY	Normal TMPHFront*	Normal TMPHRear*	Normal TMPHTrail*
1	1	0.2	81	100	100	100	155	113	113	3.179	101	79	
2	2	0.39	81	100	100	100	310	226	113	1.958	101	79	
3	3	0.59	81	100	95.12	95.12	465	323	97	1.63	96	75	
4	4	0.79	81	100	90.46	90.46	620	409	86	1.489	92	71	
5	5	0.99	81	100	85.56	85.56	775	484	75	1.431	87	68	

Phase 3 Mine Reclamation Cost Estimate

Phase 3 Specialized Reclamation Areas

Item	*Unit	Quantity	Unit Cost ($)	Cost	**Cost Data Reference
Pond 2 backfill from embankment	yd^3	160	$1.88	$301	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 2 backfill from excess spoil	yd^3	7,122	$5.87	$41,806	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 2 topsoil	yd^3	860	$5.87	$5,048	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 2 seeding	M.S.F	35	$39.00	$1,365	RS Means Heavy Constr., 32 92 19.14 3700
Pond 2 mulching	M.S.F	35	$60.00	$2,100	RS Means Heavy Constr., 32 91 13.16 0350
Pond 2 Subtotal				**$50,620**	
Pond 3 backfill from embankment	yd^3	4,767	$1.88	$8,962	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 3 backfill from excess spoil pile	yd^3	6,107	$5.87	$35,848	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 3 topsoil	yd^3	3,011	$5.87	$17,675	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 3 seeding	M.S.F	122	$39.00	$4,758	RS Means Heavy Constr., 32 92 19.14 3700
Pond 3 mulching	M.S.F	122	$60.00	$7,320	RS Means Heavy Constr., 32 91 13.16 0350
Pond 3 Subtotal				**$74,563**	
Pond 4 backfill from embankment	yd^3	1,410	$1.88	$2,651	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 4 backfill from excess spoil pile	yd^3	14,692	$5.87	$86,242	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 4 topsoil	yd^3	2,055	$5.87	$12,065	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 4 seeding	M.S.F	188	$39.00	$7,332	RS Means Heavy Constr., 32 92 19.14 3700
Pond 4 mulching	M.S.F	142	$60.00	$8,520	RS Means Heavy Constr., 32 91 13.16 0350
Pond 4 Subtotal				**$116,810**	
Phase 3 Specialized Reclamation Areas Total				**$191,381**	

Phase 3 Mine Reclamation Cost Estimate

Phase 3 Pit Backfill and Land Reclamation

Item	*Unit	Quantity	Unit Cost ($)	Cost	**Cost Data Reference
Pit Backfill Rehandle Excess Spoil Pile - Excavator	yd^3 (Loose)	6,317,550	$0.92	$5,795,046	Production from Fleet Production and Cost Analysis Software, Cost data from CostMine Coal Cost Guide 2009
Topsoil	yd^3 (Loose)	160,415	$0.94	$151,040	Production from Fleet Production and Cost Analysis Software, Cost data from CostMine Coal Cost Guide 2009
Subsoil	yd^3 (Loose)	396,483	$0.95	$376,530	Production from Fleet Production and Cost Analysis Software, Cost data from CostMine Coal Cost Guide 2009
Seeding	M.S.F	5,271	$39.00	$205,560	RS Means Heavy Constr., 32 92 19.14 3700
Mulching	M.S.F	5,271	$60.00	$316,246	RS Means Heavy Constr., 32 91 13.16 0350
Subtotal				$6,844,422	
Mobilization/Demobolization (5%)				$342,221	
Project Management/Engineering (5%)				$342,221	
Contractor Profit/Overhead (15%)				$1,026,663	
Phase 3 Mine Reclamation Total				$8,555,527	

Phase 3 Reclamation Bond Summary

Facilities Reclamation	$1,395,235
Specialized Areas Reclamation	$191,381
Mine Reclamation	$8,555,527
Phase 3 Overall Bond Total	$10,142,144

Phase 3 Mine Reclamation Material Handling Summary

Equipment Description	Production Rate (BCY)	Production Rate (LCY)	Cost/BCY	Cost/LCY	Total Volume (BCY)	Total Volume (LCY)	Total Cost
Rehandle with Truck/Shovel	566	752.8	$1.22	$0.92	4,750,038	6,317,550	$5,795,046
Topsoil	724.9	893.1	$1.16	$0.94	130,207	160,415	$151,040
Subsoil	719.6	886.6	$1.17	$0.95	322,344	396,483	$376,530
Total Phase 3 Material Handling							$6,322,617

Rehandle with Truck/Shovel Quantity	6,317,550	Loose Cubic Yards
Total Rehandle Quantity	6,317,550	Loose Cubic Yards
Software Overburden Swell Factor	33%	
Software Topsoil Swell Factor	23%	
Software Subsoil Swell Factor	23%	
Topsoil Area	121	acres
Subsoil Area (Open Pit)	60	acres

Phase 3 - Reclamation Estimate

Pit Backfill - Truck and Shovel
Fleet Production and Cost Analysis (FPC)

Fleet Production and Cost Analysis

Phase 3 Truck - Shovel | **Pit 17-21 Backfill Haul** | **FLEET**

Alton Coal Development, LLC | **Coal Hollow Mine** | **2/8/2013**

Cycle Times

Hauler Cycle Time

	5 769C
Load with Exchange (min)	1.25
Haul (min)	1.67
Dump and Maneuver (min)	1.2
Return (min)	1.3
Potential Cycle Time (min)	5.41
Wait on Slow Hauler (min)	0
Wait to Load (min)	0.84
Additional Bunching (min)	0.62
Wait to Dump (min)	0
TMPH Wait (min)	
Total Cycle Time (min)	6.87
Bunching	Avg
Haul Start mph	0
Haul End mph	0
Return Start mph	0
Return End mph	0

Loader Cycle Time

	5 769C
Loader Model	385C LME
Loader Quantity	1
Bucket Capacity (CY)	7.25
Loader Fill Factor (%)	100
Loose Density (Lbs/LCY)	2,107
Tons per Pass	7.64
System Passes per Hauler	3
Hauler Payload (Tons)	22.91
% of Max GVW	96.57
Hauler Volume (LCY)	21.75
% of Body Fill	70
Loader Cycle Time (min)	0.25
First Bucket Dump (min)	0.05
Hauler Exchange Time (min)	0.7

Fleet Production and Cost Analysis

Phase 3 Truck - Shovel | **Pit 17-21 Backfill Haul** | **LEET**

Alton Coal Development, LLC | **Coal Hollow Mine** | **2-8-2013**

Fleet Production

Fleet Estimates

Operating Schedule		
Operator Efficiency	90	%
Schedule Period	Shift	
Scheduled Hours	2,000.00	
Fleet Estimates		
Fleet Availability	87.87	%
Production per Sched Hr	565.76	BCY
Total Production	6,317,550	BCY
Sched Hrs Required	11,166.47	
Total Cost ($)	7,730,626	
Cost per BCY ($)	1.224	
Production per Shift	1,131,521	BCY
Shifts Required	5.58	

Theoretical Production

	Quantity	Model	BCY per Hour	Cycles per Hour
1	1	385C LME	786	
2	5	769C	908	11.1

Actual Production

	Quantity	Model	Cycles per Hour	Payload in Tons	Tons per Hour
1	5	769C	8.74	22.91	1,000.87
Fleet Tons per Operating Hour					1,000.87
x 90.00% Operator Efficiency =					900.78
x 87.87% Fleet Availability =					791.5

Cost

	Qty	Model	Machine Code	Hourly Cost Each Unit	Operating Hours	Total $	$ per BCY
Loaders	1	385C LME		157.31	10,050	1,580,938	0.25
Haulers:	5	769C	C202	92.46	50,249	4,646,033	0.735
Totals	5				50,249	4,646,033	0.735
Support	1	5,000 Gal. Water Truck		62.58	10,050	628,918	0.1
	1	14 Grader		87.04	10,050	874,737	0.138
Totals	2				20,100	1,503,655	0.238
Fleet Totals	8				80,399	7,730,626	1.224

Phase 3 Truck - Shovel
Alton Coal Development, LLC

Fleet Production and Cost Analysis
Pit 17-21 Backfill Haul
Coal Hollow Mine

FLEET
2-8-2013

Haul Times

Bank Density: 2798 Lbs per CY Loose Density: 2107 Lbs per CY

Model:	769C	Gross Weight:	118,200 Lbs
Identifier:		Payload:	22.91 Tons
Tire Type:	E3 28P	Propulsion Correction:	1
Tire Size:	18.00-33	Retarding Correction:	1
Speed Correction:	1		

	Distance (feet)	Nominal Rolling Resistance (%)	Grade Pct.	Total Effective Grade (%)	mph Limit	Potential Speed	Segment Max	End Speed	Cumulative Min	Segment Time (min)
1	100		4 0	3.61	15	27.9	13.5	13.5	0.13	0.125
2	2,395		4 2	5.45	25	19.1	19.1	0	1.67	1.541

Return Times

Bank Density: 2798 Lbs per CY Loose Density: 2107 Lbs per CY

Model:	769C	Gross Weight:	118,200 Lbs
Identifier:		Payload:	22.91 Tons
Tire Type:	E3 28P	Propulsion Correction:	1
Tire Size:	18.00-33	Retarding Correction:	1
Speed Correction:	1		

	Distance (feet)	Nominal Rolling Resistance (%)	Grade Pct.	Total Effective Grade (%)	mph Limit	Potential Speed	Segment Max	End Speed	Cumulative Min	Segment Time (min)
1	100		4 0	3.52	15	41.34	15	15	0.11	0.108
2	2,395		4 2	5.51	25	30.27	25	0	1.3	1.19

Phase 3 Truck - Shovel
Alton Coal Development, LLC

Fleet Production and Cost Analysis
Pit 17-21 Backfill Haul
Coal Hollow Mine

FLEET
2-8-2013

Fleet Size Annual

Loader: 1 385C LMI Availability 90 % 90 % Operator Efficiency
Haulers: 5 769C Availability 90 % 2000 Sched Hours per Shift
Avg Bunching

Qty	Model	BCY per Sched Hr	Inc. BCY per Sched Hr	Sched Hrs Req.	$ per BCY	Total $	BCY per Shift	Shifts Required	Normal TMPHFront *	Normal TMPHRear*	Normal TMPHTrail*
1	1 769C	132	132	47,740	2.716	17,160,324	264,663	23.87	88	68	
2	2 769C	261	128	24,244	1.699	10,731,765	521,174	12.12	86	67	
3	3 769C	367	107	17,193	1.431	9,041,220	734,916	8.6	81	63	
4	4 769C	462	94	13,681	1.319	8,332,854	923,567	6.84	77	60	
5	5 769C	566	104	11,166	1.224	7,730,626	1,131,521	5.58	69	54	

Fleet Size Efficiency

Loader: 1 385C LMI Availability 90 % 90 % Operator Efficiency
Haulers: 5 769C Availability 90 % 2000 Sched Hours per Shift
Avg Bunching

Qty	Fleet Match		Fleet Avail	Mismatch	Bunching	Combined	BCY per 60 min Hour	BCY per Sched Hr	Inc. BCY per Sched Hr	$ per BCY	Normal TMPHFront *	Normal TMPHRear*	Normal TMPHTrail*
1	1	0.23	81	100	100	100	182	132	132	2.716	88	68	
2	2	0.46	81	100	98.46	98.46	363	261	128	1.699	86	67	
3	3	0.69	81	100	92.56	92.56	545	367	107	1.431	81	63	
4	4	0.92	81	100	87.24	87.24	726	462	94	1.319	77	60	
5	5	1.15	87.87	86.62	91	78.82	908	566	104	1.224	69	54	