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OK



Daron Haddock <daronhaddock@utah.gov>

Castle Valley Mining Mid Term Review

1 message

Jaren Jorgensen <JJorgensen@rhinolp.com>

Sat, Dec 7, 2013 at 9:13 AM

To: "daronhaddock@utah.gov" <daronhaddock@utah.gov>, "suzannesteab@utah.gov" <suzannesteab@utah.gov>

Cc: "jamesowen@utah.gov" <jamesowen@utah.gov>

Darron/Sue,



I send on Friday the revised mid term. It should be there on Monday they said. Can you look for it James Owen has been waiting on it to review bond release information.

Thanks,

Jaren Jorgensen
Engineering

CASTLE VALLEY MINING LLC

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APPLICATION FOR COAL PERMIT PROCESSING

Permit Change New Permit Renewal Exploration Bond Release Transfer

Permittee: Castle Valley Mining LLC

Mine: Bear Canyon Mine

Permit Number:

C/015/0025

Title: Mid-Term Review Amendment

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

Activation of water monitoring locations

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.

Jaren Jorgensen Engineer Tech 9/16/2013 [Signature]
 Print Name Position Date Signature (Right-click above choose certify then have notary sign below)

Subscribed and sworn to before me this 6 day of September, 2013

Notary Public: Amanda L Price, state of Utah.

My commission Expires: May 19, 2015 }
 Commission Number: 609809 } ss:
 Address: 1150 E 900 N }
 City: Crawson State: UT Zip: 84516 }

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Chapter 5

1R645-301-500 Engineering

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R645-301-511 General Requirements

This chapter includes descriptions of existing and proposed coal mining and reclamation operations and their potential impacts to the environment.

R645-301-512 Certification

1. Maps, cross-sections and designs required by R645-301 to be certified have been prepared by or under the direction of a qualified, registered, professional engineer whose stamp and signature can be found on the individual maps or design. All maps, cross-sections, and designs will meet all requirements of R645-301.

R645-301-513 Compliance with MSHA Regulation and Approvals

1. Castle Valley Mining LLC, agrees to comply with all MSHA regulations pertaining to dams, embankments, impoundments, sediment ponds, excess spoil, coal waste, portals, and mining operation, timing, and sequence.

R645-301-514 Inspections

All engineering inspections will be conducted in accordance with both Utah State Law and the Federal Code of Regulations. The inspections will be done by either a qualified registered engineer or a qualified person under the direction of a qualified registered engineer as required by law.

R645-301-515 Reporting and Emergency Procedures

515.100 Slides

At any time a slide occurs which may have a potential adverse effect on public property, health, safety, or the environment, the Division will be notified by the fastest available means and Castle Valley Mining LLC, will comply with any reasonable remedial measures required by the Division.

515.200 Impoundment Hazards

If any examination or inspection discloses that a potential impoundment hazard exists, Castle Valley Mining LLC, will promptly inform the Division of the finding and of the emergency procedures formulated for public protection and remedial action. If adequate procedures cannot be formulated or implemented, the Division will be notified immediately.

515.310 Temporary Abandonment

In the event of a temporary abandonment of operations Castle Valley Mining LLC, will still comply with all provisions of the approved permit.

515.311 Inactive Areas

Castle Valley Mining LLC will support and maintain all access openings and surface facilities in all areas where there are no current operations, but operations are to be resumed.

515.320 Temporary Cessation of Operations

In the event of a temporary cessation of operation for a period of 30 days or more, Castle Valley Mining LLC, will submit a notice to the Division as soon as it is known that the temporary cessation will extend beyond 30 days or more. This notice will include: a statement of the exact number of surface acres and the horizontal and vertical extent of sub-surface strata which have been in the permit area prior to cessation or abandonment, the extent and kind of surface reclamation of surface area which will have been accomplished, and identification of the backfilling, regrading, revegetation, environmental monitoring, underground opening closures and water treatment activities that will continue during temporary cessation.

Castle Valley Mining LLC will seal portals which are not to be utilized for mine inspection or access during temporary cessation of operation. These seals will be constructed of woven wire or cement block and securely attached to the portal entry so as to make trespass by men or animals prohibitive. All portals which are to be utilized will be posted with "No Trespassing" and "Keep Out" notices. Where doors exist such as fan entries, this will also be locked and signed accordingly.

R645-301-520 Operation Plan

Castle Valley Mining LLC, has operations at several different sites. Because of the complexity of the entire unit, 5 different areas of operation and reclamation will be discussed.

The five areas are listed below.

Castle Valley Mining LLC Permit Area Components

1. Bear Canyon Mine Area
2. Tank Seam Area
3. WHR Blind Canyon Seam Area
4. WHR Tank Seam Area
5. Morhland Area

521.100 Cross Section and Maps

Maps showing all relevant information have been prepared by or under the direction of, and are certified by a registered certified professional engineer.

521.110 Previously Mine Area

The location and extent of know workings of active, inactive, and abandoned underground mines, are shown on [Plates 5-1](#).

521.120 Surface and Subsurface Facilities and Features

The location of all buildings, surface and sub-surface man made features, public roads, waste piles, sediment ponds, and water impoundments are shown on [Plates 5-2](#).

521.130 Landownership and Right of Entry and Public Interest Maps

521.131 Land Ownership Maps

All boundaries of lands and names of present owners of record of those land, both surface and subsurface are shown on [Plate 1-2](#) and [Plate 1-3](#).

521.132 Boundaries of Land C.W. Mining Company, Has Right of Entry To.

These boundaries are shown on [Plate 1-2](#) and [Plate 1-3](#).

521.133 Protection of Public Interest

Castle Valley Mining LLC, currently has no operations within 100 feet of public land or a public road.

521.140 Mine Maps and Permit Area Maps

521.141 Disturbed Boundary and Timing Of Mining

The boundary of all disturbed and proposed disturbed areas are shown on [Plates 5-2](#). The areas to be mined and the sequence and timing of the mining are shown on [Plate 5-1A \(Blind Canyon Seam\)](#), [Plate 5-1B \(Hiawatha Seam\)](#), and [Plate 5-1C \(Tank Seam\)](#). [Plates 5-2](#) also shown the changes to all facilities and features that have been or will be made. The boundary showing all areas that may be affected by mining is shown on [Plate 1-1 \(Permit Boundary\)](#).

521.142 Underground Workings and Subsidence Areas

Underground workings and areas where planned subsidence mining methods will be used are shown on Plates 5-1. R645-301-525 discusses subsidence in greater detail.

521.143 Mine Waste Disposal Sites

Temporary and permanent waste disposal sites will be shown on Plates 5-2. C. W. Mining Company is currently permitted to haul all mine waste to Hiawatha for permanent disposal. The location of these sites can be found in the Hiawatha Coal Company MRP.

521.150 Land Configuration Maps

All land surface configuration maps give surface contours which adequately represent the existing land surface configuration of the permit area.

521.151 Cross Sections and Slope Measurements

All areas have representative cross sections that extend 100 feet beyond the disturbed boundary and show the slope measurements for pre-mining, operational, and post-mining land configurations. The cross-sections are discussed in greater detail in R645-301-521.160 and R645-301-540.

521.152 Previously Mined Areas

See R645-301-521.151

521.160 Maps and Cross Sections of the Features of the Permit Area

Plates 5-2 show the location of all buildings, utility corridors, facilities, affected areas, coal storage areas, cleaning and loading areas, topsoil stockpile areas, coal preparation and storage areas, underground development waste areas, non coal waste areas, waste disposal facilities, refuse piles, slurry impoundments, sediment ponds, and explosive storage magazines. Cross section details are shown on [Plate 5-8](#) and in [Appendices 5-H, 5-I, 5-J, 5-K, and 5-L](#). The location of the cross sections are shown on [Plates 2-3, 5-6, and 5-7](#).

521.170 Transportation Facilities Maps

Transportation facilities are shown on [Plates 5-2](#). Road details are shown on [Plates 5-4](#) and on the cross-sections in [Appendices 5-H, 5-I, 5-J, 5-K, and 5-L](#). Road construction details can be found in [Appendices 5-F and 5-G](#).

521.180 Support Facilities

Support Facilities are discussed under [R645-301-526](#).

521.200 Signs and Marker Specifications

Signs and markers will be posted, maintained and removed by Castle Valley Mining LLC, and will be of a durable material and be a uniform design that can be easily seen and read. They will be maintained during all activities to which they pertain and will conform with all local laws and regulations.

521.240 Mine and Permit Identification Signs

Identification signs are displayed at each point of access from public roads to areas of surface operations and facilities on the permit area. These signs show the name, business address and telephone number of Castle Valley Mining LLC, and the identification number of the permanent program permit authorizing coal mining and reclamation activities.

521.250 Perimeter Markers

The perimeter of all areas affected by surface operations or facilities are clearly marked by perimeter markers.

521.260 Buffer Zone Markers

Stream buffer zone signs are installed at locations where mining and reclamation operations are conducted in the vicinity of perennial and intermittent streams.

521.270 Topsoil Markers

Topsoil markers have been installed where topsoil or other vegetation-supporting material is physically segregated and stockpiled under R645-301-234.

R645-301-522 Coal Recovery

It is in the interest of Castle Valley Mining LLC, to maximize the recovery of coal resources. A large portion of Castle Valley Mining LLC, coal resources are contained in Federal leases. A major condition of each lease agreement is maximum recovery of resources. When accessible, mine workings in each lease are inspected on a regular basis by the Bureau of Land Management personnel experienced in underground coal mining methods. Justification for not recovering coal deposits that may be detrimentally affected in terms of future recovery by the proposed operations include the following.

- A. Seams that are too thin to be economically minable given existing or reasonably foreseeable technology.
- B. Coal seams separated by insufficient rock intervals to allow safe mining above or below worked out areas.
- C. Seams that are relatively thick but not extensive, and isolated by thin coal which would make development cost prohibitive.

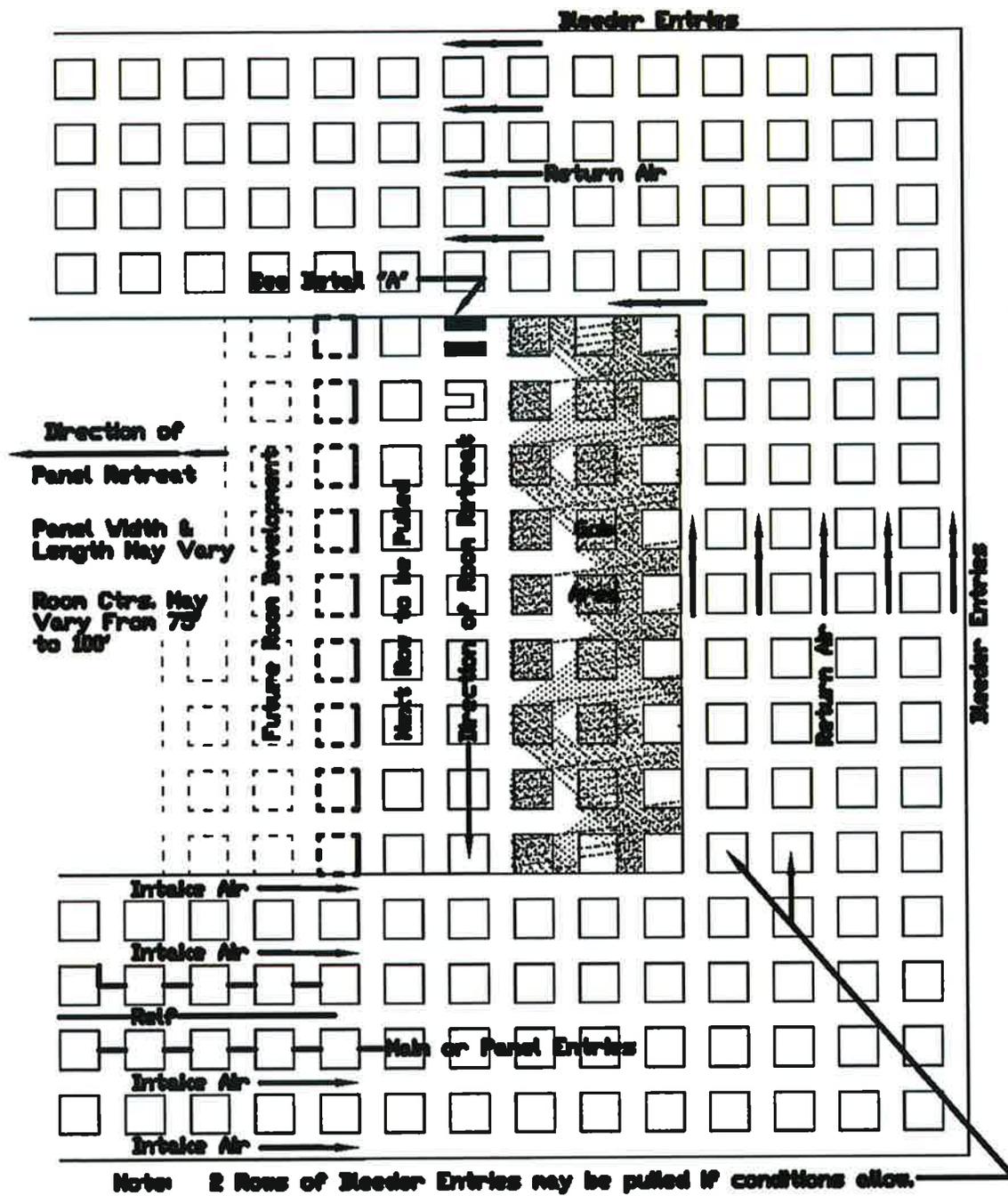
There are four main seams in the Bear Canyon Property, the Tank Seam, the Bear Canyon Seam, Blind Canyon Seam, and Hiawatha Seam. There are no plans to mine both seams due to the close proximity of the Bear Canyon seam to the Blind Canyon Seam (<30 feet interburden). There are no plans to mine the Hiawatha Seam in Wild Horse Ridge due to the thinning of the seam. Mining plan, sequence and projected development for the Bear Canyon, Hiawatha, and Tank seams are shown on Plates 5-1A, 5-1B and 5-1C respectively. Geology information is discussed in Chapter 6.

R645-301-523 Mining Method

Mining at the Bear Canyon complex is done by a longwall and continuous miners. The main entries consist of a five-entry system on 80 ft -200 ft centers to be driven to the property limits. For longwall recovery 2-5 gate entries are driven off the mains on either side of the panel to the head of the panel where they are connected by bleeders. The longwall then mines out the panel. For continuous miner recover sub-mains consisting of five entries on 80 ft - 200 ft centers are then driven off the mains and room-and-pillar panels are developed off the sub-mains. Rooms are developed within the panels on 70 ft - 150 ft centers. This is referred to as "Development". The pillars are then recovered according to the approved plan. This is referred to as "retreat". Timber or mobile roof supports are installed to support the roof and provide for breaker control of the caving roof. Retreat mining of this type will provide a recovery of 70pct - 80 pct within the panels. See [Figures 5-1](#) and [5-2](#). Sub-mains under the escarpment area in Bear Canyon will be developed and left.

Anticipated average annual production is 2,100,000 Tons from the longwall face and 400,000 Tons from development mining. Before the longwall face comes on line and after it is finished some room and pillar retreat mining will be done. The average annual production from room and pillar retreat mining is 600,000 Tons.

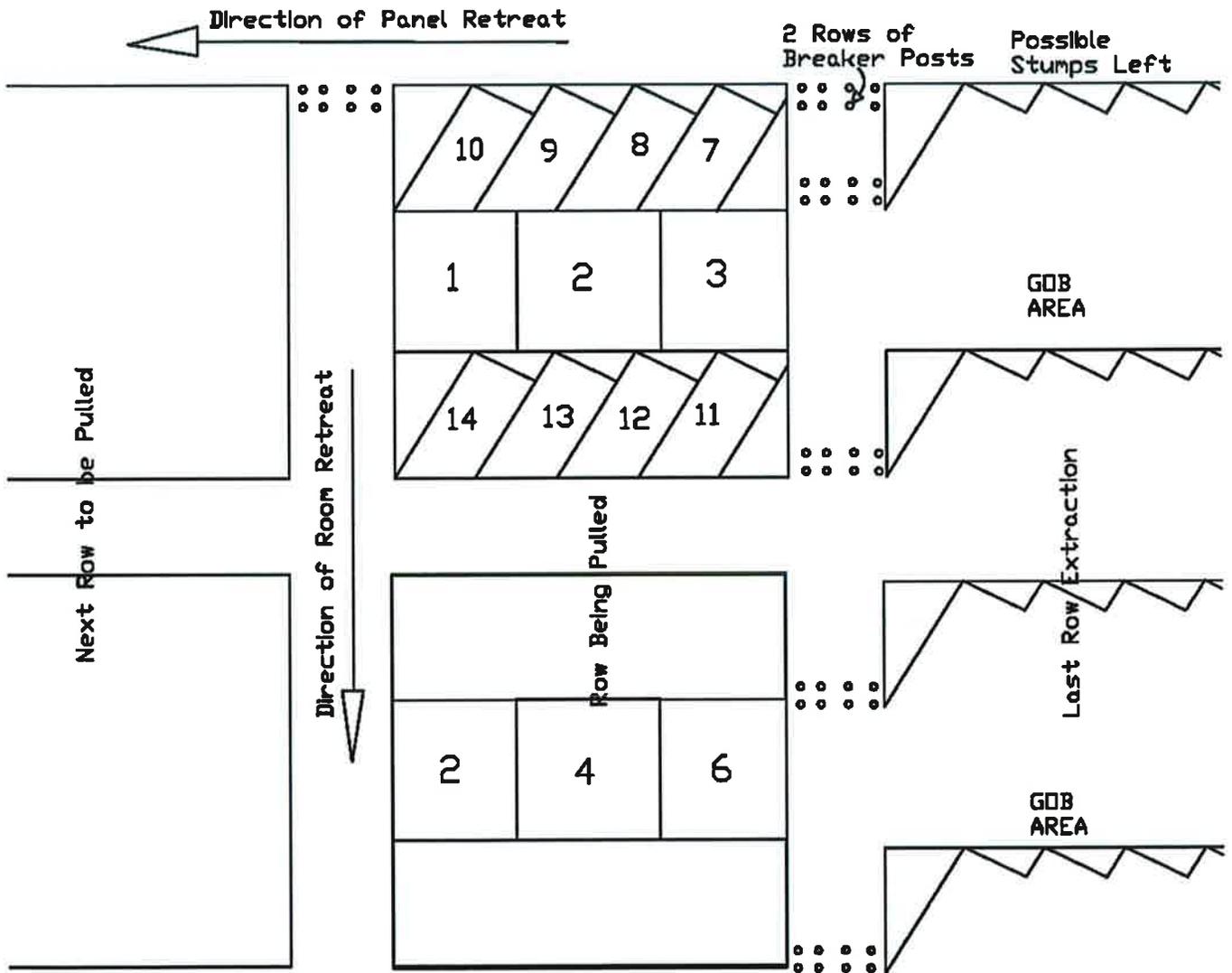
As can be seen on [Plates 5-1A](#) and [5-1B](#), the lower seam workings are planned to be columnized with the upper seams as closely as practicable. Where this is not practiced due to geologic conditions, pillars will be adequately sized to afford stability for the rooms. Geologic conditions and the limited lateral extent of reserves in the Tank Seam precludes columnizing of pillars with the other seams in some areas. However, experience has shown that the overburden (250') between these seams will provide adequate roof stability even if the pillars are not all columnized. The mining plan sequence allows for recovery of the upper seam areas (Tank Seam first, then Blind Canyon Seam) prior to final recovery of the lower seam. This procedure is consistent with accepted engineering practice in multiple seam mining.



Scale: 1 in. = 200 ft

Figure 5-1 Typical Panel Recovery

Note: Room centers may vary from 75' to 100'.
 Typical cut sequence is as shown. May vary due to condition



Scale: 1 in. = 200 Ft.

Figure 5-2 Typical Pillar Extraction

Ventilation, Water System, Dust Suppression, and Dewatering

Ventilation. A separate fan with adequate capacity supplies air to each of the mines. Intake air is carried in the entries on one side of a set, while return air is carried through the entries on the other side. Air is directed through the mine by stoppings, doors, overcasts, regulators and brattice cloth. After sweeping the working faces of each section the air is directed into the return air courses and out of the mine. Little or no methane gas is generated in any of the Blackhawk seams.

Water System. Water generated in the mine is collected in sumps and used at the mine. Some water from the roof is collected and used as culinary water outside for use in the bathhouses and as drinking water in the offices (Appendix 5-B). Tests for portability are required and made quarterly.

Dust Suppression. Water also serves for sprays on the machines at the working faces, on the coal at belt heads, transfer points and for the tipple for dust suppression.

Dewatering. Water generated is used or contained within the mine, and excess water is discharged to Bear Creek. Mine dewatering is governed by the mine discharge permit (Appendix 7-B).

Equipment Selection

Castle Valley Mining LLC, will utilize the equipment described in the following list for its mining operation and will acquire any additional equipment as required to maintain a sound mining operation.

Surface Equipment

- vibrating screens
- crushers
- conveyors
- front end loaders
- road grader
- crawler tractor
- fork lift

Recovery Rate

The recoverable coal reserves were estimated by multiplying the in-place reserve by a recovery factor of 70 pct.

The operation will produce 750,000 to 2,000,000 tons of raw coal per year with 2 to 4 miner sections working 360 days. This is 3,000+ to 8,000+ tons per day with 2 to 4 production shifts operating. The rate of production (considering a lower rate during the initial buildup years plus the tonnage still to be mined in the area of old workings) will make the projected mine life approx 29 years.

Table 5-1 Coal Reserves - Bear Canyon Mine

Reserve Area	Seam	Coal Reserves (tons)	
		In-Place	Recoverable
Federal Lease (U-46484)	<u>Blind Canyon</u>	<u>5,093,206</u>	<u>1,586,852</u>
	<u>Hiawatha</u>	<u>7,015,758</u>	<u>3,085,990</u>
	<u>SUBTOTAL</u>	<u>12,108,964</u>	<u>4,672,842</u>
(U-61048)	Tank	490,470	0
	Hiawatha	7,540,784	2,942,416
	SUBTOTAL	8,031,254	2,942,416
(U-61049)	Tank	10,027,191	6,433,459
	Blind Canyon	0	0
	Hiawatha	18,428,989	11,822,475
	SUBTOTAL	28,456,180	18,255,934
(U-024318)	Blind Canyon*	<u>52,763</u>	<u>0</u>
	Hiawatha	0	0
	SUBTOTAL	<u>52,763</u>	<u>0</u>
(U-024316)	Tank	<u>1,099,006</u>	<u>0</u>
	Blind Canyon	<u>1,112,202</u>	<u>366,089</u>
	Hiawatha	<u>1,770,113</u>	<u>959,124</u>
	SUBTOTAL	<u>3,981,321</u>	<u>1,325,213</u>
(U-020668)	Tank	<u>600,036</u>	<u>318,706</u>
	Blind Canyon	<u>2,647,894</u>	<u>774,205</u>
	SUBTOTAL	<u>3,247,930</u>	<u>1,092,911</u>
(U-38727)	Tank	<u>4,300,059</u>	<u>2,958,627</u>
	Blind Canyon	<u>3,779,496</u>	<u>1,468,042</u>
	SUBTOTAL	<u>8,079,555</u>	<u>4,426,669</u>
Fee Land	Tank	<u>7,836,811</u>	<u>3,986,939</u>
	Blind Canyon	<u>9,395,909</u>	<u>3,808,970</u>
	Hiawatha	<u>2,568,465</u>	<u>1,284,232</u>
	SUBTOTAL	<u>19,801,185</u>	<u>9,080,141</u>
Total <u>Tons</u>	Tank	<u>24,353,573</u>	<u>13,697,731</u>
	Blind Canyon	<u>22,081,470</u>	<u>8,004,158</u>
	Hiawatha	<u>37,324,109</u>	<u>20,094,237</u>
TOTAL		<u>83,759,152</u>	<u>41,796,126</u>

- NOTES: 1. Reserves based on latest projections (7/21/06) submitted to the B.L.M. in the [R2P2 update](#).
 2. Current permit application will allow for mining of Lease U-024316 in the Tank Seam only until additional hydrologic and geologic information can be obtained.
- Blind Canyon Seam reserves mined out in 1984-1985.

R645-301-524 Blasting and Explosives

Castle Valley Mining LLC, commits to follow all of the regulations in Section R645-301-524 that apply to its operation.

R645-301-525 Subsidence Control Plan

Subsidence monitoring points are shown on Plate 5-3. Appendix 5-C contains the subsidence monitoring and control plan.

525-300 Subsidence Control

Subsidence control is outlined below and in Appendix 5-C

Barrier Pillars

Pillars of coal generally are left underground to protect surface or underground features which must be maintained and protected for the life of the mine (main entries) or permanently (oil or gas wells). The size of some is specified by law; others are designed by the operator to provide the protection needed.

Property Boundaries

Area boundaries of individual leases and fee property are shown on [Plate 1-3](#). Protection of boundaries and property adjacent to the permit area is provided by continuous barrier pillars a min of 100 ft wide. This is wide enough to prevent subsidence across the boundary resulting from angle of draw. On the north end of the permit boundary no barrier will be left because this area is adjacent to the Hiawatha permit boundary which is part of the Bear Canyon LMU so mining could potentially cross from one permit boundary into the other uninterrupted.

Outcrop Protection

In most areas, coal outcrops are buried and are not visible from the surface. Outcrops are either covered to some depth with overburden or, in many areas; the coal has been burned for some distance from the surface. Where neither of these situations exist, routine tests of the coal may show that it has been "weathered" or "oxidized" and mining will be stopped within 200 ft of the outcrop.

Barrier pillars to protect main and sub- main entries have been made large enough (100 ft or greater) to assure protection of the entries for their useful life. When the area serviced is mined out, entry pillars will be recovered on the way out.

Protection of Natural Surface Structures & Streams

The primary natural structures that need protection are escarpments and streams. Escarpment locations are shown on Plate 5-3 and 5-3A, and a discussion of their protection is included in Appendix 5C. The only stream channels which lies over the minable portion of the permit area is Bear Creek, where it flows through Federal Lease U-024316, and Fish Creek where it flows through a portion of Federal Lease U-61049 and private property. See Appendix 5-C for an explanation of the protection zone delineation and method of protection. Adequate barrier zones will be left to protect adjacent stream channels, such as Bear Creek. Downstream channels are protected from disturbed area runoff contamination by utilization of sediment ponds. Temporary sediment controls i.e.; silt fences, straw bail dikes, etc. will be installed and vegetation will be reestablished as required in the event of impacts by escarpment failure.

In areas where coal burn exists the burning of the coal as caused natural subsidence causing failure of some natural structures. A barrier left adjacent to these areas would cause an interruption between the natural and man made subsidence creating greater impacts to the surface. Because of this no barrier will be left in these areas unless it is needed for roof stability or temperature considerations, in which cause the minimum possible size will be used.

Protection of Manmade Features (Surface & Subsurface)

Man made features and structures which exist on the minable portion of the permit area consist of a hunting lodge which exists in the Wild Horse Ridge Area. There are some forest trails but they are all located beyond the coal outcrops. Maximum coal recovery in the controlled uniform manner planned for this mine should result in even surface subsidence with minimal disturbance.

Buildings within 1,000 ft of Permit Area. A hunting lodge lies within 1,000 ft. of the permit area. Adequate barrier protection will be provided to prevent subsidence of this structure. No buildings have been identified above the potential subsidence zone.

Existing Public Roads. The main access road to the property is a public road. It provides access from Huntington Canyon to the mine. The lease agreement between C.W. Mining and C.O.P Coal Development requires Castle Valley Mining LLC, to allow access through the mine site for representatives of the property owners and Forest Service. The access road to the Wild Horse Ridge area consists of an existing road used to access a private hunting cabin which is owned by Sportsman's, the lessee of the hunting rights to the property. The main road is posted with speed control and general traffic control signs. When mining has been completed, the roads which are not approved to remain for post-mining land use will be reclaimed.

Protection of Oil, Gas and Water Wells

There are no active or abandoned oil or gas wells within the permit boundary.

R645-301-526 Mine Facilities

526.100 Existing Mine Structures and Facilities

This is addressed in [Appendix 5-A](#)

526.200 Utility Installation and Support Facilities

The only public utilities located on or near the mine site are Big Bear Spring and Birch Spring. Castle Valley Mining LLC, will monitor these springs for any adverse affects related to the mining operation as described in [Chapter 7 R645-301-731.200](#)

526.300 Water Pollution Control Facilities

This is addressed in [R645-301-732](#), [R654-301-733](#), [R654-301-738](#), and [R645-301-744](#).

526.400 Air Pollution Control Facilities

This is addressed in [R645-301-420](#).

R645-301-527 Transportation Facilities

There are eleven primary roads in the permit area: [Bear Canyon Haul Road](#), [Portal Access Road](#), [Tank Seam Access Road](#), [Shower House Road](#), [road to Sediment Pond A](#), [Tipple Access Road](#), [Shop Road](#), [No. 3 Mine Access Road](#), [No. 4 Mine Access Road](#), and the [No.1 and No.2 Conveyor Access Roads](#). All roads are shown on [Plates 5-2](#). Road profiles and typical cross sections are shown on [Plates 5-4](#). A description of all roads is included in [Appendix 5-F](#), along with maintenance procedures. Construction of the [Tank Seam Access Road](#) is discussed in [Appendix 5-G](#). Construction of the [Wild Horse Ridge road](#) is discussed in [Appendix 5-J](#). Construction of the [Wild Horse Ridge Tank Seam Road](#) is discussed in [Appendix 5-K](#). Construction of the [Mohrland Road](#) is discussed in [Appendix 5-L](#). Construction of the [No. 4 Mine Access Road](#) is discussed in [Appendix 5-K](#).

The mine area is approached on the [Bear Canyon Haul Road](#). The [#1 mine portal](#) is reached on the [Portal Access Road](#). The [Tank Seam Portal](#) is reached on the [Tank Seam Access Road](#). The [Wild Horse Ridge area](#) is accessed on the [No. 3 Mine Access Road](#). The [WHR Tank Seam](#) is accessed on the [No. 4 Mine Access Road](#). Six other primary roads provide access; to the [Sediment Pond A](#), the [coal preparation facility \(tipple\)](#), the [shop](#), the [Wild Horse Ridge conveyor belts](#), and to the [Shower House](#).

The [Bear Canyon Haul Road](#), [No. 3 Mine Access Road](#), and part of the [No. 4 Mine Access Road](#) are also used by customers of [Sportsman's Hunting](#) to access a [hunting cabin](#), which exists in the right fork of [Bear Canyon](#). This non-mining recreational use of the road occurs primarily from [May](#) until [November](#), typically 2-3 times per week. A [lease agreement](#)

between Sportsman's and C.O.P.D. provides them with a right-of-way access to the cabin in Bear Canyon.

There is one ancillary (jeep trail) road shown near the portal on Plate 5-2C, which was in existence prior to C. W. Mining and Castle Valley Mining LLC, activities and has not been used by C. W. Mining as well as Castle Valley Mining LLC, for mining and reclamation activities.

Traffic on the haul road consists primarily of coal haul trucks, mine personnel passenger vehicles, vendor cars and trucks, and other passenger and recreational vehicles. The traffic on the shop and portal access roads and No. 3 Mine access road consists of supply tractors, vendor trucks and company vehicles, with some additional passenger and recreational vehicular use.

Roads are maintained in such a manner that the performance standards will be met throughout the life of the entire transportation facility, including maintenance of the surface, shoulders, parking and side areas, and erosion control structures for safe and efficient utilization of the road. In the event a road is damaged by a catastrophic event, such as a flood or earthquake, the road will be repaired as soon as practical after the damage has occurred.

The road surfacing material for the No. 3 Mine Portal Access Road, No. 4 Mine Access Road, and Wild Horse Ridge Conveyor Access Roads will consist of in-place material and/or road base (gravel) material. This material has proven adequate on the other Bear Canyon Mine Access Roads for the type of traffic which will use the roads, consisting of pickup trucks and mine vehicles and tractors. Soil analyses of the in-place material for the Wild Horse Ridge area is presented in Appendix 2-F and Appendix 2-G. Soil analysis of the road base material was

analyzed during the analysis of in-place plant growth material, presented in [Appendix 2-D](#). This material is represented by the soil samples identified as [SHP-1](#), [SHP-2](#) and [PAR-1](#) (Soil segment from 0-0.5 ft.). Sample locations are shown on [Plates 2-3B](#), [2-3C](#) and [2-3D](#). None of the investigations revealed any acid- or toxic- forming materials. Any coal waste material encountered during the portal face-up process will be treated as described in [R645-301-528](#), and will not be used in the fill or as road surface material.

Reclamation of roads and parking areas is treated in the same manner as other working areas. Any asphalt or treated surfaces will be removed prior to rehabilitation upon completion of mining. Roads which are permitted to remain in place will be fit with drainage control structures adequate for post-mining use. See [Plates 5-4](#), [5-5](#) and [5-6](#), and road agreements under [Appendix 5-F](#).

R645-301-528 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 is carried from the mines by conveyor belt to surge bins, and then conveyed to the [sizing and crushing plant \(tipple\)](#), where the lump is removed and diverted to the [lump bin](#) or [seasonal storage area](#). The rest of the oversized is crushed, and then sized to meet the various requirements of different customers. It is then conveyed to the truck load-out bins or the stockpile area.

1Coal will be transferred from the Tank Seam to the Blind Canyon Seam of the Bear Canyon No. 1 Mine through a 7 ft diameter borehole, which has been bored from the surface adjacent to the portal. The conveyor from the portal and the drop tube structure will be enclosed. Air cannons will be placed on the outside of the drop tube to prevent the wedging of coal in the tube. A 7 ft diameter borehole will be used in Wild Horse Ridge to transfer coal from the Tank Seam (#4 Mine) to the Blind Canyon Seam (#3 Mine). This borehole, however, will be constructed underground.

Coal from the #3 mine will be transferred from the portal area to the tippie using an overland conveyor. This conveyor is shown on Plates 5-2C, 5-2F and 5-2G. The conveyor will either be suspended in the air from cables or set on stands on the ground. Because the Wild Horse Ridge area is an important migratory path for the deer and elk, restriction of this migration by the conveyor in areas where it sets on the ground is a concern. To mitigate this potential problem, the stands will be constructed to suspend the bottom of the conveyor belt a minimum of 36" above the ground. A typical cross-section of the conveyor is shown in Appendix 7-K, Figure 1. All moving parts are contained within the spill pan, so there will be no danger to wildlife passing under the conveyor.

528.200 Overburden

Overburden was removed from areas in the vicinity of mine portals and used in the construction of the portal pads. The material will be utilized to reclamation to cover the highwalls and to reshape the slopes to approximate their pre-mining condition as described under R645-301-540.

528.301 Excess Spoil

No excess spoil is proposed to be generated during the term of this permit. Castle Valley Mining LLC, commits to not conduct any activities that could generate excess spoil unless a plan is submitted and approval granted by the Division.

528.320 Coal Mine Waste

Coal mine waste such as separated waste rock will be temporarily stored at the designated site on the main storage pad shown on Plate 5-2C. Storage time in this area will not exceed 15 days. Each time waste rock is placed in the area, a survey will be conducted to determine the approximate volume of material being placed in the designated area. A log will be kept of the survey which includes a sketch of the material pile and placement dates and will be available onsite for review. In-Mine roof sample analyses are included in Appendix 6-C. A maximum volume of 150 yd³ of material will be stored in the temporary area at any given time.

The material will then be returned underground and either crushed prior to transportation to use as underground road base material, or placed underground in dry areas in accordance with MSHA regulations. Samples will be taken during future development in accordance with R645-301-623.100.

Roof and rock materials developed underground during mining and related tunneling activities will be placed underground. When relocation of these materials is required underground, they will be placed in "dry" areas where there are no active seeps, sumps or drippers.

Bear Canyon #3 and #4 Mines. Coal Mine Waste such as separated waste rock which is generated from the Wild Horse Ridge operation and can not be used as described above will be hauled to Hiawatha (C1/007/011) and placed in Refuse pile 1 (MSHA ID# 1211-UT-09-02157-04). All material placement will comply with the requirements of the Hiawatha Coal Company's Coal Mining and Reclamation Plan, Section R645-301-528.

Prior to being shipped to the Hiawatha Mine, waste material will be tested for acid and toxic properties in accordance with Table 5O-1. Any material found having acid and toxic properties will be disposed of in the Hiawatha Refuse pile 1 in accordance with the Hiawatha MRP requirements for acid- and/or toxic-forming material. For sediment control, runoff from any material placed in the temporary storage area reports to and is contained in sediment pond "A".

528.321 Return of Coal Processing Waste to Abandoned Underground Mines

No coal processing waste has been, or is proposed to be, disposed of in abandoned underground mine workings. No coal processing waste will be disposed of in abandoned underground mine workings without the express approval of the Division and MSHA.

528.322 Refuse Piles

Castle Valley Mining LLC Currently has no permanent refuse piles.

528.323 Burning and Burned Coal Mine Waste

MSHA has verbally notified Castle Valley Mining LLC that a fire-extinguishing plan for the temporary rock pile is not required by their office, since the area utilizes minimal storage, which is temporary. In the event a fire does occur, however, it will be extinguished by spreading the material out on the storage pad and allowing it to burn out and/or distinguishing the fire using water from the belt tower water supply lines.

528.330 Non-Coal Mine Waste

Non-coal waste generated in the operation of the mine is placed in metal dumpsters which are strategically located on the property. A local trash collector is contracted to replace these bins when they are near capacity. Appendix 5-D addresses a comprehensive plan to handle toxic or contaminated material.

528.340 Underground Development Waste

Historically there has been a minimal amount of underground development waste produced. This waste has been associated with the development of portal entries or vent shafts and in each case the waste has been used in the construction of the portal sites or used within the mine to fill low areas. This same process will be followed for all future development waste.

528.400 Dams, Embankments and Other Impoundments

Castle Valley Mining LLC currently has only four dams, embankments and impoundments. All 4 of them are sediment ponds. Three sedimentation ponds are used to control the main Bear Canyon area (Plate 7-1B), a fourth sedimentation pond on the Bear Canyon #3 mine portal pad, and additional ASCA structures. A slope stability analysis for Sediment Pond "A" is shown in Appendix 7-E. The properties of the embankment material for the three ponds are similar due to the close proximity of the three ponds to each other and the native material being used for the pond embankments. The slope stability analysis, which would apply to ponds "B" and "C" also, shows that the minimum safety factor for the pond slopes is 2.8. This is calculated using a slope of 2H:1V. Slopes will be constructed at a slope of 2H:1V or less, providing a 2.8 safety factor. This is greater than the minimum required safety factor of 1.3. These facilities will be maintained as long as it is required to meet the effluent limitations of applicable federal or state laws for runoff or drainage. When their usefulness is ended, they will be removed and the sites reclaimed as described previously.

The fourth pond treats the #3 mine portal pad. A slope stability analysis for the embankment material in this area is shown in Appendix 5-J, pg. 30-32. This embankment will also be constructed at a slope of 2H:1V, providing a minimum safety factor of 1.46, which is greater than the required safety factor of 1.43.

In areas where sedimentations ponds are not used, additional ASCA controls are used. These controls are discussed in detail in Appendix 7-K.

R645-301-529 Management of Mine Openings

Exploratory Holes, Bore Holes, And Wells. Upon abandonment of drilling operations, all drill holes are to be cemented with an approved slurry. The slurry mixture will consist of 5.2-5.5 gal. of water per bag of cement. Castle Valley Mining LLC is committed to plugging all openings as described in R645-301-551

Shafts. The shafts will be filled from bottom to collar with non-combustible material. A cap consisting of a 6 inch thick reinforced concrete slab will be used as a seal. The cap will be equipped with a 2 in. dia vent pipe and will extend for a distance of 5 ft below the surface of the shaft collar.

Mine Entries. Seals will be installed in all entries as soon as mining is completed and the mine is to be abandoned. Seals will be located at least 25 ft inside the portal mouth entry. Prior to installation all loose material within 3 ft of the seal will be removed from the roof, rib and floor. The mine entry seals will be made of solid concrete blocks (average minimum compressive strength of 1,800 lbf/in² tested in accordance with ASTM C140-70) and mortar (1 part cement, 3 parts sand and no more than 7 gallons of water per sack of cement) to form a wall two blocks thick.

Seals will be installed in the following manner:

- a. The seal will be recessed at least 16 in. deep into the rib and 12 in. deep into the floor. No recess will be made into the roof. The blocks will be at least 6 in. high, except in the top course and 8 in. wide.
- b. The blocks will be laid and mortared in a transverse pattern. In the bottom course, each block will be laid with its long axis parallel to the rib. The long axis in succeeding courses will be perpendicular to the long axis block in the preceding course. An interlaced pilaster will be constructed in the center. The seals will have a total thickness of 16 inches. Where conditions permit, the portal seals will be graded to conform with existing surface contours and seeded.

The opening in front of the wall will be filled with non-combustible material as above and the portal and entire exposed seam on the highwall will be covered with 6 to 8 ft of noncombustible material, graded, covered with suitable material and seeded. The portal fill material will be put in place with a load, haul, dump (LHD) unit to ensure proper backfilling. For illustration of a typical seal, see Figure 5-3. Temporary seals are discussed in R645-301-515.300.

Each mine entry which is temporarily inactive, but has a further projected useful service under the approved permit application, shall be protected by barricades or other covering devices, fenced, and posted with signs, to prevent access into the entry and to identify the hazardous nature of the opening. These devices shall be periodically inspected and maintained in good operation condition by the person who conducts the underground coal mining activities.

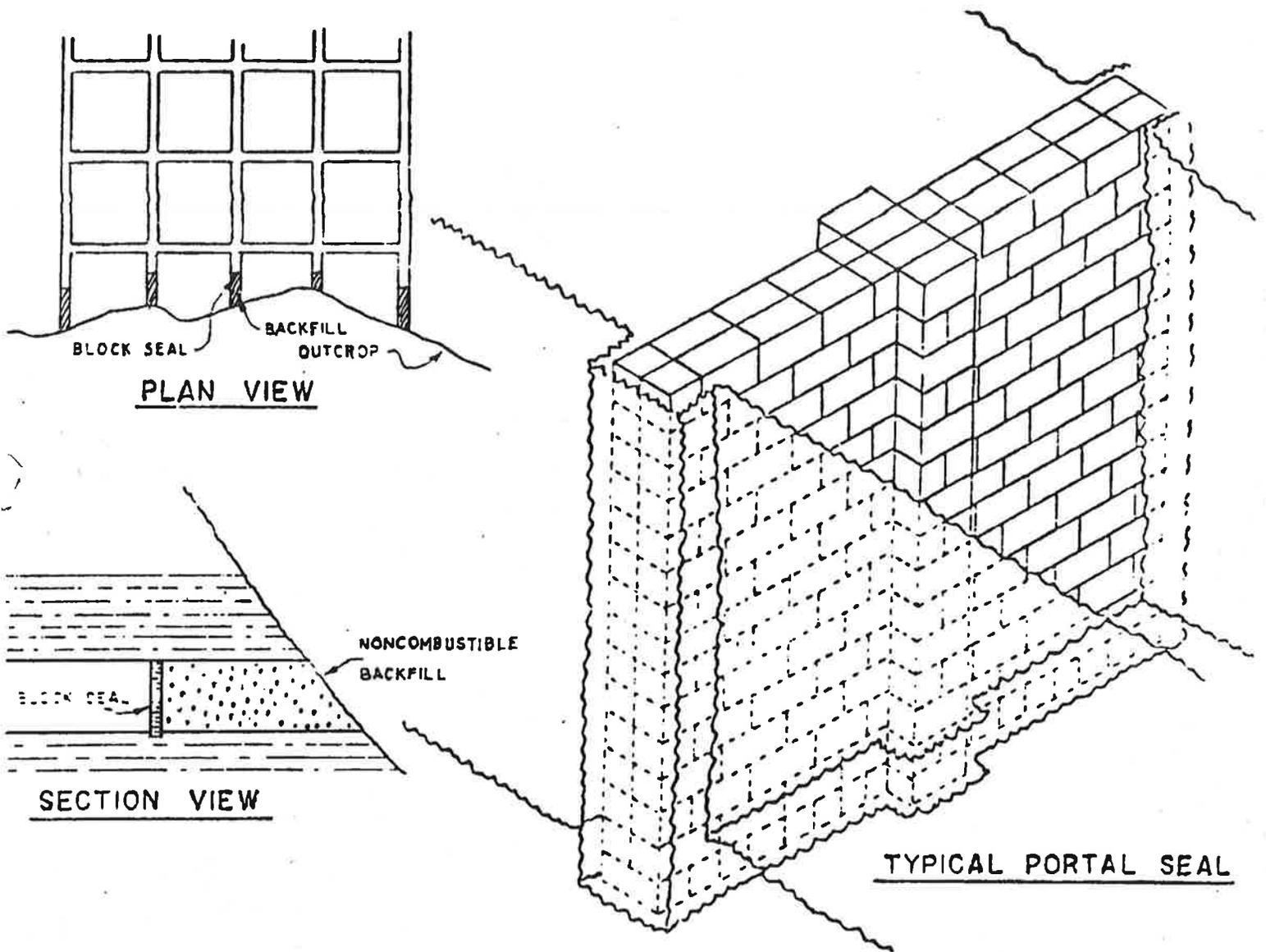


Figure 5-3 Typical Portal Seal

R645-301-530 Operation Design Criteria and Plans

531 General

General plans for sediment ponds are given in [R645-301-528.400](#). Water impoundments are discussed in [Chapter 7](#).

532 Sediment Control

Sediment control for each specific disturbed area is discussed and referenced under [R645-301-526](#), and [R645-301-732](#).

533 Impoundments

This is addressed in [R645-301-528.400](#)

534 Roads

This is addressed in [R645-301-527](#). A reclamation timetable is given in [R645-301-540](#).

535 Spoil

This is addressed in [R645-301-514](#)

536 Coal Mine Waste

This is addressed in [R645-301-513](#), [R645-301-514](#), and [R645-301-528](#).

537 Regraded Slopes

537.100 Geotechnical Analysis

Slope stability analysis's are given in [Appendix 5-G for the Tank Seam](#), [Appendix 5-J for the WHR Blind Canyon Seam](#), [Appendix 5-K for the WHR Tank Seam](#), and [Appendix 5-L for the Mohrland area](#).

537.200 Settled and Revegetated Fills

Parts of the mine access roads will not be restored to its original contour, but will be left in place for post-mining land use. This is discussed in [R645-301-242](#).

R645-301-540 Reclamation Plan

R645-301-541 General

541.100 Reclamation of All Areas

Upon completion of mining on the permit area, Castle Valley Mining LLC will reclaim all disturbed surface areas as diligently and rapidly as possible, to restore the property to pre-mining and/or alternative post-mining uses. All reclaimed areas will be maintained during the liability period for at least 10 years.

The initial step in the reclamation plan is to seal all large-diameter openings by backfilling these openings with non-combustible material (earth & small rock), adjacent to the portals. The seals will be designed such that mine drainage, if any, will not enter surface water bodies. For a more detailed description of the sealing of openings, see R645-301-529, Sealing of mine Openings, Drill Holes, Wells, etc.

The next step in reclamation would be the removal of all surface structures, equipment and road blacktop. Once this has been accomplished, all solid waste generated in the abandonment operation will be collected and disposed of in an approved manner. Additional information concerning this aspect of the reclamation plan is present in R645-301-541.300 (Surface Structures), and R645-301-542.600 (Roads).

Proposed access roads to the mine portals will be reclaimed and revegetated. This will accomplish a dual purpose of controlling runoff and re-vegetating the hillsides with vegetation

comparable to existing growth. Roads proposed to remain in place for post-mining use will be re-graded to the post-mining configuration and fitted with post-mining diversions. A detailed description of the roads is given in R645-301-542.600 (Roads).

Backfilling of the subterranean portion of the silos, holes and depressions will be the next reclamation activity, Once the backfilling is completed, the disturbed areas will be graded and recontoured. Topsoil materials will be redistributed as defined in Chapter 2 and then seeded or planted as described in Chapter 3, before the next growing season. A suitably permanent and diverse vegetation cover will be established on all affected areas of land.

The post-mining land uses will be grazing, recreation, wildlife and timber.

541.300 Removal of Structures

All surface facilities including support facilities will be removed and the areas reclaimed to prevent damage to fish, wildlife, and associated environmental values.

Mine Operational System Removal. Systems such as domestic water will be phased out and removed or buried. All structures, tanks and lines will be removed and properly disposed. Buried lines will be removed where feasible; otherwise, lines will be severed and left in place beneath a minimum of 4 ft of fill. Leaving lines in place will cause less disturbance than digging in some cases.

Excess Coal Spoil and Waste Disposal. Any excess coal spoil and waste material on-site at the time of reclamation will be placed and compacted against the cut slopes and covered with a minimum of 2 ft of non-toxic, non-acid material. If testing indicates that the material has acid or toxic forming potential it will be covered with a minimum of 4 ft of non-toxic, non-acid material. These materials will be placed in areas away from post mining drainage structures.

Solid (Non-Coal) Waste Disposal. The following are solid waste items expected during reclamation, and methods of disposal:

- a. Concrete. All concrete (estimated at approximately 900 cu yds) will be broken up into pieces not to exceed 3 ft x 3 ft and placed against the highwalls mentioned above, and covered with at least 3 ft of backfill material. (This category also includes cinder blocks). Asphalt material will be taken to the Nielson Construction landfill;
- b. Culverts and Pipe. All such material will be removed, and either salvaged or taken to the Nielson Construction Landfill in Emery County;
- c. Scrap Metal. All scrap metal will be removed, and either salvaged or taken to the Construction Landfill;

- d. Wood, paper, trash. All such items will be collected during the area cleanup during and after reclamation and then taken to the Nielson Construction Landfill for disposal. Wood items are identified as extraneous building material, timbers, block wedges and other mining material, and do not include any material occurring living or dead vegetation.

Note: The Nielson Construction Landfill is the designated disposal site for all non-coal solid waste items to be removed from the site.

R645-301-542 Narrative, Maps, and Plans

542.100 Timetable

The following schedule of reclamation is proposed to be initiated within 90 days (weather permitting) of final abandonment of the mining operation:

	<u>Accumulated Time</u>
a. Seal Portals - 2 weeks	2 weeks
b. Remove Structures - 34 weeks	36 weeks
c. Soil Replacement and Ripping - 10 weeks	46 weeks
d. Channel Restoration - 25 weeks	71 weeks
e. Revegetation - 2 weeks	73 weeks

The above reclamation tasks can, therefore, be completed within 73 weeks, weather permitting, following the start of reclamation activities. Revegetation will be scheduled for completion in the fall of the final season of reclamation.

542.200 Backfilling and Regrading

General

The objective of the proposed backfilling, soil stabilizing, contouring and grading process is to achieve a reclaimed surface which will provide a variety of topographic features and enhance post-mining land use.

The steps to be taken in the backfill, soil stabilization, compaction, contouring and grading problems are described in the following subsections. Stability analysis of highwalls and backfilled areas are discussed in Appendix 5-H.

Backfilling operations, utilizing equipment such as rubber-tired scrapers, bulldozers, backhoes, front-end loaders and dump trucks, will be conducted in the portal and treatment facility areas. Holes or depressions will be filled when the mining operation is concluded. Compaction operations utilizing equipment such as sheeps-foot tampers will be conducted to stabilize all filled holes and depressions.

In general, the backfilling and grading operation will take place in the following manner:

- a. All mining portals will be sealed and backfilled as previously described in R645-301-529.

- b. Solid waste generated in the facilities removal will be collected and disposed of as identified in R645-301-541.300. See Appendix 5-D for toxic materials and handling.

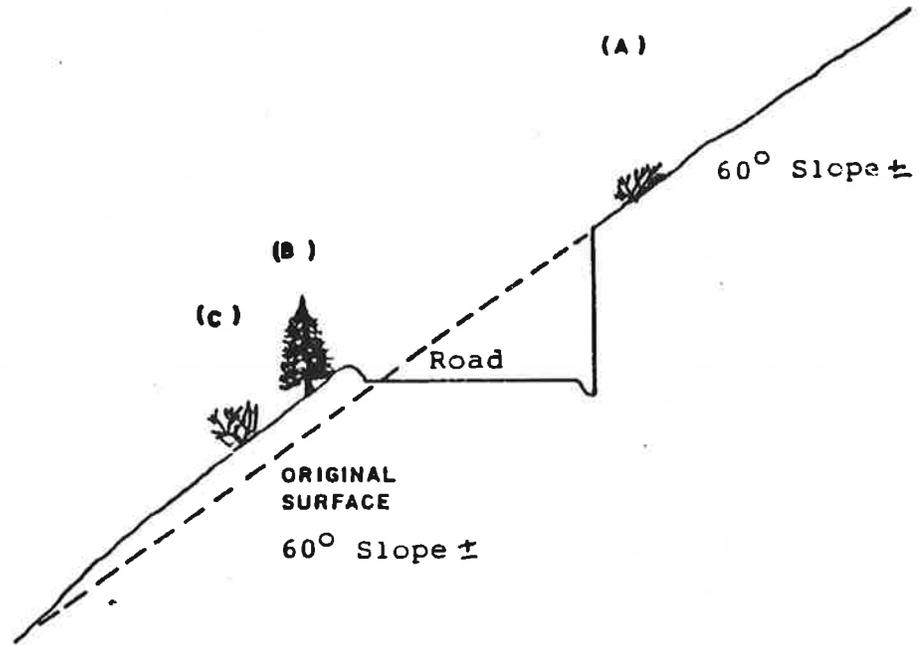
In disturbed areas which contain coal fines from current operations and are not proposed to be regarded, the coal fines will be removed to pre-mining levels. Methods of removal will consist of either vacuuming (if justified by large quantities), or by washing down the area by high-pressure water hoses. The wash down procedure is particularly effective on rock and rocky slopes. All other extraneous debris from the operations will also be removed from the areas. Disposal of all materials will be as described in R645-301-529.

It should be noted that the existence of small to moderate amounts of coal fines has not been established as detrimental to either soils or vegetation; therefore, amounts less than the 50 pct figure cited above will not be removed.

- c. A backhoe and dozer will work in conjunction to remove the outer edge of the recontoured operational benches and compact it against the cut slopes. This will be accomplished by the backhoe reaching over the edge of the bank approx 20 ft. and pulling the material back. The dozer will then push and compact this material from the cut slope outward to reach a bench slope of approx 1v:3h for drainage purposes and a maximum of 1v:2h on slopes outside of drainage areas. Culverts will be removed by excavating the material over the culvert, extracting the pipe, and backfilling the area.

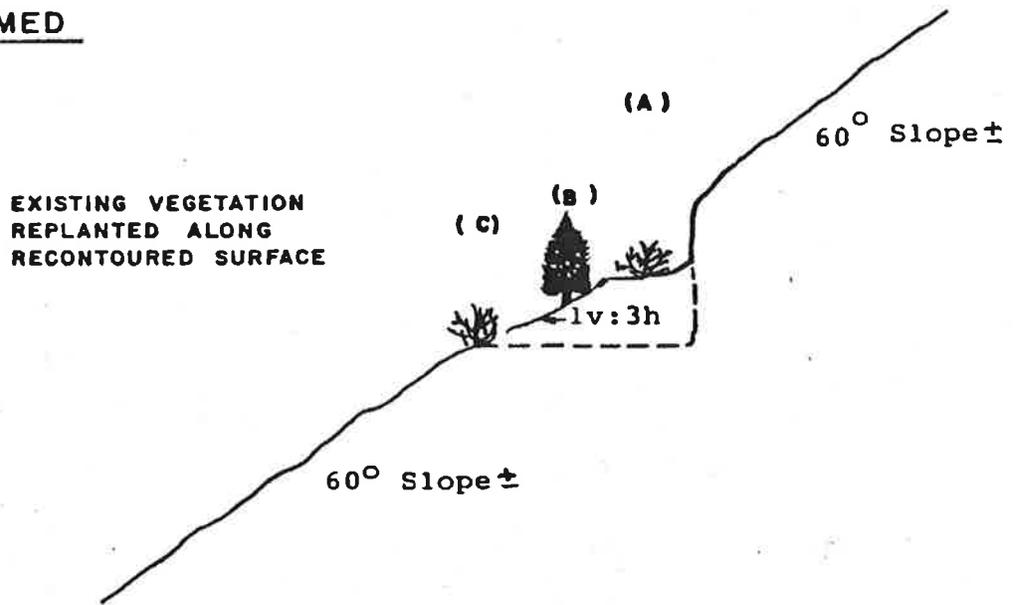
- d. This operation will start on the upper bench and work across the bench to the upper access road.
- e. The backhoe and dozer will work in the same manner to eliminate the access road, working down to the lower pad. A typical cross-section of the reclaimed road cut is shown in Figure 3.6-2.
- f. Steps d-f will be repeated from the Tipple Pad on down the canyon reshaping the mine yard and disturbed area to the configuration shown on [Plates 5-6](#), Post-mining topography. The [mine access road](#) below the [No. 3 Mine Access Road](#) will be regraded and fitted with post-mining diversion structures as shown on [Plates 5-6](#). Diversion designs are shown in [Appendix 7-H](#). Asphalt road surfacing material from the scalehouse pad will be excavated and disposed of at the Nielson Construction Landfill in Emery County. All roads which are to be reclaimed will be closed to traffic during reclamation. The reclaimed road design will be the same as the operational design, and is shown on [Plate 5-4](#).
- g. As backfilling and grading is completed, operational areas will be scarified by gouging to a depth of approximately 8 in. with a trackhoe. All areas will be gouged to increase surface roughness. This will reduce compaction and prevent topsoil slippage, and improve soil retention and vegetation establishment in the gouges.

EXISTING



Scale: 1"=20'

RECLAIMED



Scale: 1"=20'

Figure 5-4 Typical Slope Reclamation

Tank Seam Access Road Reclamation

This section provides a detailed description of the backfilling and grading plans for the Tank Seam Access Road and Portal Area. Reclamation will be scheduled to allow revegetating of the area in conjunction with backfilling and grading.

As soon as the Tank Seam portals are sealed and all facilities removed, the borehole will be filled using the cuttings from initial construction of the borehole. These cuttings will be stored underground in the Blind Canyon Seam during operation. Backfilling will begin at the Tank Seam Portal Area. Backfilled material shall be placed by heavy equipment such as a front-end loader and track backhoe in lifts not exceeding 18 inches and compacted as described on [page 5H-27](#). Lifts will be placed parallel to the slope of the road until the final lifts are reached which are wide enough for the equipment to drive on. Final lifts will be placed by a backhoe and compacted in a sloping manner as shown in [Figure 5-5](#).

In areas where fill material is located on the outslope, fill material will be pulled back using a backhoe and the material incorporated into the lifts placed on the cut bench. Where large fill areas exist, the fill will be excavated in a reverse sequence from the placement described in [Appendix 5-G](#). This will allow the fill to be removed and then reclamation to proceed from the bottom of the slopes toward the top, as the "pilot cut" is reclaimed.

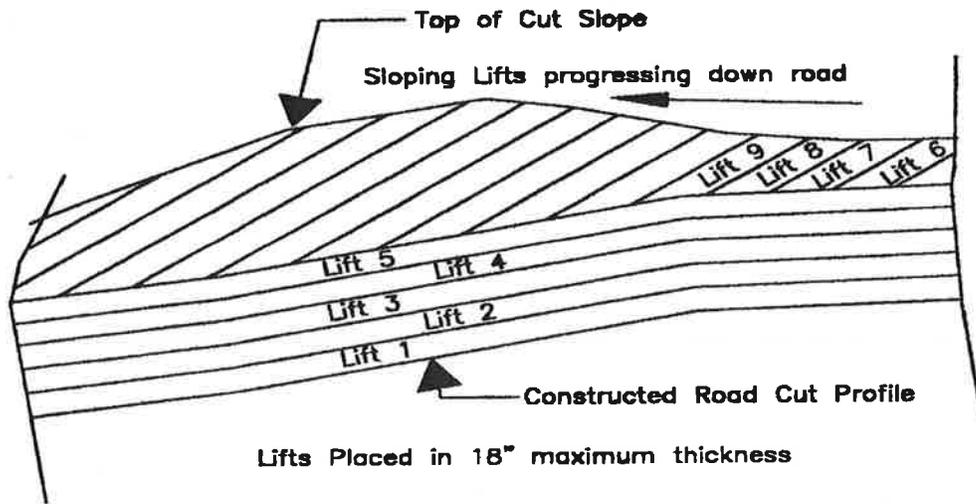
Fill material will be excavated from around the large boulders, which were left in place during construction using a backhoe, and the approximate original contour of the slope will be restored. Channels will be restored in the large fill areas by duplicating the configuration shown in [Appendix 7-H](#).

As the lifts are placed and fill material retrieved, topsoil will be redistributed on the outslope and upper lifts and spread using a backhoe. Boulder sized rock fragments will be embedded into the surface in the upper lifts as described on page 5H-27 in order to obtain, at a minimum, a surface rock cover of 32.75 percent, which equals the reference area cover shown on page 5A-24.

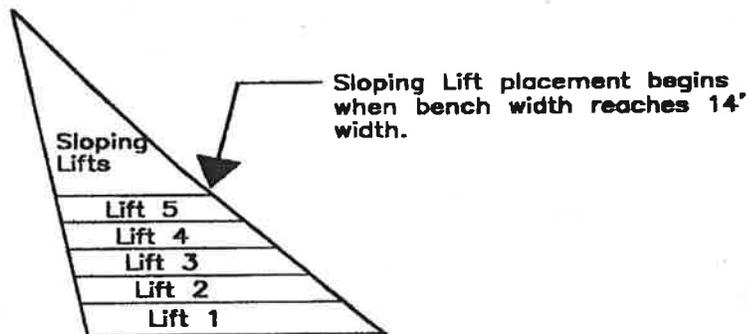
Using the bucket of the backhoe, the surface will then be ripped and scarified, creating horizontal pockets approx. 8 to 12 inches deep to aid in water retention for revegetation. The bucket will also spread the topsoil at the top of the cut in a manner to blend the reclaimed slope with the natural slope above.

As backfilling progresses down the road, seed will be placed on the completed slopes behind backfilling by hand. Following seeding, erosion control matting similar to Excelsior S-2 or equivalent will be placed on the slopes by hand, and stapled to the reclaimed surfaces.

Reclamation will progress in this manner to the bottom of the Tank Seam Access Road.



TANK SEAM ACCESS ROAD PROFILE



CROSS-SECTION OF TYPICAL LIFT SEQUENCE

Figure 5-5 Typical Compaction Lift Sequence

Wild Horse Ridge Reclamation Plan

This section provides a detailed description of the backfilling and grading plans for the Wild Horse Ridge portal pads, conveyor roads and access roads. Reclamation will be scheduled to allow reseeding of the area immediately following backfilling and grading.

As soon as the portals are sealed and all facilities removed, backfilling will begin with the portal pads. ASCA Controls will be put in place in accordance with BTCA "2" controls, described in Appendix 7-K. Due to the remoteness of the area, Pond "D" will be removed during the initial backfilling and grading to avoid any future re-disturbance. A silt fence will first be placed at the base of the fill area across the drainage, as shown on Plate 5-6G. Fill material in the bottom of the canyon will then be excavated, including pond "D". Any highwalls created along the seam outcrops will be backfilled and the coal seams will be covered.

Material will then be placed along the portal pad access roads, backfilling the cut slope. Material shall be placed by heavy equipment such as a crawler dozer, front-end loader and track backhoe in lifts not to exceed 36 inches and compacted as described in Appendix 5-J. Material will first be excavated from the West side of the Blind Canyon Pad and the East side of the Tank Seam Pad (down-drainage side), maintaining access to the bottom of the canyon for topsoiling. As fill material is placed on the access roads, it will result in narrowing the road width, while backfilling the cut slope. Materials will be compacted in lifts not to exceed 24 inches in depth. Large diameter rocks will be incorporated into the outslope which is created by filling to aid in surface stability. This procedure will be followed until the majority of the cut is backfilled and the roads have been narrowed to "pilot cuts" which will still allow the equipment access to the areas. During the backfilling and grading process, culverts will be excavated and removed.

Topsoil will then be placed on the excavated areas of the pad and on the reclaimed slopes utilizing a trackhoe.

Any reclaimed slopes which will be out of reach of the trackhoe when backfilling is complete will receive topsoil during the backfilling process while the area is still within reach. As topsoil is placed, the surface will be roughened with deep gouges as described in Appendix 7-K.

The reclaimed channel, RC-9, will then be constructed in the drainage while the area is still accessible. The remaining fill material will then be excavated and temporarily placed along the portion of the access road which will remain in place for post-mining use and the post-mining roads will be reestablished. The excavated areas will be topsoiled in conjunction with the excavation. The “pilot cuts” will then be reclaimed in the same manner as the Tank Seam Access Road described above using the material previously placed along the remaining portions of the access road. When the backfilling is complete, silt fences will be staggered along the edge of the drainage as shown on Plate 5-6G for runoff control.

The conveyor access roads will be reclaimed in a similar manner. As all areas are reclaimed, the surface will be gouged using a trackhoe, creating pockets approximately 8-12 inches deep to aid in water retention for revegetation.

Since a cut slope existed along portions of this area prior to mining, there may not be enough material to completely eliminate the entire cut. In areas where cuts existed prior to mining, the material will be placed so as to backfill the cut to the extent possible. These areas are shown on Plates 5-6.

Slopes will be constructed in accordance with the slope stability recommendations presented in [Appendix 5-J](#) and [Appendix 5-K](#). This will insure a slope stability factor greater than 1.3. Due to the limitation of a maximum slope of 2H:1V, some portions of the road and pad cuts will be left during reclamation. The locations of the cuts are shown on [Plates 5-6F](#) and [5-6G](#). The heights of these cuts are summarized on [page 5J-64](#). These cuts are also shown on the cross-sections in the post-mining slope stability analysis in [Appendix 5-J](#) and [Appendix 5-K](#).

Following regrading, seed and fertilizer will be placed on the completed slopes by hand. Following seeding, erosion control matting similar to Excelsior-S-2 or equivalent will be placed on slopes constructed at or near 2h:1v. The erosion control matting will be installed in strict conformance with the manufacturer's instructions. Following the placement of the matting, the temporary silt fences placed for runoff control during reclamation will be removed.

542.300 Final Surface Configuration Maps and Cross Sections

[Plates 5-6](#) show the final surface configurations after reclamation. Cross sections on shown on the maps are found in [Appendixes 5-I](#), [5-J](#), and [5-K](#).

542.400 Removal of Temporary Structures

See [R645-301-240](#), [R645-301-340](#), [R645-301-412](#), [R645-301-540](#), and [R645-301-740](#).

542.500 Timetable for Removal of Water Impoundments

See [R645-301-542.100](#)

542.600 Roads

See [R645-301-240](#).

542.700 Final Abandonment of Mine Openings and Disposal Areas

See [R645-301-529](#) and [R645-301-738](#).

542.800 Reclamation Costs

See [R645-301-830.100](#) and [R645-301-830.300](#)

R645-301-550 Reclamation Design Criteria and Plans

R645-301-551 Casing and Sealing of Underground Openings

The Bear Canyon Mine complex has eight existing portals.

The Bear Canyon #3 and #4 mines have a total of six portals (Plate 5-1A and 5-1C), all located in Bear Canyon. The #4 Mine has an auxiliary portal described in Appendix 5P. All portals will be reclaimed as described in section [R645-301-529](#), and [R645-301-738](#).

R645-301-552 Permanent Features

No response required.

R645-301-553 Backfilling and Grading

553.100 Disturbed Area

See R645-301-240, R645-301-412.100, and [R945-301-540](#).

553.200 Spoil and Waste

See R645-301-513, R645-301-514, and [R645-301-525](#).

553.250 Refuse Pile

Not applicable.

553.260 Disposal of Coal Processing Waste

See [R645-301-513](#).

553.300 Exposed Coal Seams

See [R645-301-731.100](#) and [R645-301-731.300](#)

553.400 Cut and Fill Terraces

No cut and fill terraces are proposed.

553.500 Previously Mine Areas

See [R645-301-540](#)

553.600 Approximate Original Contour

See R534-301-540

553.700 Backfilling and Grading Thin Overburden

Not applicable.

553.800 Backfilling and Grading Thick Overburden

Not applicable

R645-301-560 Performance Standard

Coal mining and reclamation operations will be conducted in accordance with the approved permit and requirements of R645-301-511 through R645-301-553.

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Table 7-14 Water Monitoring Matrix: Operational Phase of Mining

Location	Status	Jan	Feb	Mar	May	June	July	Aug ³	Sept	Oct	Nov	Dec
Streams												
BC-1 (Upper Bear Creek)	Active	oper		oper				oper.		oper.		
BC-2 (Lower Bear Creek)	Active	oper		oper				oper.		oper.		
BC-3 (Lower Rt Fork Bear Creek)	Active	oper		oper				oper.		oper.		
BC-4 (Upper Rt Fork Bear Creek)	Active	oper		oper				oper.		oper.		
CK-1 (Upper Cedar Creek)	Active	oper		oper				oper.		oper.		
CK-2 (Lower Cedar Creek)	Active	oper		oper				oper.		oper.		
MH-1 (Lower McCadden Hollow Creek)	Inactive - Initiate if mining in Lease U 46481 or U-024316				field ⁸			field		field		
MH-2 (Upper McCadden Hollow Creek)	Inactive - Initiate if mining in Lease U 46481 or U-024316				field ⁸			field		field		
FC-1 (Lower Left Fork Fish Creek) ⁷	Active				field ⁸			field		field		
FC-2 (Lower Right Fork Fish Creek) ⁷	Active				field ⁸			field		field		
FC-3 (Right Fork Fish Creek Property Line) ⁷	Active				field ⁸			field		field		
FC-4 (Upper Right Fork Fish Creek) ⁷	Active				field ⁸			field		field		
FC-5 (Mud Spring) ⁷	Inactive; initiate when mining T16S R8E Sec 7				field ⁸			field		field		
FC-6 (Upper Left Fork Fish Creek) ⁷	Active				field ⁸			field		field		
FC-7 (Water Right Upper Left Fork Fish Creek)	Active				field ⁸			field		field		
FC-8 (Water Right Upper Left Fork Fish Creek)	Active				field ⁸			field		field		
Springs												
SBC-4 (Big Bear Springs) ⁴	Active	oper		oper.				oper.		oper.		
SBC-5 (Birch Spring) ⁴	Active	oper		oper.				oper.		oper.		
SBC-9a (Hiawatha Seam)	Active	oper		oper.				oper.		oper.		
SBC-12 (16-7-13-1) ⁵	Inactive; initiate when mining begins in Mohrland				field ⁸			field		field		
SBC-14 (WHR-6)	Active				oper.			oper.		oper.		
SBC-15 (WHR-5)	Active				field ⁸			field		field		
SBC-16 (WHR-4) ^{6,7}	Active				field ⁸			field		field		
SBC16A ⁷	Active				field ⁸			field		field		
SBC-16B ⁷	Active				field ⁸			field		field		
SBC-17 (16-7-24-4)	Active	oper		oper.				oper.		oper.		
SBC-18 (WHR-2) ^{7,8}	Active Begin sampling within 500' In 4 Mine or Mohrland				field ⁸			field		field		
SBC-20 (16-8-18-4) ^{7,8}	Active Begin sampling within 500' In 4 Mine or Mohrland				field ⁸			field		field		
SBC-21 (16-8-18-1) ^{7,8}	Active Begin sampling within 500' In 4 Mine or Mohrland				field ⁸			field		field		
SBC-22 (Stockwater Trough) ⁸	Active Begin sampling within 500' In 4 Mine				field ⁸			field		field		
SCC-1 (16-8-20-1) ^{7,8}	Inactive; initiate when active mining in Mine #4 or Mohrland area is within 500'				field ⁸			field		field		
SCC-2 (16-8-18-5) ^{7,8}	Active Begin sampling within 500' In 4 Mine or Mohrland				field ⁸			field		field		
SCC-3 (Mohrland Portal)	Active				field ⁸			field		field		
SCC-5 (16-8-7-3)	Inactive; initiate when active mining in Mohrland area is within 500 feet				field ⁸			field		field		
SMH-1 (FBC-6)	Inactive - Initiate if mining in Lease U 46481 or U-024316				field ⁸			field		field		
SMH-2 (FBC-5)	Inactive - Initiate if mining in Lease U 46481 or U-024316				field ⁸			field		field		
SMH-3 (FBC-13)	Inactive - Initiate if mining in Lease U 46481 or U-024316				field ⁸			field		field		
SMH-4 (FBC-4)	Inactive - Initiate if mining in Lease U 46481 or U-024316				field ⁸			field		field		
SMH-5 (Stockwater Trough)	Active				field ⁸			field		field		
Wells												
SBC-3 (Creek Well)	Active	oper		oper.				oper.		oper.		
SDH-2 (Well Sec. 11, T16S, R7E)	Inactive - Initiate if mining in Lease U 46481 or U-024316				level ⁸			level		level		
SDH-3 (Well Sec. 10, T16S, R7E)	Inactive - Initiate if mining in Lease U 46481 or U-024316				level ⁸			level		level		
MW-114 (Well Sec. 18, T16S, R8E)	Active				level ⁸			level		level		
MW-117 (Well Sec. 12, T16S, R8E)	Active				level ⁸			level		level		

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- Notes:
- See Tables 7-13 and 7-17 for listing of water quality monitoring parameters.
 - oper. = operational base, = baseline
 - Expanded List parameters taken in August of year 5 prior to each permit renewal.
 - SBC-4 and SBC-5 shall also be tested for oil and grease
 - First sample to be taken in May or June, when Gentry Mountain is accessible.
 - A comment will be made regarding the level of the pond feeding the spring.
 - Weekly monitoring to begin one month prior to mining in area and continue until one month after. Monthly monitoring will then be done for an additional six months.
 - Field sampling to begin within 500' of location one month prior to mining in area and continue until one month after. Monthly monitoring will then be done for an additional six months.

Four sedimentation ponds, A, B, C, and D have been constructed to hold run-off from the disturbed area of the Mine Plan to facilitate settling and filtering of contaminated surface water from the mine site.

Surveys of A, B, and C sedimentation ponds were conducted in November 1990, and October, 1995, by Olympus Aerial Surveys, Inc. Additional pond surveys were conducted by EarthFax Engineering, Inc. in May, 1991. As-built surveys were completed for ponds A and B in July, 1991, and the topography and cross sections are contained on and 7-3, respectively. As-built surveys for Pond C was completed in August, 1993, and the topography and cross-sections are shown on Plate 7-6.

A fourth sediment pond ~~is proposed in 2002 to be~~ built in conjunction with the Bear Canyon No. 3 mine Portal Area. All of the runoff from the portal pad will report to sediment pond D.

Discharge. Discharge from the sediment ponds is to Bear Creek or the Right Fork ephemeral drainage. Each pond is constructed with both an open channel spillway and a decant device, 4 in. valved drainpipe with down turned inlet located above the 60 pct sediment cleanout elevation. The decant device allows for separation of oil, grease and other floatables. Discharge to surface waters is governed by the State of Utah Division of Water Quality. See Appendix 7-B, Discharge Permit.

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Castle Valley Mining, LLCC/015/025

Bond Amount

Revised July 2013

Bonding Calculations
Castle Valley Mining, LLC

Bond Summary

Direct Costs

Subtotal Demolition and Removal	\$410,375.00
Subtotal Backfilling and Grading	\$776,040.00
Subtotal Revegetation	\$483,034.00
Direct Costs	\$1,669,449.00

Indirect Costs

Mob/Demob	\$166,945.00	10.0%
Contingency	\$83,472.00	5.0%
Engineering Redesign	\$41,736.00	2.5%
Main Office Expense	\$113,523.00	6.8%
Project Management Fee	\$41,736.00	2.5%
Subtotal Indirect Costs	\$447,412.00	26.8%

Total Cost \$2,116,861.00

Escalation factor 0.015
Number of years 5
Escalation \$163,599.00

Reclamation Cost \$2,280,460.00

Bond Amount (rounded to nearest \$1,000) \$2,280,000.00
2018 dollars

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Scale House 01																			19933
	Scalehouse Pavement 02																			9831
	Shower House 03																			17169
	Shop 04																			17406
	Machine Shop 05																			4730
	WHR Shop 06																			3427
	Trappa 07																			20869
	Substation 08																			14251
	Coal Storage Bin 09																			8521
	Lump Coal 10																			5320
	Coal Recovery Bin 11																			184
	WHR Surge Bin 12																			12088
	Ditch D 80 13																			302
	Lump Coal Storage Pad 14																			2792
	Equipment Wash Pad 15																			589
	Transformer Pad Shop 16																			67
	Water Tanks 17																			1795
	Fuel Tanks 18																			2796
	Fans 20																			3260
	Conveyor 21																			4042
	Bld Tank Seam 22																			90506
	Septic Tanks 23																			334
	Cuberts 24																			330
	Water Tank Trailer 25																			15028
	Cap and Powder Msk 26																			179
	Conveyor Tunnel 27																			139
	Plug Well 28																			5000
	Seal Ponds 29																			93600
	Power Lines and Poles 30																			5483
	Portals AMOZA No 31																			817
	Culvert Removal No 32																			15600
	Portals No 33																			3938
	Hillier Retaining Wall 34																			339
	Sampling Station 35																			
	Total																			410375

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Scale House 01																				
	Structure's Demolition Cost	Mixed Materials Bkt. Large	02.41.16.13.0100	0.29 /CF	CF	34	83	16								FT	0.3	45152 CF		13094	
	Structure's Vol. Demolished																	502 CY			
	Rubble's Weight (exclude steel)																	678 TON			
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel	Neilson Construction	Neilson Con.	7 /TON																	4746
	Shed's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				17640
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	234	2	0.67								FT	1.3	12 CY		118	
	Concrete's Vol. Demolished																	10 CY		26	
	Loading Cost	Front end loader 3 CY	31.23.16.42.1300	1.64 /CY	CY													16 CY		86	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. trf	31.23.23.20.1020	5.48 /CY	CY													16 CY		138	
	Disposal Costs	Disposal on site	02.41.16.17.4200	8.61 /CF	CF													16 CY		370	
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	234	4	0.67								FT	1.3	23 CY		220	
	Concrete's Vol. Demolished																	30 CY		49	
	Loading Cost	Front end loader 3 CY	31.23.16.42.1300	1.64 /CY	CY													30 CY		162	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. trf	31.23.23.20.1020	5.48 /CY	CY													30 CY		288	
	Disposal Costs	Disposal on site	02.41.16.17.4200	8.61 /CF	CF													30 CY		697	
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	83	34	0.33								FT	1.3	3.4 CY		304	
	Concrete's Vol. Demolished																	44 CY		72	
	Loading Cost	Front end loader 3 CY	31.23.16.42.1300	1.64 /CY	CY													44 CY		241	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. trf	31.23.23.20.1020	5.48 /CY	CY													44 CY		379	
	Disposal Costs	Disposal on site	02.41.16.17.4200	8.61 /CF	CF													44 CY		1026	
	Subtotal																				
	Total																				19933

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Scalehouse Pavement 02																				
	Structure's Demolition Cost	Pavement removal (asphalt) 3 inch	02-41.13.17.5010	4.3 /SY	SY					1450								1450 SY		6235	
	Structure's Vol. Demolished							0.683										1.3	156 CY		
	Rubble's Weight (exclude steel)																		406 TON		
	Truck's Capacity																				
	Flatage																				
	Transportation Cost Non Steel Truck	Truck dump 16 ton payload	01-54.33.20.5300	325 /day	day									1.22					1.22 DAY	397	
	Transportation Cost Non Steel Drive	Truck Driver, Heavy		\$30.60 /HR	HR									9.76					9.76 HR	357	
	Disposal Cost Non Steel	Nelson Construction		7 /TON	TON														406 TON	2842	
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				9631

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Shower House 03																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished	Mixed Materials Bld. Ltrmp	02 41 16 13 0100	0.29 /CF	CF	92	50	8								FT		36800	CF	10672
	Structure's Weight (exclude steel)																	0.3		
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	Nelson Construction	Nelson Con.	7 /TON	TON															
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			3864
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	284		2	0.67							FT				
	Concrete's Vol. Demolished																			
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY															
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rtd. trl	31 23 23 20 1020	5.48 /CY	CY															
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF															
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	319		2	0.67							FT				
	Concrete's Vol. Demolished																			
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY															
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rtd. trl	31 23 23 20 1020	5.48 /CY	CY															
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF															
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	92		50	0.33							FT				
	Concrete's Vol. Demolished																			
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY															
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rtd. trl	31 23 23 20 1020	5.48 /CY	CY															
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF															
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	12		5.5	0.33							FT				
	Concrete's Vol. Demolished																			
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY															
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rtd. trl	31 23 23 20 1020	5.48 /CY	CY															
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF															
	Subtotal																			
	Total																			
																				17169

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Shop 04																				
	Structure's Demolition Cost	Steel Bld. Large	02-41 16 13 0020	0.29 /CF	CF	40	93	14								FT		52080	CF	15103	
	Structure's Vol. Demolished																				
	Rubber's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				15103
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	197.5	4	0.67								FT					196
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																43
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rtd. trf	31 23 23 20 1020	5.48 /CY	CY																142
	Disposal Costs	Disposal on site	02-41 16 17 4200	8.61 /CF	CF																224
	Subtotal																				605
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	266	2	0.67								FT					128
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																28
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rtd. trf	31 23 23 20 1020	5.48 /CY	CY																93
	Disposal Costs	Disposal on site	02-41 16 17 4200	8.61 /CF	CF																146
	Subtotal																				395
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	40	83	0.33								FT					442
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																96
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rtd. trf	31 23 23 20 1020	5.48 /CY	CY																321
	Disposal Costs	Disposal on site	02-41 16 17 4200	8.61 /CF	CF																504
	Subtotal																				1383
	Total																				17486

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Machine Shop 05																				
	Structure's Demolition Cost	Steel Bldg. Large	02.41.16.13.0020	0.29 /CF	CF	30	45	10										13500	CF	3915	
	Structure's Vol. Demolished																				
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Sheet's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				3915
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	Concrete/Demo1	9.82 /CY	CY	135	1	0.67													29
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31.23.16.42.1300	1.64 /CY	CY																7
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tri	31.23.23.20.1020	5.48 /CY	CY																22
	Disposal Costs	Disposal on site	02.41.16.17.4200	3.61 /CF	CF																34
	Subtotal																				92
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	Concrete/Demo1	9.82 /CY	CY	150	2	0.67													69
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31.23.16.42.1300	1.64 /CY	CY																16
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tri	31.23.23.20.1020	5.48 /CY	CY																49
	Disposal Costs	Disposal on site	02.41.16.17.4200	3.61 /CF	CF																77
	Subtotal																				210
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	Concrete/Demo1	9.82 /CY	CY	30	45	0.33													167
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31.23.16.42.1300	1.64 /CY	CY																36
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tri	31.23.23.20.1020	5.48 /CY	CY																121
	Disposal Costs	Disposal on site	02.41.16.17.4200	3.61 /CF	CF																189
	Subtotal																				513
	Total																				4730

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	WHR Shop 06																				
	Structure's Demolition Cost	Steel Bld. Large	02.41.16.13.0020	0.29 /CF	CF	20	40	14										11200	CF	3248	
	Structure's Vol. Demolished																				
	Rubber's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Sheer's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				3248
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	120	1	0.67													29
	Loading Cost	Front end loader 3 CY	31.23.16.42.1300	1.64 /CY	CY												1.3				7
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. In	31.23.23.20.1020	5.48 /CY	CY																22
	Disposal Costs	Disposal on site	02.41.16.17.4200	8.61 /CF	CF																34
	Subtotal																				92
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	120	2	0.67													59
	Loading Cost	Front end loader 3 CY	31.23.16.42.1300	1.64 /CY	CY												1.3				13
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. In	31.23.23.20.1020	5.48 /CY	CY																44
	Disposal Costs	Disposal on site	02.41.16.17.4200	8.61 /CF	CF																69
	Subtotal																				185
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	20	40	0.33													98
	Loading Cost	Front end loader 3 CY	31.23.16.42.1300	1.64 /CY	CY												1.3				21
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. In	31.23.23.20.1020	5.48 /CY	CY																71
	Disposal Costs	Disposal on site	02.41.16.17.4200	8.61 /CF	CF																112
	Subtotal																				302
	Total																				3627

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Triple 07																				
	Structure's Demolition Cost	Steel Bid Large	02 41 16 13 0012	0.29 /CF	CF	27	10	25								FT		6750	CF	1958	
	Structure's Vol	Steel Bid Large	02 41 16 13 0012	0.29 /CF	CF	27	20	17								FT		9180	CF	2662	
	Structure's Vol	Steel Bid Large	02 41 16 13 0012	0.29 /CF	CF	27	10	8								FT		2160	CF	626	
	Structure's Vol	Steel Bid Large	02 41 16 13 0012	0.29 /CF	CF	20	30	51								FT		30600	CF	8874	
	Structure's Vol	Mixed Materials Bid Large	02 41 16 13 0100	0.29 /CF	CF	12	20	10								FT	0.3	2400	CF	696	
	Structure's Vol Demolished															TON/CY		568	CY		
	Rubber's Weight (exclude steel)													1.35							
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Dispose Cost Non Steel	Nelson Con		7 /TON	TON														767	TON	5369
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Dispose Cost Steel																				
	Subtotal																				20185
	Concrete Demolition	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	2	2	1.5													
	Demolition Cost																				
	Concrete's Vol Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rmd. trf	31 23 23 20 1020	5.48 /CY	CY																
	Dispose Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF																
	Subtotal																				20
	Concrete Demolition	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	3	3	2													
	Demolition Cost																				
	Concrete's Vol Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rmd. trf	31 23 23 20 1020	5.48 /CY	CY																
	Dispose Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF																
	Subtotal																				29
	Concrete Demolition	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	4	4	2													
	Demolition Cost																				
	Concrete's Vol Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rmd. trf	31 23 23 20 1020	5.48 /CY	CY																
	Dispose Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF																
	Subtotal																				4
	Concrete Demolition	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	27	40	0.29													
	Demolition Cost																				
	Concrete's Vol Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rmd. trf	31 23 23 20 1020	5.48 /CY	CY																
	Dispose Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF																
	Subtotal																				11
	Concrete Demolition	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	20	30	0.29													
	Demolition Cost																				
	Concrete's Vol Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rmd. trf	31 23 23 20 1020	5.48 /CY	CY																
	Dispose Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF																
	Subtotal																				1.3
	Concrete Demolition	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	1	1														
	Demolition Cost																				
	Concrete's Vol Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rmd. trf	31 23 23 20 1020	5.48 /CY	CY																
	Dispose Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF																
	Subtotal																				12
	Concrete Demolition	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	20	30	0.29													
	Demolition Cost																				
	Concrete's Vol Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rmd. trf	31 23 23 20 1020	5.48 /CY	CY																
	Dispose Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF																
	Subtotal																				1.3
	Concrete Demolition	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	1	1														
	Demolition Cost																				
	Concrete's Vol Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rmd. trf	31 23 23 20 1020	5.48 /CY	CY																
	Dispose Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF																
	Subtotal																				6
	Total																				20859

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Substation 08																				
	Structure's Demolition Cost																				
		Torch Cutting Steel 1" plate	02 41 19 27 0020	1.17 /LF	LF	26.6								0.77	1	Day		27 LF		32	
		Torch Cutting Steel 1" bar	02 41 19 27 0040	1.35 /EA	EA										6.2	1	HR	0.8 DAY		1	
		Truck Mounted Crane 25 ton	01 54 33 60 2500	430 /day	day										6.2	2	DAY	6.2 HR		3906	
		Eq. Op., Crane or Shovel (Eqhw)	Eqhw	\$48.80 /HR	HR									0.77	2	DAY		1.5 DAY		73	
		Truck dump, 10 ton payload	01 54 33 20 5000	335 /day	day										6.2	2	HR	12.4 HR		4030	
		Truck Driver, Heavy	Trnv	\$36.60 /HR	HR										6.2	2	HR	12.4 HR		454	
		CLAB	Clab	\$35.45 /HR	HR																
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				8496
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished	Chain link remove 8'-10"	02 41 13 60 1700	2.93 /LF	LF	157															920
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Transformers																				
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished	Mechanical equipment heavy	23 05 05 10 3000	740 /ton	ton																
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				4440
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	19	19	0.5													128
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																28
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rmd. trf	31 23 23 20 1020	5.48 /CY	CY																63
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF																146
	Subtotal																				395
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				14251

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Coal Storage Bin 09																			
	Structure's Demolition Cost																			
		Torch Cutting Steel 1" plate	02 41 19 27 0020	1.17 /LF	LF	163.3													163 LF	191
		Torch Cutting Steel 1" bar	02 41 19 27 0040	1.35 /EA	EA										0.66	1 DAY			0.7 DAY	1
		Truck Mounted Crane 25 ton	01 54 33 60 2500	630 /day	day										5.3	1 HR			5.3 HR	3336
		Eq. Op., Crane or Shovel (Eqhv)	Eqhv	\$48.80 /HR	HR										0.66	2 DAY			1.3 DAY	63
		Truck dump, 10 ton payload	01 54 33 20 5000	335 /day	day										5.3	2 HR			10.6 HR	3445
		Truck Driver, Heavy	TRV	\$36.60 /HR	HR										5.3	2 HR			10.6 HR	388
		C/JAB	Chb	\$35.45 /HR	HR															
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			7427
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	60	1	6								FT			13 CY	126
	Concrete's Vol. Demolished																			
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY														17 CY	28
	Transportation Cost	12 CY (16 Ton) Dump Truck 12 mi. rtd. trf	31 23 23 20 1020	5.48 /CY	CY														17 CY	93
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF														17 CY	146
	Subtotal																			395
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	3	3	1								4 FT			1 CY	10
	Concrete's Vol. Demolished																		1 CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY														1 CY	2
	Transportation Cost	12 CY (16 Ton) Dump Truck 12 mi. rtd. trf	31 23 23 20 1020	5.48 /CY	CY														1 CY	6
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF														1 CY	8
	Subtotal																			26
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	30	30	0.67								FT			22 CY	216
	Concrete's Vol. Demolished																		29 CY	48
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY														29 CY	48
	Transportation Cost	12 CY (16 Ton) Dump Truck 12 mi. rtd. trf	31 23 23 20 1020	5.48 /CY	CY														29 CY	159
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF														29 CY	250
	Subtotal																			673
	Total																			8521

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Lump Coal 10																				
	Structure's Demolition Cost																				
		Torch Cutting Steel 1" plate	02 41 19 27 0020	1.17 /LF	LF	225															263
		Torch Cutting Steel 1" bar	02 41 19 27 0040	1.35 /EA	EA																
		Truck Mounted Crane 25 ton	01 54 33 60 2500	360 /day	day																1584
		Eq. Op. Crane or Shovel (Ethv)		\$48.00 /HR	HR																54
		Truck dump 16 ton payload	01 54 33 20 5300	325 /day	day																2880
		Truck Driver Heavy		\$30.00 /HR	HR																2880
		CLAB		\$35.45 /HR	HR																322
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				5084
	Equipment's Disposal Cost																				
	Demantiling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	Concrete/Demo1	9.82 /CY	CY	102	2	1								FT	1.3				70
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																18
	Transportation Cost	192 CY (16 Ton) Dump Truck 1/2 mi. md. th	31 23 23 20 1020	5.46 /CY	CY																55
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF																86
	Subtotal																				236
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				5320

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Coal Recovery Bin 11																				
	Structure's Demolition Cost																				
	Structure's Vol. Demolished																				
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Pileage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				
	Equipment & Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY		12	2.5	1							4	FT					39
	Concrete's Vol. Demolished																				
	Loading Cost	Front loader 3 CY	31 23 16 42 1300	1.64 /CY																	8
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd.	31 23 23 20 1020	5.48 /CY																	27
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF																	43
	Subtotal																				117
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY		12	12	0.33													20
	Concrete's Vol. Demolished																				
	Loading Cost	Front loader 3 CY	31 23 16 42 1300	1.64 /CY																	5
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd.	31 23 23 20 1020	5.48 /CY																	16
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF																	26
	Subtotal																				67
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				184

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	WHR Surge Bin 12																				
	Structure's Demolition Cost																				
		Torch Cutting Steel 1" plate	02 41 19 27 0020	1.17 /LF	LF	458															
		Torch Cutting Steel 1" pipe	02 41 19 27 0040	1.35 /EA	EA																
		Truck Mounted Crane 25 ton	01 54 33 60 2500	630 /day	DAY																
		Eq. Op. Crane or Shovel (Eqnrv)	Eqnrv	\$48.80 /HR	HR																
		Truck dump 16 ton payload	01 54 33 20 5300	325 /day	DAY																
		Truck Driver, Heavy	Trnv	\$36.60 /HR	HR																
		CLAB	Clab	\$35.45 /HR	HR																
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				9822
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	120	6	0.67								FT	1.3				177
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. trl	31 23 23 20 1020	5.48 /CY	CY																
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF																
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	3	3	1								4 FT	1.3				10
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. trl	31 23 23 20 1020	5.48 /CY	CY																
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF																
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	60	50	0.5								FT	1.3				550
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. trl	31 23 23 20 1020	5.48 /CY	CY																
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF																
	Subtotal																				
	Total																				12086

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Ditch D 8D 13																				
	Structure's Demolition Cost																				
	Structure's Vol. Demolished																				
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	Concrete/Demo1	9.82	CY	35	12	0.67								FT	1.3				98
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64	CY																21
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rmd. trip	31 23 23 20 1020	5.48	CY																71
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.61	TCF																112
	Subtotal																				302
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				302

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Lump Coal Storage Pad 14																				
	Structure's Demolition Cost																				
	Rubble's Vol. Demolished																				
	Truck's Weight (excludes steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Steer's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY		118	4	1								FT				167	
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY																36	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. In	31 23 23 20 1020	5.48 /CY																121	
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF																189	
	Subtotal																			513	
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY		38	80	0.67								FT				737	
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY																161	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. In	31 23 23 20 1020	5.48 /CY																537	
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF																844	
	Subtotal																			2279	
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				2792

Ref.	Description	Materials	Mians Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Equipment Wash Pad 15																				
	Structure's Demolition Cost																				
	Structure's Vol. Demolished																				
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	Concrete/Demo1	9.82 /CY	19 CY	40	25	0.5								FT	1.3				187
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	41																41
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tri	31 23 23 20 1020	5.48 /CY	137																137
	Disposal Costs	Disposal on site	102 41 16 17 4200	8.61 /CF	215																215
	Subtotal																				580
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				580

Ref.	Description	Materials	Mears Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Transformer Pad Shop 16																				
	Structure's Demolition Cost																				
	Rubble's Vol. Demolished																				
	Truck's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Sheet's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1		9.82 /CY	11	9	0.5								FT					20
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 02 1300		1.64 /CY																5
	Transportation Cost	12 CY 116 Ton Dump Truck 1/2 mi. rd. lift	31 23 23 20 1020		5.48 /CY																16
	Disposal Costs	Disposal on site	02 41 16 17 4200		8.01 /CF																26
	Subtotal																				67
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				67

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Water Tanks 17																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0012	0.29 /CF	ICF	10			14						3	FT		4618	CF	1339
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0012	0.29 /CF	ICF	20			10						1	FT		1571	CF	456
	Structure's Vol. Demolished																			
	Truck's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Sheet's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1795
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			1795

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Flat Tanks 18																				
	Structure's Demolition Cost	Steel Bld. Large	02.41.16.13.0012	0.29 /CF	CF	10			13.5						2	FT		2883	CF	830	
	Structure's Demolition Cost	Steel Bld. Large	02.41.16.13.0012	0.29 /CF	CF	23			11.5						1	FT		2389	CF	693	
	Structure's Demolition Cost	Steel Bld. Large	02.41.16.13.0012	0.29 /CF	CF	19			9						3	FT		3626	CF	1052	
	Structure's Demolition Cost	Steel Bld. Large	02.41.16.13.0012	0.29 /CF	CF	11			4						1	FT		138	CF	40	
	Structure's Demolition Cost	Steel Bld. Large	02.41.16.13.0012	0.29 /CF	CF	7			7						1	FT		269	CF	78	
	Structure's Demolition Cost	Steel Bld. Large	02.41.16.13.0012	0.29 /CF	CF	5			9.5						1	FT		354	CF	103	
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Disposal Cost Steel																				
	Subtotal																				2796
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				2796

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Fuel Lines 1P																				
	Structure's Demolition Cost	Pipe Steel 4" dia	02.41.13.33.3200	8.15	LF	400												400	LF	3260	
	Structure's Vol. Demolished																				
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				3260
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				3260

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Fans 20																				
	Structure's Demolition Cost	Torch Cutting Steel 1" plate	02 41 19 27 0020	1.17 /LF	LF	77															60
	Structure's Vol. Demolished	Torch Cutting Steel 1" bar	02 41 19 27 0040	1.35 /EA	EA																389
		Truck Mounted Cranes 25 ton	01 54 33 60 2500	630 /day	DAY										1	1 DAY					630
		Eq. Op., Cranes or Shovel (Eqty)	Eqty	\$48.80/HR	HR										8.2	1 HR					400
		Truck dump 16 ton payload	01 54 33 20 6300	325 /day	DAY										1	2 DAY					650
		Truck Driver, Heavy	Triv	\$36.00/HR	HR										8.2	2 HR					600
		CLAB	Clab	\$35.40/HR	HR										8.2	2 HR					581
	Subtotal																				3340
	Equipment's Disposal Cost																				
	Demolition Cost	Concrete demolition	Concrete/Demo 1	9.82 /CY	CY	7.5	2	0.67							8	8 FT					20
	Concrete's Vol. Demolished	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																7
	Loading Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rfd.	31 23 23 20 1020	5.48 /CY	CY																22
	Transportation Cost	Disposal on site	02 41 16 17 4200	8.61 /CF	CF																54
	Disposal Costs																				82
	Subtotal																				
	Concrete Demolition	Concrete demolition	Concrete/Demo 1	9.82 /CY	CY	16	13	0.67							4	4 FT					206
	Demolition Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																44
	Concrete's Vol. Demolished	12 CY (16 Ton) Dump Truck 1/2 mi. rfd.	31 23 23 20 1020	5.48 /CY	CY																148
	Loading Cost	Disposal on site	02 41 16 17 4200	8.61 /CF	CF																232
	Transportation Cost																				630
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				4002

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost		
	Conveyor 21																					
	Structure's Demolition Cost	Steel Bld. Larga	02 41 16 13 0012	0.29 /CF	CF	6230	5	5								FT		155750	CF	45168		
	Structure's Demolition Cost	Steel Bld. Larga	02 41 16 13 0012	0.29 /CF	CF	60	8	8								39	FT	145760	CF	43430		
	Structure's Vol. Demolished																					
	Rubble's Weight (exclude steel)																					
	Truck's Capacity																					
	Haulage																					
	Transportation Cost Non Steel Truck																					
	Transportation Cost Non Steel Drive																					
	Disposal Cost Non Steel																					
	Steel's Weight																					
	Truck's Capacity																					
	Haulage																					
	Transportation Cost Steel Truck																					
	Transportation Cost Steel Truck Drive																					
	Disposal Cost Steel																					
	Subtotal																				88598	
	Equipment's Disposal Cost																					
	Dismantling Cost																					
	Equipment's Vol. Demolished																					
	Loading Costs																					
	Transport Costs																					
	Disposal Costs																					
	Subtotal																					
	Concrete Demolition																					
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	CY	3	3	3	1						188	FT	1.3			63	CY	619
	Concrete's Vol. Demolished																					
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY																	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. tri	31 23 23 20 1050	5.48 /CY	CY																	
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF																	
	Subtotal																					134
	Concrete Demolition																					
	Demolition Cost																					
	Concrete's Vol. Demolished																					
	Loading Cost																					
	Transportation Cost																					
	Disposal Costs																					
	Subtotal																					449
	Concrete Demolition																					
	Demolition Cost																					
	Concrete's Vol. Demolished																					
	Loading Cost																					
	Transportation Cost																					
	Disposal Costs																					
	Subtotal																					706
	Total																					90506

Ref.	Description	Materials	Mears Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Septic Tanks 23																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Excavation of Septic Tanks																			
	Excavation	Excavation Bulk Bank 2 CY (322BL)	31 23 16 42 0260	1.54 /CY	4 FT	10	10	3								44 CY				68
	Backfill	Backfill Trench Minimal Haul 2 1/4 CY	31 23 16 13 3080	1.75 /CY	4 FT	10	10	3								44 CY				77
	Subtotal																			145
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	9.82 /CY	4 CY						1.5									59
	Concrete's Vol. Demolished																			
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY																13
	Transportation Cost	12 CY (16 Tom) Dump Truck 1/2 mi. rfd. tri	31 23 23 20 1020	5.48 /CY																44
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF																69
	Subtotal																			185
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			330

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Witchman Trailer 25																				
	Structure's Demolition Cost	Mixed Materials Bldg. Large	02-41 16 13 0100	0.29 /CF	CF	8	8	7								FT	0.3	448 CF		130	
	Structure's Vol. Demolished																				
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Driv																				
	Disposal Cost Non Steel																				
	Steel's Weight	Nelson Construction	Nelson Con.		7 TON															49	
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				179

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Cap and Powder Mar 26																			
	Structure's Demolition Cost	Steel Blk. Large	02.41.16.13.0012	0.29 /CF	CF	5	6	8								2 FT		480 CF		139
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			139
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			139

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Conveyor Tunnel 27																				
	Structure's Demolition Cost																				
	Structure's Vol. Demolished																				
	Rubber's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non-Steel Truck																				
	Transportation Cost Non-Steel Drive																				
	Disposal Cost Non-Steel																				
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	Concrete/Demo1	9.82 /CY		470	7	0.5							2	2 FT				1198	
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY																261	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. trl	31 23 23 20 1020	5.48 /CY																871	
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF																1369	
	Subtotal																				3699
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	Concrete/Demo1	9.82 /CY		470	8	0.5							2	2 FT				1365	
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY																297	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. trl	31 23 23 20 1020	5.48 /CY																992	
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF																1555	
	Subtotal																				4212
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				7911

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swall Factor	Quantity	Unit	Cost	
	Plug Well 28	Plus Well	AML3	5000 EA.	1 EA.													1 EA.		5000	
	Structure's Demolition Cost																				
	Structure's Vol. Demolished																				
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				5000
	Equipment's Disposal Cost																				
	Demolition Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				5000

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Seal Porthals 29															18 EA					
	Structure's Demolition Cost	Seal Porthals	AWL1	5200 EA.												18 EA					93600
	Structure's Vol. Demolished																				
	Rubble's Weight (excludes steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				93600
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				93600

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Power Lines and Poles 30																				
	Structure's Demolition Cost																				
	Rubble's Vol. Demolished																				
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				
	Equipment's Disposal Cost	Wire Removal	Old Means 1	11.3 /ICLF		8700										FT			87 CLF	983	
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				983
	Equipment's Disposal Cost	Powerpoles			100 EA											50 EA				50 EA	5000
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				5000
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				5983

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Portals AMOZA No 31																				
	Structure's Demolition Cost	Seal Portals	AM/L 1	5200	EA										4	EA		4	EA	20800	
	Structure's Vol. Demolished																				
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				20800
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				20800

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Culvert Removal No. 32																				
	Structure's Demolition Cost																				
	Rubber's Vol. Demolished																				
	Rubber's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				0
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	Concrete/Demo1	9.82 /CY	CY						27.15						1.3	27.15	CY	287	
	Concrete's Vol. Demolished																				
	Loading Cost	Front end loader 3 CY	31.23.16.42.1300	1.64 /CY	CY																57
	Transportation Cost	12 CY (18 Ton) Dump Truck 1/2 mi. rd. trl	31.23.23.20.1020	5.48 /CY	CY																192
	Disposal Costs	Disposal on site	02.41.16.17.4200	5.61 /CF	CF																301
	Subtotal																				817
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				817

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Portals No. 33																			
	Structure's Demolition Cost	Seal Portals	AMI-1	5200 EA.												3 EA.		3 EA.		15600
	Structure's Vol. Demolished																			
	Rubber's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			15600
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			15600

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Hilfiker Retaining Wall 34																				
	Structure's Demolition Cost																				
	Rubble's Vol. Demolished																				
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				
	Crane	Truck Mounted Crane 25 ton	01 54 33 60 2500	630 /day											2	1 days			2	days	1280
	Truck	Truck dumbo 16 ton payload	01 54 33 20 5300	325 /day											2	2 days			2	days	1300
	Crane Operator	Eq. Op. Crane or Shovel (Eqhw)		\$48.80 /HR											2	1 days			2	days	98
	Truck Driver	Truck Driver, Heavy		\$36.60 /HR											2	2 days			2	days	146
	Labor	CLAB		\$36.45 /HR											16	2 hrs			32	hr	1134
	Subtotal																				3038
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				3938

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Sampling Station 35																			
	Structure's Vol. Demolished	Steel Bld. Lumps	02 41 16 13 0012	0.29 /CF	CF	9	12	10								FT		1080	CF	313
	Rubble's Weight (excludes steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			313
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	Concrete/Demo1	9.82 /CY	CY	10	7	0.5								FT				10
	Concrete's Vol. Demolished																			
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.64 /CY	CY															2
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tri	31 23 23 20 1020	5.48 /CY	CY															5
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.61 /CF	CF															9
	Subtotal																			26
	Concrete Demolition																			
	Demolition Cost	Concrete's Vol. Demolished																		
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete's Vol. Demolished																		
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete's Vol. Demolished																		
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			339

	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Bear Canyon Mine Grading															
Tank Seam No.01 TS-10 & TS-11															
Tank Seam Access Road and Portal Pad Area															
Direct Cut and Fill															
CAT 345BL II (10-24)(2nd2006) 2005	13900	109.55	0.1	47.50	254.88	1	254.88	\$/HR	9649	CY	478	CY/HR	20.2	HR	5149
Load and Haul															
CAT 345BL II (10-24)(2nd2006) 2005	13900	109.55	0.1	47.50	254.88	1	254.88	\$/HR	10661	CY	478	CY/HR	22.3	HR	5684
6X4 50,000lbs 10-12 CY (20-15) (2nd2006)	2950	62.05	0.1	36.60	123.29	4	493.16	\$/HR							10997
Place Hauled Material															
CAT 345BL II (10-24)(2nd2006) 2005	13900	109.55	0.1	47.50	254.88	1	254.88	\$/HR	10661	CY	478	CY/HR	22.3	HR	5684
Volume									20310	CY					
Total															27514

	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Bear Canyon Mine Grading															
Upper Storage Pad No.02 TS-8															
Direct Cut and Fill															
CAT 345BL II (10-24)(2nd2006) 2005	13900	109.55	0.1	47.50	254.88	1	254.88 \$/HR		3666 CY	478 CY/HR	7.7 HR				1963
Place Hauled Material From TS-5 and TS-6															
CAT 345BL II (10-24)(2nd2006) 2005	13900	109.55	0.1	47.50	254.88	1	254.88 \$/HR		3356 CY	478 CY/HR	7 HR				1784
Volume									7022						
Total															3747

	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Bear Canyon Mine Grading															
Portal Pad Area No 03															
Direct Cut and Fill CAT 345BL II (10-24)(2nd2006) 2005	13900	109.55	0.1	47.50	254.88	1	254.88 \$/HR		6445 CY		478 CY/HR		13.5 HR		3441
Place Hauled Material From TS-5 CAT 345BL II (10-24)(2nd2006) 2005	13900	109.55	0.1	47.50	254.88	1	254.88 \$/HR		11592 CY		478 CY/HR		24.3 HR		6194
Volume Total									18037						9635

	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Bear Canyon Mine Grading															
Portal Access Road No 04															
Direct Cut and Fill															
CAT 345BL II (10-24)(2nd2006) 2005	13900	109.55	0.1	47.50	254.88	1	254.88 \$/HR		5573	CY	478	CY/HR	11.7	HR	2982
Load and Haul															
CAT 345BL II (10-24)(2nd2006) 2005	13900	109.55	0.1	47.50	254.88	1	254.88 \$/HR		2553	CY	478	CY/HR	5.3	HR	1351
6X4 50,000lbs 10-12 CY (20-15) (2nd2006)	2950	62.05	0.1	36.60	123.29	4	493.16 \$/HR						5.3	HR	2614
Place Hauled Material															
CAT 345BL II (10-24)(2nd2006) 2005	13900	109.55	0.1	47.50	254.88	1	254.88 \$/HR		2553	CY	478	CY/HR	5.3	HR	1351
Volume									8126						
Total															8298

	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Bear Canyon Mine Grading															
Coal Storage Pad No. 5															
Load and Haul Soil to other sites															
980H Series II EROPS (9-34) (2nd2006)	16200	115.7	0.1	47.5	276.02	1	276.02 \$/HR						26.7 HR		7370
6X4 50,000lbs 10-12 CY (20-15) (2nd2006)	2950	62.05	0.1	36.60	123.29	14	1726.06 \$/HR		15428 CY		577 CY/HR		26.7 HR		46086
Place Hauled Material															
CAT 345BL II (10-24)(2nd2006) 2005	13900	109.55	0.1	47.50	254.88	1	254.88 \$/HR		15428 CY		478 CY/HR		32.3 HR		8233
Move material on site/Place Hauled Material															
D9R Semi-U EROPS (9-50) (2H2006)	20300	134.95	0.1	47.50	322.82	1	322.82 \$/HR		25157 CY		500 CY/HR		50.3 HR		16238
Volume									40585						
Total															77927

	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Ds.	Units	Cost
Bear Canyon Mine Grading															
Scale House No.6															
D9R Semi-U EROPS (9-50) (2H2006)	20300	134.95	0.1	47.50	322.82	1	322.82 \$/HR		1454 CY		500 CY/HR		2.9 HR		936
Volume									1454						
Total															936

	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Bear Canyon Mine Grading															
Sediment Ponds No.7															
D9R Semi-U EROPS (9-50) (2H2006)	20300	134.95	0.1	47.50	322.82	1	322.82 \$/HR		3460 CY	500 CY/HR	500	6.9 HR		2227	
D9R Semi-U EROPS (9-50) (2H2006)	20300	134.95	0.1	47.50	322.82	1	322.82 \$/HR		0 CY	500 CY/HR	500	0 HR		0	
D9R Semi-U EROPS (9-50) (2H2006)	20300	134.95	0.1	47.50	322.82	1	322.82 \$/HR		0 CY	500 CY/HR	500	0 HR		0	
Volume									3460						
Total															2227

	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Bear Canyon Mine															
Grading															
Shower House No. 8															
D9R Semi-U EROPS (9-50) (2H2006)	20300	134.95	0.1	47.50	322.82	1	322.82 \$/HR		5851	500 CY			11.7 CY		3777
Volume									5851						
Total															3777

	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Disc.	Units	Cost
Bear Canyon Mine Grading															
Wild Horse Ridge No. 9															
WHR Portal Area															
Rough Backfilling and Grading															
D9R Semi-U EROPS (9-50) (2H2006)	20300	134.95	0.1	47.50	322.82	1	322.82 \$/HR		10288 CY		500 CY/HR		20.6 HR		6650
Haul and Place Topsoil															
980H Series II EROPS (9-34) (2nd2006)	16200	115.7	0.1	47.50	276.02	1	276.02 \$/HR		4860 CY		577 CY/HR		8.4 HR		2319
6X4 50,000lbs 10-12 CY (20-15) (2nd2006)	2950	62.05	0.1	36.60	123.29	17	2095.93 \$/HR						8.4 HR		17606
D9R Semi-U EROPS (9-50) (2H2006)	20300	134.95	0.1	47.50	322.82	1	322.82 \$/HR		4860 CY		500 CY/HR		9.7 HR		3131
Subtotal															29706
WHR Upper Access Road															
Cut and Fill Material															
CAT 345BL II (10-24)(2nd2006) 2005	13900	109.54	0.1	47.50	254.87	1	254.87 \$/HR		1912 CY		478 CY/HR		4 HR		1019
Haul and Place Topsoil															
CAT 345BL II (10-24)(2nd2006) 2005	13900	109.54	0.1	47.50	254.87	1	254.87 \$/HR		2171 CY		478 CY/HR		4.5 HR		1147
6X4 50,000lbs 10-12 CY (20-15) (2nd2006)	2950	62.05	0.1	36.60	123.29	3	369.87 \$/HR						4.5 HR		1664
CAT 345BL II (10-24)(2nd2006) 2005	13900	109.54	0.1	47.50	254.87	1	254.87 \$/HR		2171 CY		478 CY/HR		4.5 HR		1147
Subtotal															4977
WHR Lower Access Road															
Load and Haul Material with															
CAT 345BL II (10-24)(2nd2006) 2005	13900	109.54	0.1	47.50	254.87	1	254.87 \$/HR		1473.5 CY		478 CY/HR		3.1 HR		790
D9R Semi-U EROPS (9-50) (2H2006)	20300	134.95	0.1	47.50	322.82	1	322.82 \$/HR		1473.5 CY		500 CY/HR		2.9 HR		936
Subtotal															1726
Volume Total									20704.5						36409

	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Bear Canyon Mine Grading Borehole No 10															
Load and Haul Material															
980H Series II EROPS (9-34) (2nd2006)	16200	115.70	0.1	47.50	276.02	1	276.02 \$/HR		10560 CY	498 CY/HR	21.2 HR			5852	
6X4 50,000lbs 10-12 CY (20-15) (2nd2006)	2950	62.05	0.1	36.60	123.29	13	1602.77 \$/HR				21.2 HR			33979	
CAT 345BL II (10-24) (2nd2006) 2005	13900	109.55	0.1	47.50	254.88	1	254.88 \$/HR		10560 CY	478 CY/HR	22.1 HR			5633	
Volume									10560						
Total															45464

	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Disc.	Units	Cost
Bear Canyon Mine Grading Support No.11															
Foreman Average, Outside					37.45	1	37.45 \$/HR						335.6	HR	12568
5,000 gal H2O truck Diesel (20-17) (2nd2006)	3800	52.7	0.1	45.65	127.37	1	127.37 \$/HR						35.6	HR	4534
Pickup Truck Crew 4x4 1 ton (20-17) (2nd2006)	660	15.2	0.1	0	20.85	1	20.85 \$/HR						335.6	HR	6997
Total															24099

	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Bear Canyon Mine															
Grading															
Riprap No.12															
Place riprap 18" min.thickness mat only					75.75				7076			S.Y.			536007
31 37 13.10 0200															
Total															536007

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Main Mine Site 01																				
	Revegetation																				
	Drill Seeding																				
	Seed Material	Tractor Spreader (equip. & labor) B-66	Reveg004	24.09 /MSF	MSF																
	Seed Material	Bear Canyon Main Mine Shrubs	Bear Canyon 001	196 \$/AC	S/AC																
	Seed Material	Bear Canyon Main Mine Forbs	Bear Canyon 002	178 \$/AC	S/AC																
	Seed Material	Bear Canyon Main Mine Grass	Bear Canyon 003	188 \$/AC	S/AC																
	Drill Seeding	Tractor Spreader (equip. & labor) B-66	Reveg004	24.09 /MSF	MSF																
	Mulch	Tractor Spreader (equip. & labor) B-66	Reveg001	41.19 /MSF	MSF																
	Stock Labor	Hay 1" material only 029105000250	32 93 43 10 0140	0.78 Ea	Ea																
	Stock Material	Bare root seedlings, 11" to 16" med. soil	Bear Canyon 004	4.66 \$/AC	S/AC																
	Ripping	300 HP Dozer w/ Ripper	31 23 16 32 2830	0.46 /CY	CY																
	Subtotal																				
	Hydroseeding																				
	Hydroseeding	Hydro Spreader (equip. & labor) B-61 80MS	Reveg002	24.83 /MSF	MSF																
	Seed Material	Bear Canyon Main Mine Shrubs	Bear Canyon 001	196 \$/AC	S/AC																
	Seed Material	Bear Canyon Main Mine Forbs	Bear Canyon 002	178 \$/AC	S/AC																
	Seed Material	Bear Canyon Main Mine Grass	Bear Canyon 003	188 \$/AC	S/AC																
	Mulch	Hydro Spreader (equip. & labor) B-81	Reveg005	24.09 /MSF	MSF																
	Stock Labor	Hay 1" material only 029105000250	Reveg001	41.19 /MSF	MSF																
	Stock Labor	Bare root seedlings, 11" to 16" med. soil	32 93 43 10 0140	0.78 Ea	Ea																
	Stock Material	Bear Canyon Main Transplants	Bear Canyon 004	4.66 \$/AC	S/AC																
	Packing 340 CY/AC																				
	Subtotal	Excavation Bulk Bank 2 CY (322BL)	31 23 16 32 0280	1.54 /CY	CY																
	Riparian Planting Area																				
	Plant Stock	Bear Canyon Main Mine Grass	Bear Canyon 008	105 \$/AC	S/AC																
	Subtotal	Bare root seedlings, 11" to 16" med. soil	32 93 43 10 0140	0.78 Ea	Ea																
	Mattion																				
	Mattion	Revegetation mat. webbed	31 25 13 10 0120	7 /SY	SY																
	Subtotal																				
	Total																				
	Reseed																				
	Subtotal	Assume 25% reseeding																			
	Subtotal																				
	Total																				

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	M/14 Horse Ridge 02																				
	Revegetation																				
	Drill Seeding																				
	Drill Seeding																				
	Drill Seeding																				
	Mulch																				
	Mulch																				
	Stock																				
	Ripping																				
	Subtotal																				
	Hydroseeding																				
	Hydroseeding	Hydro Spreader (equip. & labor) B-81	Reveg005	24.09 /MSF	MSF																
	Hydroseeding	Bear Canyon Main Mine Grass	Bear Canyon 005	196 \$/AC	AC																3927
	Hydroseeding	Bear Canyon Main Mine Grass	Bear Canyon 006	235 \$/AC	AC																784
	Hydroseeding	Bear Canyon Main Mine Grass	Bear Canyon 007	188 \$/AC	AC																940
	Mulch	Hydro Spreader (equip. & labor) B-81	Reveg005	24.09 /MSF	MSF																752
	Mulch	Hay 1" material only 029105000250	Reveg001	41.19 /MSF	MSF																3927
	Stock	Bear Canyon Main Transplants	Bear Canyon 004	4.66 \$/AC	AC																6714
	Stock (labor cost = material cost)	Bare root seedlings, 11" to 16" med. soil	23 93 43 10 0130	0.78 Ea	Ea																1459
	Stock (labor cost = material cost)	Excavation Bulk Bank 2 CY (3228L)	31 23 16 32 0260	1.54 /CY	CY																1959
	Subtotal																				29176
	Hand Seed																				
	Hand Seed	Hand Spread Seed (CLAB)	32 92 19 14 0400	54.11 /MSF	MSF																
	Hand Seed	Bear Canyon Main Mine Grass	Bear Canyon 005	196 \$/AC	AC																3788
	Hand Seed	Bear Canyon Main Mine Grass	Bear Canyon 006	235 \$/AC	AC																392
	Hand Seed	Bear Canyon Main Mine Grass	Bear Canyon 007	188 \$/AC	AC																470
	Hydroseeding																				
	Hydroseeding	Bear Canyon Main Mine Grass	Bear Canyon 004	4.66 /MSF	MSF																
	Stock (labor cost + material cost)	Bare root seedlings 11" to 16" med soil	23 93 43 10 0140	0.78 Ea	Ea																692
	Matting	Revegetation mat, webbed	31 25 13 10 0120	7 \$Y	Y																54206
	Subtotal																				65586
	Total Vegetation																				92762
	Reseed																				
	Reseed	Assume 25% reseeding																			4560
	Subtotal																				4560
	Total																				121938

Castle Valley Mining LLC

P O Box 1169
265 Hambley Boulevard
Pikeville, KY 41502

FEIN 27-2909495
Phone 606-432-3900

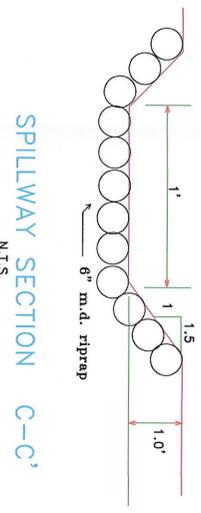
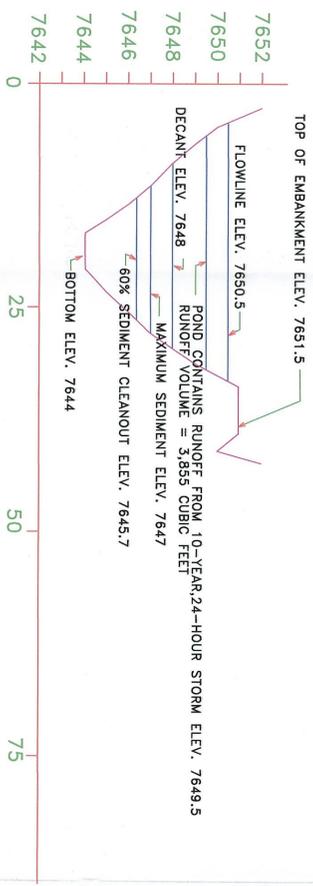
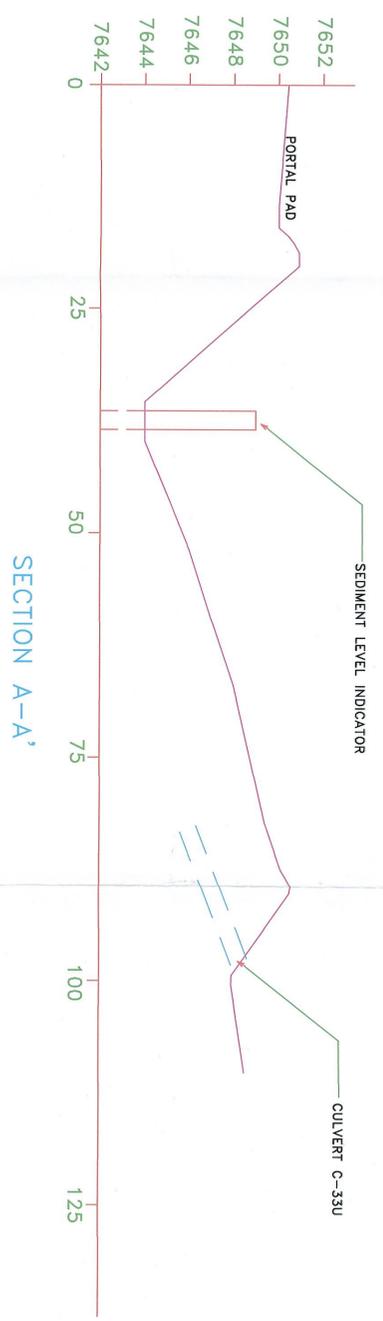
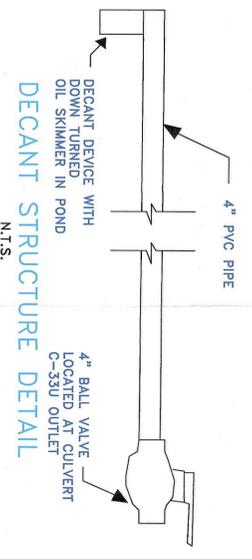
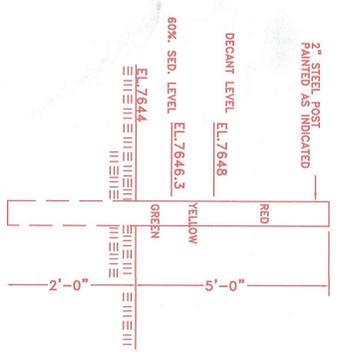
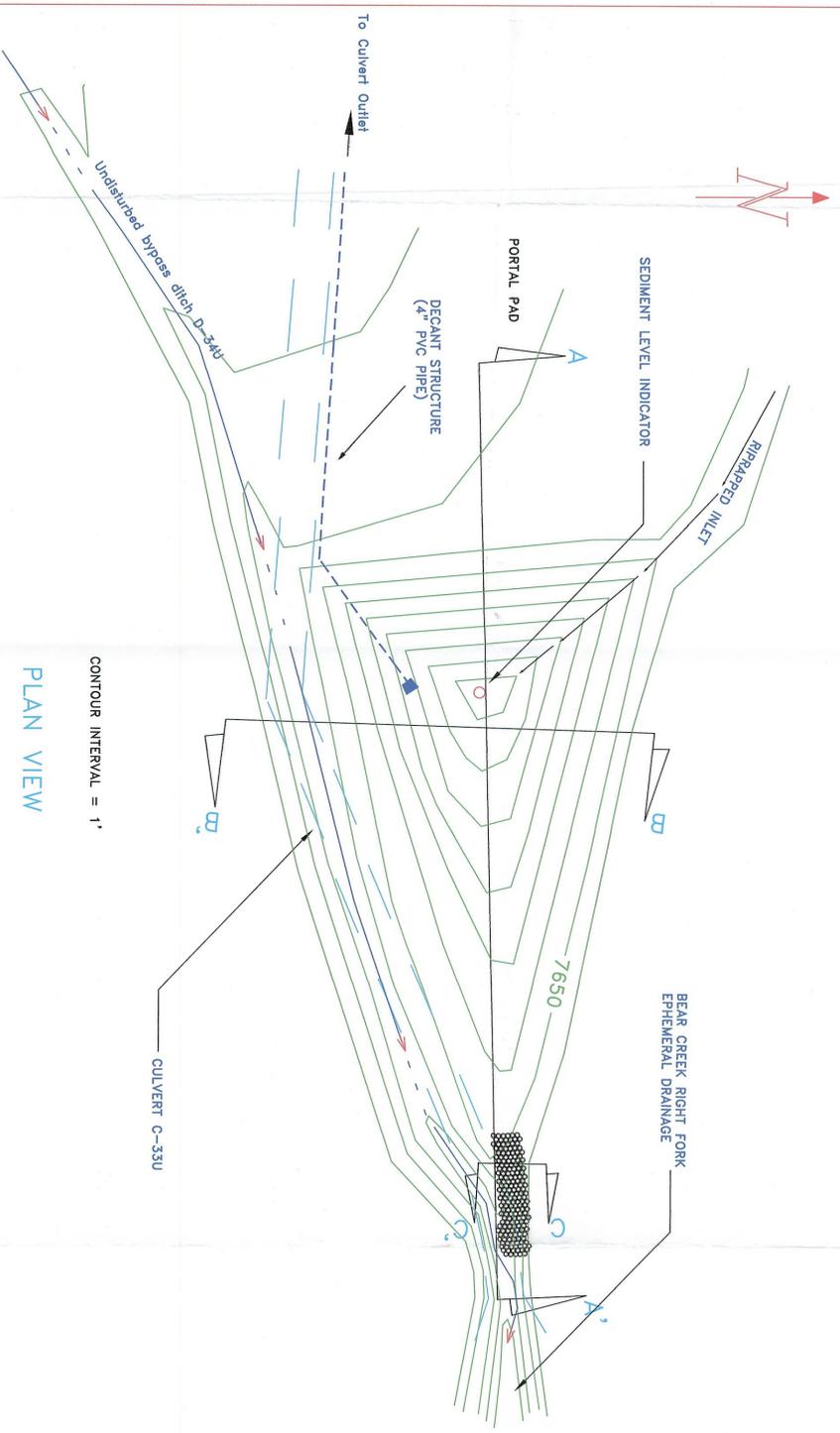
Officers and Directors

OFFICER	TITLE	BEGIN DATE OWNERSHIP	BEGIN DATE AFFILIATION	END DATE
Mark Zand	Chairman	N/A	6/10/2010	
David Zatezalo	Chief Executive Officer	N/A	6/10/2010	
Chad Hunt	President	N/A	6/10/2010	
Richard Boone	Senior Vice President & Chief Financial Officer	N/A	6/10/2010	
Christopher N. Moravec	Senior Vice President, Business Development	N/A	6/10/2010	
Joseph Miller	Vice President & Asst. Secretary	N/A	6/10/2010	
Elizabeth Branham	Vice President, Controller, Assistant Secretary	N/A	6/10/2010	
Andrew Cox	Vice President Sales	N/A	6/10/2010	
Arthur Amron	Vice President and Assistant Secretary	N/A	6/10/2010	
Jay Maymudes	Vice President, Secretary and Treasurer	N/A	6/10/2010	
Paul Jacobi	Vice President	N/A	6/10/2010	
Gary Isaac	Vice President and Assistant Secretary	N/A	6/10/2010	
Corey Heaps	Vice President			
Rhino Energy LLC	Member, Shareholder - 100%		6/10/2010	

Rhino Energy LLC3120 Wall Street, Suite 310
Lexington, KY 40513FEIN 59-3762498
Phone 859-389-6500

Officers and Directors

OFFICER	TITLE	BEGIN DATE OWNERSHIP	BEGIN DATE AFFILIATION	END DATE
Mark Zand	Chairman	N/A	6/26/2003	
David Zatezalo	President & CEO	N/A	9/4/2009	
Richard Boone	Senior Vice President & Chief Financial Officer	N/A	2/1/2005	
Christopher N. Moravec	Senior Vice President, Business Development	N/A	3/23/2007	
Joseph Miller	Vice President and Assistant Secretary	N/A	1/3/2007	
Elizabeth Branham	Vice President, Controller and Assistant Secretary	N/A	1/1/2007	
Andrew Cox	Vice President of Sales	N/A	1/22/2007	
Arthur Amron	Vice President and Assistant Secretary	N/A	6/26/2003	
Jay Maymudes	Vice President, Secretary and Treasurer	N/A	6/26/2003	
Paul Jacobi	Vice President	N/A	6/26/2003	
Chad Hunt	Vice President	N/A	8/26/2008	
Corey Heaps	Vice President of Western Operations	N/A	9/1/2010	
Wexford Capital LLC	Member, Manager 0%	N/A	4/30/2003	
Taurus Investors LLC	Member, Shareholder <10%	N/A	4/30/2003	
Valentis Investors LLC (Class A)	Member, Shareholder >10%	N/A	4/30/2003	
Artis Investors LLC (Class A)	Member, Shareholder <10%	N/A	4/30/2003	
Artis Investors LLC (Class B)	Member, Shareholder <10%	N/A	4/30/2003	
Callidus Investors, LLC	Member, Shareholder <10%	N/A	10/1/2003	
Solitar Corporation	Member, Shareholder >10%	N/A	7/15/2003	
Wexford Spectrum Investors LLC	Shareholder >10%	N/A	11/1/2004	
Nick Glancy	CEO & President	N/A	10/4/2005	3/5/2009
David Zatezalo	Senior Vice President & COO	N/A	3/1/2007	9/4/2009
Thomas Hanley	Senior Vice President	N/A	9/1/2007	9/4/2009



REV.	DATE	REMARKS	APPR.
1			
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RECEIVED
 SEP 09 2013
 DIV. OF OIL, GAS & MINING



CASTLE VALLEY MINING LLC.
 HUNTINGTON, UTAH

SEDIMENT POND "D"

SCALE: 1" = 20'

DRAWN BY: C. REYNOLDS

DATE: 6-25-01

BEAR CANYON PLATE 7-11