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**FILE IN** Expandable 09062006

**Refer to Record No.** 0045  
**in** 0070019, 2006, ENCLINGS  
**for additional information**

Two sedimentation ponds (Pond C and Pond E) have been constructed, as shown on Plate 6. Pond A, as its capacity was not required, is now being used for snow storage and topsoil storage. Sediment Basin B was also no longer needed for sediment or runoff capacity, and will also be eliminated and replaced with a parking area. The sedimentation and drainage control plan has been designed according to OSM regulations and the design and construction certified by a Utah Registered Professional Engineer. No other embankments, or other impoundments have been built nor are any proposed.

### **General Description**

The Andalex Deadman Canyon Project is comprised of three mines located closely together in Deadman Canyon. The Pinnacle Mine, Apex Mine, and the Aberdeen Mine are all presently in operation mining the Gilson and Lower Sunnyside Seams and the A Seam. The Centennial Seam is mined via rock tunnels from the existing Pinnacle Mine. Surface runoff from the Pinnacle Mine and Apex Mine is controlled by Pond C. Engineering Design for these ponds have been presented to the Division of Oil, Gas, and Mining on 4-3-80 and 8-21-81. Surface runoff from the Aberdeen Mine is controlled by Pond E. Designs for these ponds are shown on Plates 12 and 13 included herein.

The mines are located in the Right Fork of Deadman Canyon. This is an ephemeral drainage flowing only from direct runoff and eventually reaches the Price River some 12 miles to the south. The major drainages in the minesite area will be routed under the site through large culverts. The existing minesite has a disturbed area of 34.2 acres. Please note that a certain percentage of the disturbed area does not report to sedimentation ponds. Please refer to Plates 7 and 8 for these areas. Actual disturbed area reporting to basins and ponds is approximately 26 acres. Sediment pond designs include undisturbed areas reporting to ponds. In order to minimize additional sediment loading to the main drainage, these ponds and basins will collect runoff from these approximately 27 acres. Berms will be placed on the lower edge of all disturbed areas to prevent runoff from reaching natural drainages before it has passed through the sedimentation ponds except in small area exemptions. Ponds are designed for maximum runoff including the chidister water. Areas draining to Pinnacle and Apex portals are to be included.

### Sedimentation Pond Specifications

#### **Location**

The ponds are located over the main drainage of the Right Fork of Deadman Canyon. The main canyon drainage is routed through a 36-42" culvert located under the ponds. The sites are located downslope of the disturbed areas to simplify collection of runoff

approved seed mix to prevent erosion and promote stability. Compaction of the slopes were at least 95%. Top width of dams are not less than  $(H + 35)/5$ .

### **General Notes**

The primary settling basins (formerly Pond B) were located above Pond "C". These basins were installed early in the history of the site, and were left in place as sediment traps, although they were no longer needed as part of the runoff containment. An evaluation of Pond C shows it is sized to contain the runoff and sediment from the entire area which drained to the Settling Basin B and Sediment Pond C; therefore, the Settling Basins B have been eliminated and all drainage from this area is routed to Sediment Pond C as shown on Plate 8.

The runoff previously reporting to the settling basins will be routed around the new parking area by enlarging existing ditch DD-10 and installation of a new 18" cnp culvert in the ditch to provide access to the parking area. The drainage controls are shown on Plate 6, and the ditch and culvert sizing are detailed on Tables IV-3A and IV-3C, respectively.

Area of Ponds = 0.39 acres

Volume  $_{10/24}$  = 0.39 ac. x 1.82 in./12 in./ft. =  
0.059 ac. ft.

Volume  $_{100/6}$  = 0.39 ac. x 1.91 in./12 in./ft. =  
0.062 ac. ft.  
ft.

10. Total Required Pond Volume

Volume  $_{10/24}$  = 1.161 + 0.463 + 1.234 + 0.059 =  
2.917 ac. ft.

Volume  $_{100/6}$  = 1.254 + 0.534 + 1.234 + 0.062 =  
3.084 ac. ft.

11. Pond Volume at Outlet

18" cmp oil skimmer = 3.321 ac. ft.

36" cmp overflow = 4.264 ac. ft.

12. Conclusions:

A. Pond size is adequate to contain the runoff and sediment load from a 10 year - 24 hour precipitation event.

B. Pond size is also adequate to contain the runoff and sediment load from a 100 year - 6 hour precipitation event.

\* Includes runoff to Former "Primary Settling Basins" (Formerly Pond B)

\*\* Includes sediment to Former "Primary Settling Basins". The sediment factor of 0.05 acre-ft./acre is considered conservative due to the extensive paving (roads and loadout area), and the grouted or paved ditches to the pond.

The USLE calculation for Disturbed Areas (Table IV-9) shows the actual expected sediment yield to be much lower than the 0.05 figure used.

\*\*\* Sediment yield taken from the USLE calculations on Table IV-10, "Sediment Yield for Undisturbed Areas".

## Pond "C" - General Notes

The sizing of Pond C is based on the drainage areas delineated on Plate 8 - "Drainage Map". As can be seen from this Plate, a portion of the minesite drainage goes into the Pinnacle Mine, the old Chidister Portal, and the Apex Mine. The actual disturbed area draining directly to Pond "C" was planimetered from this Plate and determined to be 10.72 acres. The disturbed area flowing to the Former "Primary Settling Basins" was measured to be 4.07 acres. As shown in the sizing calculations for Pond C, the runoff and sediment from all 14.79 acres of disturbed area are included in the Pond C volume; therefore, the Settling Basins were no longer required and have been eliminated.

In addition, a certain amount of undisturbed area does not flow into the undisturbed drainage culverts, and thus drains onto the mine site (see plates 8 and 9). The portion of this drainage that flows to Pond "C" was measured at 30.89 acres, and is included in the Pond "C" sizing calculations.

Runoff Curve numbers used in the calculations were: 90 for disturbed areas and 70 for undisturbed areas.

An "As-Constructed" plan and profile of Pond "C" is shown on Plate 12. This plate has been certified by a registered, professional engineer. Also shown on this plate is a proposed sediment marker, and maximum and cleaning point depths for sediment. The cleaning point for sediment is at 60% of the maximum design depth for sediment storage. This point will be clearly marked on the sediment marker.

Also shown on Plate 12 is the location of each of the pond inlets. Inlets are either grouted concrete or culvert, and do not require rip-rap or other additional erosion protection.

Pond "C" will be removed during the earthwork portion of reclamation. The culvert will also be removed and the main channel restored throughout the area. All reclaimed area above will then drain into Pond "E" below.

Decanting for Pond C, as needed, will be accomplished with pumps located at the minesite. Decanted water will be pumped into the primary spillway once the 24 hour retention time has been met. An access ramp will be constructed to allow for inspection and sampling at the overflow riser pipe.

Hydrologic Balance:

**Sedimentation Ponds**

The sedimentation ponds are shown on Plates 12 and 13. Pond C is constructed as shown on Plate 6 "Support Facilities - As Built". There will be no Pond D. Pond E has been constructed (Plate 13), and is shown on Plate 7 "Aberdeen Mine Surface Facilities - As Constructed". The plans and profiles shown on Plate 12 are for Pond C, as constructed. Plate 13 (Pond E) plans and profiles are as built.

All elevations of inflow and discharge are shown on the plates. Also, the embankment slopes are shown not to exceed 5:1 as required. The embankment widths are greater than the required width of height of embankment plus 35 feet divided by 5' as required. (Please note the different horizontal and vertical scales used on the section views of Pond C. Horizontal and vertical scales for Pond E are the same.)

Previous Pond "B", redesignated as "Primary Settling Basins" have been eliminated. This was previously shown on Plate 11.

**Sediment Pond "C"**

Design specifications for Sediment Pond "C" are shown in this submittal.

**Sediment Pond "E"**

Design specifications for Sediment Pond "E" are covered under this submittal.

TABLE IV-3A

DISTURBED DIVERSION DESIGN  
(MISCELLANEOUS FLOWS-2YR.-6 HR. DESIGN)

<u>Structure</u>	<u>DD-1</u>	<u>*DD-8</u>	<u>*DD-9</u>	<u>DD-11</u>
Drainage Area (acres)				
Disturbed	3.31	-	-	5.35
Undisturbed	5.40	-	-	6.12
Time of Conc. (hrs.)	0.09	0.327	0.327	
Runoff Curve Number (CN)				
Disturbed	90	-	-	90
Undisturbed	70	-	-	70
Weighted CN	78	-	-	79
Manning's Number (n)	0.040	0.040	0.040	0.040
Ditch Slope (%)	6.25	6.25	6.25	5.25
Hydraulic Length (ft.)	200	1200	1200	800
Land Slope (%)	6.25	6.25	6.25	56.25
2 yr.-6 hr. Event (in)	0.80	0.80	0.80	0.80
Peak Flow 2/6 (cfs)	0.08	0.07	0.07	0.13
Required Area 2/6 (ft <sup>2</sup> )	0.05	0.04	0.04	0.07
Flow Depth 2/6 (ft.)	0.22	0.21	0.21	0.26
Velocity 2/6 (fps)	1.69	1.63	1.63	1.90
10 yr.-24 hr. Event (in.)	1.82	1.82	1.82	1.82
Peak Flow 10/24 (cfs)	3.49	2.88	2.88	4.75

\* Based on ½ flow from DD-3, which is 0.13 cfs for 2 yr.-6 hr. event. See Appendix O.

TABLE IV-3A (Continued)

DISTURBED DIVERSION DESIGN  
(PRIMARY ROAD DRAINAGE - 10YR.-6HR. DESIGN)

\*

\*\*

<u>Structure</u>	DD-2	DD-3	DD-4	DD-6	DD-7	DD-10
Drainage Area (acres)						
Disturbed	4.07	7.41	12.21	-	1.28	-
Undisturbed	-	25.49	12.20	-	6.12	-
Time of Conc. (hrs.)	0.04	0.327	0.289	0.289	0.08	-
Runoff Curve Number (CN)						
Disturbed	90	90	90	-	90	90
Undisturbed	-	70	70	-	70	-
Weighted CN	90	75	80	-	74	90
Manning's Number (n)	0.040	0.040	0.040	0.040	0.040	0.040
Ditch Slope (%)	6.25	6.25	6.25	5.95	5.56	6.25
Hydraulic Length (ft.)	200	1200	1200	-	800	-
Land Slope (%)	6.25	6.25	8.00	-	56.25	-
2 yr.-6 hr. Event (in)	1.25	1.25	1.25	1.25	1.25	1.25
Peak Flow 2/6 (cfs)	1.70	0.90	1.67	0.84	0.20	2.79
Required Area 2/6 (ft <sup>2</sup> )	0.47	0.30	0.40	0.28	0.10	0.68
Flow Depth 2/6 (ft.)	0.69	0.24	0.68	0.53	0.31	0.83
Velocity 2/6 (fps)	3.62	2.96	3.60	2.98	2.03	4.10
10 yr.-24 hr. Event (in.)	1.82	1.82	1.82	1.82	1.82	1.82
Peak Flow 10/24 (cfs)	3.50	5.75	8.06	4.03	1.92	8.56

\* Based on ½ flow for DD-4

\*\* Based on flow from CD-12 and CD-13.

Notes:

1. Ditch Slopes measured from Plate 8.
2. Peak flows by SCS-TR55 Method using "Storm 6.20" Computer program.
3. The Manning's Number is based on Table 3.1, page 159, under Small Drainage Ditches - Earth Lined, "Applied Hydrology and Sedimentology for Disturbed Areas", Barfield, Warner, and Haan, 1983.
4. See Appendix O for computer back-up.
5. All calculations are based on minimum ditch size- "V" shape with 1:1 side slopes, except DD-3 which has a 1' bottom width. Ditch configurations may vary in field.

TABLE IV -3B  
DIVERSION DITCH SUMMARY

<u>DITCH NO.</u>	<u>FLOW</u> (cfs)	<u>REQ'D FLOW DEPTH</u> (ft.)	<u>REQ'D FLOW AREA</u> (ft <sup>2</sup> )
UD-1	1.35	0.61	0.37
UD-2 (PAD)	0.99	0.61	0.37
UD-2 (UPPER)	0.99	0.41	0.17
UD-2 (LOWER)	0.99	0.39	0.15
UD-3	0.11	0.24	0.06
UD-4	0.47	0.45	0.20
UD-4 (MAX)	10.43	1.09	1.18
UD-5	0.29	0.39	0.15
UD-5 (MAX)	0.29	0.29	0.08
DD-1	0.08	0.22	0.05
DD-2	1.70	0.69	0.47
DD-3	0.90	0.24	0.30
DD-4	1.67	0.68	0.46
DD-6	0.84	0.53	0.28
DD-7	0.20	0.31	0.10
DD-8	0.07	0.21	0.04
DD-9	0.07	0.21	0.04
DD-10	2.79	0.83	0.68
DD-11	0.13	0.26	0.07

- Notes:
- 1- Flows for UD ditches and primary road ditches (D-2 through DD-7) based on 10 yr.-6hr. event (1.25).
  - 2- Flows for Ditches DD-1 and DD-8, DD-9 and DD-11 based on 2yr.-6hr. event (0.80").
  - 3- All calculations based on minimum ditch size - "V" ditch with 1:1 side slopes, except DD-3, which has a 1' bottom width. Ditch configurations may vary in field.
  - 4- Ditches will be maintained to minimum depth and/or area shown in this table.

8/03

TABLE IV-3C (Continued)  
DISTURBED AREA CULVERT DESIGN

<u>STRUCTURE</u>	<u>CD-9</u>	<u>CD-10</u>	<u>CD-11</u>	<u>CD-12</u>	<u>CD-13</u>
10yr.-6hr. Event (in)	1.25	1.25	1.25	1.25	1.25
Manning's Number (n)	0.025	0.025	0.025	0.025	0.025
Culvert Slope (%)	8.00	6.25	8.00	5.56	6.25
Peak Flow 10/6 (cfs)	0.31*	0.31*	0.31**	0.92**	1.87***
Velocity 10/6 (fps)	3.29	3.00	3.29	3.77	4.70
Diam. Req'd. (ft.)	0.35	0.36	0.35	0.56	0.71
Diam. In Place (ft.)	1.50	1.50	1.00	2.00	1.50

\* Based on 1/3 flow from DD-11.

\*\* Based on entire flow from DD-11.

\*\*\* Based on entire flow from DD-2.

TABLE IV-3C (Continued)  
DISTURBED AREA CULVERT DESIGN

<u>Structure</u>	<u>CD-14</u>	<u>CD-15</u>	<u>CD-16</u>	<u>CD-17</u>	<u>CD-18</u>	<u>CD-19</u>
10yr.-6hr. Event (in)	1.25	1.25	1.25	1.25	1.25	1.25
Manning's Number (n)	0.025	0.025	0.025	0.025	0.025	0.025
Culvert Slope (%)	3.50	3.50	6.25	5.56	57.74	6.25
Peak Flow 10/6 (cfs)	*	**	***	***		****
	3.50	2.84	4.65	4.65	0.29	2.79
Velocity 10/6 (fps)	3.51	4.20	5.90	5.65	6.79	5.20
Diam. Req'd. (ft.)	0.70	0.93	1.00	1.02	0.23	0.83
Diam. In Place (ft.)	1.50	1.50	2.00	2.00	1.50	1.50

\* Based on entire flow from DD-1.

\*\* Based on entire flows from DD-2, CD-10 & DD-11

\*\*\* Based on entire flow from DD-4.

\*\*\*\* Based on flow from CD-12 and CD-13.

Table IV-11  
Minesite Drainage Area Summary

<u>Drainage No.</u>	<u>Area (ac.)</u>	<u>Type</u>	<u>Drains To:</u>
1	4.23	Undisturbed	Pond E
2	5.40	"	Pond C
3	3.00	"	Old Works (Chidister Mine)
4	3.12	"	" " "
5	11.97	"	Pond C
6	2.06	"	Apex Mine
7	1.12	"	Old Works (Chidister Mine)
8	0.55	"	" " "
9	1.01	"	" " "
10	7.41	"	" " "
11	0.13	"	Pinnacle Mine
12	13.52	"	Pond C
13	6.20	"	Pond E
14	1.77	"	" "
15	12.21	Disturbed	" "
16	6.04	"	Pond C
17	4.07	"	Pond C
18	1.28	"	Old Works (Chidister Mine)
19	0.81	"	Pinnacle Mine
20	4.68	"	Pond C
21	3.25	"	Old Works (Chidister Mine)
22	1.23	"	Apex Mine
Total =			95.06;

Disturbed = 33.57 Acres;  
Undisturbed = 61.49 Acres

- Notes: (1) Areas disturbed from Plate 8 (and Plate 9 as necessary).
- (2) Does not include diverted undisturbed drainage.

All existing structures are situated on the Zion's fee land, on federal lease SL-027304, or on right-of-way UTU-62045 and are shown on Plate 6. There are no structures existing as part as Andalex's facility which were constructed prior to 1980. Plate 6 depicts the Aberdeen Mine with the surface facilities completed in early 1990. No new structures on the surface will be required to mine the Centennial and Aberdeen Seams on any lease including the new AEP Lease. Underground rock tunnels access the Centennial Seam. See 1.1, 2.1-1, 2.1-4. Existing structures include the following:

Bathhouse (3)	14' x 60'
Mine Water Storage Tanks (3)	12' x 16'
Warehouse (1)	14' x 60'
Lamphouse (2)	40' x 40'
Main Substation	60' x 100'
Office Building	28' x 60'
Mine Fans (3)	88"
Portals (15)	6' x 20'
Culinary Water Tanks (3)	12' x 10'
Shop	80' x 120'

It should be noted that a new administration/bathhouse building is proposed as shown on Plate 6. Rock presently stored in this area is proposed to be placed in the new parking area or abandoned Sediment Pond A - also shown on Plate 6.

Upon completion of mining activities, the portals will be sealed according to existing state and federal regulations and all buildings and structures not being utilized as part of the reclamation sequence, will be removed.

**R645-301-526.111. LOCATION**

See R645-301-110.

**R645-301-526.112. PLANS OR PHOTOGRAPHS**

See R645-301-110.

**R645-301-526.113. DATES OF CONSTRUCTION OF EXISTING STRUCTURES**

See R645-301-110.

**R645-301-526.114. MONITORING DATA**

N/A

**R645-301-529.210.            TEMPORARILY INACTIVE OPERATIONS**

See R645-301-515.300.

**R645-301-529.220.            RETURN        UNDERGROUND        DEVELOPMENT  
WASTE,    COAL    PROCESSING    WASTE    OR  
WATER    TO    UNDERGROUND    WORKINGS**

See R645-301-515.300.

**R645-301-529.300.            HOLES USED FOR BLASTING**

N/A

**R645-301-529.400.            SURFACE MINING OPERATIONS**

N/A

**R645-301-530.                OPERATIONAL    DESIGN    CRITERIA    AND  
PLANS**

**Operation Plan: Existing Structures**

**Construction and Design of Surface Facilities**

**Existing Structures**

All existing structures are situated on the Zion's fee land, on federal lease SL-027304, or on right-of-way UTU-62045 and are shown on Plate 6. There are no structures existing as part as Andalex's facility which were constructed prior to 1980. Plate 6 depicts the Aberdeen Mine with the surface facilities completed in early 1990. No new structures on the surface will be required to mine the Centennial and Aberdeen Seams on any lease including the new AEP Lease. Underground rock tunnels access the Centennial Seam. See 1.1, 2.1-1, 2.1-4. Existing structures include the following:

Bathroom (3)	14' x 60'
Mine Water Storage Tanks (3)	12' x 16'
Warehouse (1)	14' x 60'
Lamphouse (2)	40' x 40'
Main Substation	60' x 100'
Office Building	28' x 60'
Mine Fans (3)	88"
Portals (15)	6' x 20'
Culinary Water Tanks (3)	12' x 10'
Shop	80' x 120'

It should be noted that a new administration/bathhouse building is proposed as shown on Plate 6. Rock presently stored in this area is proposed to be placed in the new parking area or abandoned Sediment Pond A - also shown on Plate 6.

Upon completion of mining activities, the portals will be sealed according to existing state and federal regulations and all buildings and structures not being utilized as part of the reclamation sequence, will be removed, according to the Reclamation Plan.

### **Construction Schedule**

All of the above structures have been completed, except the proposed administration/bathhouse building. The earthwork for the Aberdeen Mine was completed in 1989. The surface facilities were in early 1990. Construction has been located and carried out so as to prevent and control erosion, siltation, water pollution, and damage to property. All facilities have been designed and constructed and will be maintained and used in a manner which prevents damage to wildlife and related environmental values. Any future construction will be conducted in a similar manner according to regulations regarding protection of the hydrologic system, etc. The rock tunnels for the Centennial Seam development were constructed in the spring of 1990 and completed late in 1990. As previously discussed this mining will require no new surface facilities.

### Construction Methods

#### **Major Equipment**

The portal and building sites were leveled using dozers, trucks, and loaders. At the building sites, the topsoil was removed and transported to a nearby area for storage.

All surface pads have been graveled and all other disturbed areas (pond embankments, etc.) have been reseeded.

**R645-301-531.**

#### **GENERAL**

#### **Schedule of Construction, Mine Development, Mining and Reclamation**

All surface facilities have been constructed for the Pinnacle, Apex and Aberdeen Mines. Earthwork for the Aberdeen Mine was completed in 1989. The surface facilities for the Aberdeen Mine were completed in early 1990. No additional surface facilities are required for any new leases, however, as mentioned above, there is a proposed new administration/bathhouse building as shown on Plate 6. There will be no additional construction activities or surface disturbance whatsoever in Hoffman Creek or Alrad Canyon.

However, Andalex does intend to add a fan installation in the left-hand fork of Deadman Canyon at some point in time. This installation will be according to measures outlined by the Bureau of Land Management as part of Right-of-Way U-64158. (Copy of Right-of-Way is included in Appendix B.) Andalex will submit detailed

plans for this installation at the appropriate time. The location of this breakout is shown on Plate 29 (R.O.W.).

Mining in the Gilson seam began in October, 1980 with a single unit's production. As mining progresses, additional units will be added with three production units and the longwall scheduled to be operating by mid-1994. A systematic mining plan will be followed to assure maximum recovery. All planning and scheduled production, however, will be contingent upon the coal market. Upon the conclusion of mining activities in the area, the scheduled reclamation phase will begin immediately.

Andalex will fill, regrade and stabilize rills and gullies over 9 inches in depth. Further, Andalex has agreed to interim stabilization of all slopes and embankments within the disturbed area and has done so. One slope located at the bottom of the office driveway, has been attempted through hydroseeding, fertilizing and mulching techniques on three separate occasions. No significant erosion problems have occurred, Andalex will notify the Division in the event of any slides or other damage immediately by telephone and in writing.

Andalex will cover acid or toxic forming materials if any are encountered.

Andalex will advise the Division in the event of a temporary shutdown, such as a letter sent to the Division when Andalex's Apex Mine was temporarily closed.

#### **R645-301-532. SEDIMENT CONTROL**

See R645-301-512.240.

#### **R645-301-532.100. MINIMIZING DISTURBANCES**

Surface disturbances are minimal due to the nature of the mining activities. The permit area has been previously impacted by mining. Surface disturbances will be limited to the existing facilities which have been constructed. The total existing surface area disturbed is 34.2 acres. Existing facilities are indicated on Plate 6 and 7.

The land affected by mining operations which shall be reclaimed, in compliance with the Mining and Reclamation Plan and all requirements of the Mined Land Reclamation Act and Rules and Regulations adopted in accordance therewith, can be described as follows:

34.2 acres located in T13S, R11E, S.L.B.&M., Carbon County, Utah and contained within,  
SE 1/4 SW 1/4 Section 7  
NE 1/4 SW 1/4 Section 7  
SW 1/4 SE 1/4 Section 7  
NW 1/4 SE 1/4 Section 7  
SW 1/4 NE 1/4 Section 7  
NE 1/4 NW 1/4 Section 18  
NW 1/4 NE 1/4 Section 18