

the area until final reclamation begins, except for periodic inspections. The culvert trash rack and portal highwall will be inspected at a minimum of three times a year: (1) early spring; (2) mid-summer at the beginning of the thunderstorm season, and (3) late fall before freeze-up.

3.2.12 Areas Not Reporting to Sedimentation Ponds, **Exempt**
Alternate Sediment Control Areas and Special Exempt Areas

There are 41 areas that do not report to any sedimentation pond. There are also small areas ~~in front of portals 2, 3 & 4 of both Mine #1 and Mine #3 and South Fork breakout~~ which drain back into the mines. This water enters the normal mine drainage system and is pumped back into the sedimentation pond.

On all areas not reporting to a sediment pond, sediment control measures such as strawbales, silt fences, straw dikes, excelsior mats, etc. will be installed and maintained until there is adequate vegetative cover to properly filter any surface runoff. See Vol. 5, Sec. 20 for designs for all ASCA treatment. When this occurs, the alternate control measures will be removed and not maintained if it can be demonstrated that they are not needed and approved by the Division.

Maintenance is done on all structures (straw bales, silt fences and straw dikes) a minimum of three times a year. It is done first in the spring as soon as they are accessible after snow melt, second during mid-summer, and third in late fall just before snow fall. All areas are observed for effectiveness almost daily by trained mine personnel and if deficiencies are seen, corrective action is taken.

Area 1. The Water Tank area is shown on Map No. 4.4.2-1F. It contains .19 acres and is classified as an "Exempt Area". This area has been reseeded and has a well established cover of grass, forbs and trees. The permittee has run a SedCAD program to demonstrate the runoff so that this area can be classified as an exempt area. (See Vol. 5 Sec. 21).

Revised: 12/27/2005

3-64

Mine # C/007/0005
File Incorporating
Record # 0009
Doc. Date 2-08-06
Recd. Date 2-08-06

Area 7. This area is above the conveyor bench and is shown on Map No. 3.2.1-1. It contains .58 acres and has been classified as an "Alternative Sediment Control Area." (ASCA) The area contains both reseeded areas and areas that are undisturbed and support the native vegetation. All disturbance has been reseeded and mulched. ~~The fill slope of the docking station road is to be seeded, fertilized, covered with excelsior matting and have straw bales and a silt fence at the toe of the slope*. The small amount of runoff that leaves this area is treated by natural and reseeded vegetation as well as straw bales and/or silt fences.~~

The fill slope of the docking station road has been revegetated and is now considered a "Small Area Exemption" (SAE) (see Sec. 21 (a), Vol. 5 for demonstration).

Areas 8, 9, 10 & 10a. These areas make up the conveyor bench that goes down Eccles Canyon and is shown on Maps No. 3.2.3-3 through 3.2.3-3f, and goes from overland conveyor bent ~~69~~ 173 to bent 4. These areas contain 1.82 acres, .72 acres, 6.04 acres, and .045 acres, respectively, and have been classified as an "Alternative Sediment Control Area." The conveyor drainage system for areas 8, 9, & 10 entails allowing the runoff to flow to selected locations. Where this water leaves the conveyor bench, it is treated with straw and/or silt fences (see Sec. 20, Vol. 5 for design). The conveyor bench has been seeded, fertilized and mulched. Erosion control mats have also been used in selected locations to help in the establishment of vegetation. After September 2002, all the runoff in areas 8 and 9 are classified as "Small Area Exemption" (SAE) and will now be treated using grass filters. 3.40 acres in area 10 will be treated using grass filters and the remaining 2.64 acres (located between bends 69 and 76) will be treated as stated above with straw bales and/or silt fences.

~~*Note: The docking station area and area ARA-1B contain .18 acres, and were formerly part of ASCA No. 7, and now is tributary to the sediment pond. The drainages have been determined by on-the-ground drainage truthing.~~

Area 10a. The bent foundations of bents GB-3, GB-4 and GB-5 at the end of the overland conveyor makes up Area 10a. At these three locations where the enclosed conveyor crosses the highway, the access road and Eccles Creek, special foundations were dug using both machine and hand labor. At these three locations, the average disturbance is 660 square feet (.015 acres). At each tower location, the disturbed area was reseeded with seed mix on Table 4.7-6b and mulched with excelsior mats, or straw. Straw bales and/or silt fences were installed for water treatment at each location, along with selective berming to insure BCTA, and will be maintained until the disturbed areas are fully re-vegetated. The total disturbance for this alternate sediment control area is .045 acres. In 2005 GB-3 and GB-4 were reclassified as Small Area Exemption (SAE), based on a demonstration of adequate vegetative cover (see Sec. 21 (a), Vol. 5 for demonstration). The vegetative demonstration refers to GB-3 and GB-4 as Rail Load Out (east side of road) and (west side of road), respectively.

Areas 20, 21, and 22. These areas are the highway approaches from SR-96 to the Railroad Loadout area itself (two approaches), and the area south of the loadout structure. These areas are shown on Map 3.2.1-3. These areas contain .1 acre and have been classified as "Special Exempt Areas." These road approaches are paved. Area 20 also contains a small straw dike to treat water from the area that is not paved and additional treatment for water leaving the paved area. All of these areas are part of the permitted area and will be reclaimed during final reclamation; however, these areas fall within the rights-of-way of SR-96 (refer to UDOT letter dated 7-18-89 from L. Archie Hamilton, District Four Pre/Construction Engineer, found in this section). The Permittee has no control over the activities of UDOT or the public who utilize these approaches; therefore, the Permittee is not responsible for the activities (other than his own) which occur on these approaches.

Area 23. This area is the South Fork Breakout Area and is shown on Map No. 3.2.11-1. This area contains .96 acres (see Areas 32 and 33 which are classified as exempt areas). ~~The small pad area in front of the portals drains into the mine and then is pumped back to the surface for treatment in the sedimentation pond. The rest of the area contains an ancillary road.~~ **The South Fork Breakout Area was reclaimed in 2003 and the access trail was completely reclaimed in 2005 and is considered a Small Area Exemption (SAE). All existing silt fencing was removed, with the exception of temporary silt fencing that was used during reclamation construction. Extreme surface roughening or 'pocking' was used as the form of sediment control until vegetation is established. Figure 3.2.11-1 will be modified to reflect these changes once the area is flown to establish the reclamation topography.**

Area 24. The access road to the Scofield Waste Rock Disposal Site is shown on Map No. 3.2.8-1. It contains 3.45 acres and is classified as a "Primary Access Road".

Area 24a. A small area of .1 acre was disturbed adjacent to the Scofield Waste Rock access road. This area has been reseeded and is becoming well re-vegetated. Any runoff water leaving this area enters the roadside drainage. A Sed-Cad model program has been done for this area which demonstrated that alternate sedimented control measures are not needed. This area is therefore classified as an exempt area. (See Vol. 5 Sec. 21 and 21 (a))

area 10, except bents 89 and 83 which have two leg supports. These leg supports vary from 18 to 36 inches in diameter. The support areas are the only areas that were disturbed. The topsoil and subsoil was removed from the holes and then filled with concrete. Since the areas have no exposed disturbance, the area is classified as an exempt area.

Area 30. The area is located at bents 68 through GB-6 (as shown on Maps 3.2.3-3E and 3.2.3-3F). There are 150 support legs in this area. They vary in size from 12 inches in diameter to a 24" x 60" area. The topsoil and subsoil was removed from each support leg area and then filled with concrete. Since there is no exposed disturbance, this area is classified as an exempt area, except for areas described in Area 30a.

Area 30a. In 2005 this area was reclassified as a "Small Area Exemption" based on a demonstration of adequate vegetative cover (see Sec. 21 (a), Vol. 5 for demonstration). Silt fences at Bent 59 and 44 were used in the demonstration. This area consisted of construction and operational disturbances that were previously not fully revegetated and are at the following locations: (1) Bent 59, The upper 24" diameter support; is classified as a ASCA area (2) Bent 44, the lower 24" diameter leg support; is classified as a ASCA area (3) Bent 36, the upper 30" leg support; is classified as a ASCA area (4) Bent 32, both leg supports; are classified as ASCA area (5) Bents 28, 26 and 22, all leg supports; are classified as ASCA areas and (6) the area from Bent GB6 to approximately midway of truss No. 3 has been disturbed due to a coal spill and is classified as an ASCA area. All of these ASCA areas The area from Bent GB6 is the only portion of the area still classified as an ASCA and will be treated with straw bales and/or silt fences. Area 30a is mis-labeled on Plates 3.2.3-3E and -3F as Area 10a, and will be corrected at a future date.

Area 31. This area is a topsoil storage area in the South Fork of Eccles Creek drainage, as shown on Map 3.2.11-1. This area was mulched and seeded in the fall of 1989. A thick cover of vegetation has become established. There is no visible evidence of soil movement. The permittee has run a Sedcad program to demonstrate the run-off, so that this area can be classified as an exempt area. (See Vol. 5 Sec. 21)

Area 32. This area is a topsoil storage area in a side drainage of the South Fork of Eccles Creek, as shown on Map 3.2.11-1. This area is an old roadbed that has been filled in with topsoil from the South Fork Breakout. The area was mulched and seeded in the fall of 1989. A thick cover has become established. There is no visible evidence of soil movement. The permittee has run a Sedcad program to demonstrate the run-off, so that this area can be classified as an exempt area. (See Vol. 5 Sec. 21). **The area was re-disturbed in 2003 to reclaim the South Fork Breakout area. The area was roughened and seeded in 2003, then re-disturbed in 2005 to eliminate the footprint of the former roadbed. Extreme surface roughening is the only form of sediment control until vegetation is established.**

Area 33. This area is a snow storage area and is adjacent to State Highway 264 and is directly south of the docking station for the overland conveyor, as shown on Map 3.2.3-3. This area is what is commonly referred to as the UDOT pad and has been used by UDOT as a snow storage area. Part of the pad to be used is within the UDOT right-of-way and the remainder of the pad is owned by Canyon Fuel Company, LLC. Exhibit B shows the letter from UDOT giving permission to use its portion of the pad and indicating that the post-mining land use as a snow storage pad. The post-mining land use for the Canyon Fuel Co., LLC, portion of the pad will also be a snow storage pad. The configuration of the pad is such that all of the drainage will be directed to straw bales and/or silt fencing for treatment before entering the natural drainage (see Volume 5, Section 6 for the design). This area contains 0.64 acres and is classified as an Alternate Sediment Control Area.

No salt or other deicing chemicals will be used on the snow placed on this area. Each spring, following use of the pad, after the snow placed on the pad has melted any sediment or coal fines which have accumulated on the site will be removed.

Area 34. This area is located on road out slopes at the waste-rock disposal site as shown on Map 3.2.8-4. In order to make the road more usable for third parties, minor gravel fills were placed at the locations shown on the map. **Silt fences were placed at the base of gravel fills, then later removed once the gravel fills were fully compacted.** ~~Since these fills are new and not vegetated a silt fence and/or straw bales are placed as shown to treat any runoff from the fill areas.~~ Since the fills are constructed of gravel they will not

erode.

Revised: 12/27/05

3-72(b)

Area 35 and 36. These areas are the James Canyon road from the forest Service Mounment Peck Road to the drill pad and includes the buried pipeline to Electric Lake. The James Canyon road is graveled with water bars approximately every 150 feet. Road runoff water flows to a water bar and is directed to a silt fence for sediment control. The buried pipeline disturbed area has been regraded and deep gouged. The area has been reseeded. Water bars have been constructed approximately every 150 feet. ~~The runoff water flows to the water bar and is directed to a silt fence used as sediment control.~~ In 2005, both the drill pad topsoil pile (see plate 3.4-1) and the reseeded area was reclassified as a "Small Area Exemption" based on a demonstration of adequate vegetative cover (see Sec. 21 (a), Vol. 5 for demonstration). All silt fences were removed from these areas.

On all areas not reporting to a sediment pond, and classified as Alternate Sedimental Areas, the alternate sediment control measure such as straw bales, silt fences, catch basins, excelsior mats, etc. will be maintained until there is adequate vegetative cover to properly filter any surface runoff (see Sec. 20, Vol. 5 for design). When this can be demonstrated, the alternate control measures will be removed and the area reclassified as an "Exempt area". (See Sec. 21, Vol. 5 for Demonstrations)

On all areas classified as Exempt Areas, if they should become redisturbed they will be reclassified as ASCA areas and will have the runoff treated with a designed treatment.

the area until final reclamation begins, except for periodic inspections. The culvert trash rack and portal highwall will be inspected at a minimum of three times a year: (1) early spring; (2) mid-summer at the beginning of the thunderstorm season, and (3) late fall before freeze-up.

3.2.12 Areas Not Reporting to Sedimentation Ponds, Alternate Sediment Control Areas and Special Exempt Areas

There are 41 areas that do not report to any sedimentation pond. There are also small areas Mine #3 which drain back into the mines. This water enters the normal mine drainage system and is pumped back into the sedimentation pond.

On all areas not reporting to a sediment pond, sediment control measures such as strawbales, silt fences, straw dikes, excelsior mats, etc. will be installed and maintained until there is adequate vegetative cover to properly filter any surface runoff. See Vol. 5, Sec. 20 for designs for all ASCA treatment. When this occurs, the alternate control measures will be removed and not maintained if it can be demonstrated that they are not needed and approved by the Division.

Maintenance is done on all structures (straw bales, silt fences and straw dikes) a minimum of three times a year. It is done first in the spring as soon as they are accessible after snow melt, second during mid-summer, and third in late fall just before snow fall. All areas are observed for effectiveness almost daily by trained mine personnel and if deficiencies are seen, corrective action is taken.

Area 1. The Water Tank area is shown on Map No. 4.4.2-1F. It contains .19 acres and is classified as an "Exempt Area". This area has been reseeded and has a well established cover of grass, forbs and trees. The permittee has run a SedCAD program to demonstrate the runoff so that this area can be classified as an exempt area. (See Vol. 5 Sec. 21).

Area 2. The South Fork of Eccles Creek area is shown on Map No. 3.2.1-1. It contains .23 acres and is classified as an "Alternative Sediment Control Area." This area has been reseeded, but as of 1989 does not have a well established cover of vegetation. All runoff leaving this area is treated with straw bales and/or silt fences.

Area 3. The Middle Fork of Eccles Creek area is shown on Map No. 3.2.1-1. It contains .29 acres and is classified as an "Alternative Sediment Control Area." This area has been reseeded but is not well established. Straw bales and/or silt fences are being used to treat the runoff water until adequate vegetation is established.

Area 4. The North Fork of Eccles Creek area is shown on Map No. 3.2.1-1. It contains 1.0 acre and is classified as an "Alternative Sediment Control Area." The area has been reseeded and most of the area has a well established cover of grass and forbs. Runoff water is treated with straw bales and/or silt fences.

Area 5. This area is highway approach area to the main mine office maintenance complex and Mine No. 1 portal area and is shown on Map No. 3.2.1-1. This area contains .18 acres and has been classified as a "Special Exempt area." The area extends from the shoulder of SR-264 to the entrance gates of the mine area. This road approach is paved and is part of the permitted area and will be reclaimed during final reclamation; however, this area falls within the rights-of-way of SR-264 (refer to UDOT letter dated 4-14-89 from L. Archie Hamilton, District Four Pre/Construction Engineer, found in this section). The Permittee has no control over the activities of UDOT or the public who utilize this approach; therefore, the Permittee is not responsible for the activities (other than his own) which occur on this approach. Since the area is paved, no further treatment of the runoff is necessary.

Area 6. This area is the highway approach area to the Mine No. 3 portal area and is shown on Map No. 3.2.1-1. This area contains .07 acres and has been classified as a "Special Exempt Area." This area extends from the shoulder of SR-264 to the entrance gates to the mine area. This road approach is paved and is part of the permitted area and will be reclaimed during final reclamation; however, this area falls within the rights-of-way of SR-264 (refer to UDOT letter of 4-14-89 from L. Archie Hamilton, District Four Pre/Construction Engineer, found in this section). The Permittee has no control over the activities of UDOT or the public who utilize this approach; therefore, the Permittee is not responsible for activities (other than his own) which occur on this approach. Since the area is paved, no further treatment of the runoff is necessary.

Area 7. This area is above the conveyor bench and is shown on Map No. 3.2.1-1. It contains .58 acres and has been classified as an "Alternative Sediment Control Area." (ASCA) The area contains both reseeded areas and areas that are undisturbed and support the native vegetation. All disturbance has been reseeded and mulched. The fill slope of the docking station road has been revegetated and is now considered a "Small Area Exemption" (SAE) (see Sec. 21 (a), Vol. 5 for demonstration).

Areas 8, 9, 10. These areas make up the conveyor bench that goes down Eccles Canyon and is shown on Maps No. 3.2.3-3 through 3.2.3-3f, and goes from overland conveyor bent 173 to bent 4. These areas contain 1.82 acres, .72 acres, 6.04 acres, and .045 acres, respectively, and have been classified as an "Alternative Sediment Control Area." The conveyor drainage system for areas 8, 9, & 10 entails allowing the runoff to flow to selected locations. Where this water leaves the conveyor bench, it is treated with straw and/or silt fences (see Sec. 20, Vol. 5 for design). The conveyor bench has been seeded, fertilized and mulched. Erosion control mats have also been used in selected locations to help in the establishment of vegetation. After September 2002, all the runoff in areas 8 and 9 are classified as "Small Area Exemption" (SAE) and will now be treated using grass filters. 3.40 acres in area 10 will be treated using grass filters and the remaining 2.64 acres (located between bents 69 and 76) will be treated as stated above with straw bales and/or silt fences.

Area 10a. The bent foundations of bents GB-3, GB-4 and GB-5 at the end of the overland conveyor makes up Area 10a. At these three locations where the enclosed conveyor crosses the highway, the access road and Eccles Creek, special foundations were dug using both machine and hand labor. At these three locations, the average disturbance is 660 square feet (.015 acres). At each tower location, the disturbed area was reseeded with seed mix on Table 4.7-6b and mulched with excelsior mats, or straw. Straw bales and/or silt fences were installed for water treatment at each location, along with selective berming to insure BCTA, and will be maintained until the disturbed areas are fully re-vegetated. The total disturbance for this alternate sediment control area is .045 acres. In 2005 GB-3 and GB-4 were reclassified as Small Area Exemption (SAE), based on a demonstration of adequate vegetative cover (see Sec. 21 (a), Vol. 5 for demonstration). The vegetative demonstration refers to GB-3 and GB-4 as Rail Load Out (east side of road) and (west side of road), respectively.

Area 11. This area is the upper well house area and is shown on Map No. 3.2.3-3a. This area contains approximately .02 acres and has been classified as an "Alternative Sediment Control Area." The area is basically a roadway to the well house and, therefore, the area has not been reseeded. The area is lined with straw bales and/or silt fences to treat the runoff water.

Area 12. This area is the lower well house area and is shown on Map No. 3.2.3-3b. This area contains approximately .01 acres and has been classified as an "Alternative Sediment Control Area." The area is lined with strawbales and/or silt fences to treat the runoff water.

Area 12a. This area is a roadway to the well house and South Fork Area has not been reseeded as the fill slope is basically covered with large rocks. It contains approximately .03 acres.

Area 13. This area is the Railroad Loadout well house area and is shown on Map No. 3.2.3-3f. This area contains approximately .01 acres of area and has been classified as an "Alternative Sediment Control Area." This area has straw bales to treat any surface runoff water.

Area 14. This area is the highway approach to the truck dump area at the Railroad Loadout area and is shown on Map No. 3.2.1-3. This area contains .31 acres and has been classified as a "Special Exempt Area." The area extends from the shoulder of SR-264 to the entrance gates of the Railroad Loadout area. This road approach is paved and is part of the permitted area and will be reclaimed during final reclamation; however, this area falls within the rights-of-way of SR-264 (refer to UDOT letter dated 4-14-89 from L. Archie Hamilton, District Four Pre/Construction Engineer, found in this section). The Permittee has no control over the activity of UDOT or the public who utilize this approach. Therefore, the Permittee is not responsible for activities (other than his own) which occur on this approach. Since the area is paved, no further treatment of the runoff is necessary.

Area 15. This area is just north of the truck dump and is shown on Map No. 3.2.1-3. This area contains 3.3 acres and has been classified as an "Alternative Sediment Control Area." This area has been reseeded and has a well established cover of grass and forbs. Where needed, the toe of the slope is lined with straw bales and/or silt fences to treat any runoff. The disturbance around the overland conveyor towers has been

seeded and mulched, and, where needed, additional straw bales and/or silt fences, erosion mats installed to treat any runoff. Part of the area also has a collection ditch below the straw bales. Where needed, this ditch has a series of straw bales across the drainage at 15-20 feet intervals. Much of the ditch has become well grassed-in and is almost indistinguishable from the adjacent undisturbed areas and does not need any additional silt control devices as the runoff has already been treated with strawbales and/or silt fences.

Area 16. This area is south of the truck dump and is shown on Map No. 3.2.1-3. This area contains .61 acres and is the fill slope of the access road. The slope has been reseeded and basically has a well established cover of vegetation. The disturbance around the overland conveyor towers have been seeded and mulched, and have additional straw bales and/or silt fences, erosion mats, where needed, to treat any surface runoff. (See Area 10a)

Area 17. This area is south of the RLO sediment pond and is shown on Map No. 3.2.1-3. This area contains .35 acres and has been classified as an "Alternative Sediment Control Area." Much of the area has been paved. There are straw bales and/or silt fences and three small straw dikes to treat any runoff water. One of these straw dikes is on the UDOT rights-of-way of SR-96. This treatment location has been approved by UDOT (refer to UDOT letter dated 7/18/89 from L. Archie Hamilton, District Four Pre/construction Engineer, Page 3-70).

Area 17a. This area is adjacent to RRLO sediment ponds and is shown on Map 3.2.1-3. This area contains .15 acres and has been classified as an "Exempt Area" since it is the outslope of the sediment pond embankment.

Areas 18. This area is adjacent to the Railroad Loadout structure and is shown on Map No. 3.2.1-3. This area contains .1 acres and has been classified as an exempt area as the entire area is paved.

Area 19. This area is adjacent to the Railroad loadout structure and is shown on Map No. 3.2.1-3. This area contains .1 acres and has been classified as an "Alternate Sediment Control Area". This area has been covered with approximately 4 inches of clean 2-inch rock material. The runoff is also treated with strawbales and/or silt fence.

Areas 20, 21, and 22. These areas are the highway approaches from SR-96 to the Railroad Loadout area itself (two approaches), and the area south of the loadout structure. These areas are shown on Map 3.2.1-3. These areas contain .1 acre and have been classified as "Special Exempt Areas." These road approaches are paved. Area 20 also contains a small straw dike to treat water from the area that is not paved and additional treatment for water leaving the paved area. All of these areas are part of the permitted area and will be reclaimed during final reclamation; however, these areas fall within the rights-of-way of SR-96 (refer to UDOT letter dated 7-18-89 from L. Archie Hamilton, District Four Pre/Construction Engineer, found in this section). The Permittee has no control over the activities of UDOT or the public who utilize these approaches; therefore, the Permittee is not responsible for the activities (other than his own) which occur on these approaches.

Area 23. This area is the South Fork Breakout Area and is shown on Map No. 3.2.11-1. This area contains .96 acres (see Areas 32 and 33 which are classified as exempt areas). The South Fork Breakout Area was reclaimed in 2003 and the access trail was completely reclaimed in 2005 and is considered a Small Area Exemption. All existing silt fencing was removed, with the exception of temporary silt fencing that was used during reclamation construction. Extreme surface roughening or 'deep gouging' was used as the form of sediment control until vegetation is established. Figure 3.2.11-1 will be modified to reflect these changes once the area is flown to establish the reclamation topography.

Area 24. The access road to the Scofield Waste Rock Disposal Site is shown on Map No. 3.2.8-1. It contains 3.45 acres and is classified as a "Primary Access Road".

Area 24a. A small area of .1 acre was disturbed adjacent to the Scofield Waste Rock access road. This area has been reseeded and is becoming well re-vegetated. Any runoff water leaving this area enters the roadside drainage. A Sed-Cad model program has been done for this area which demonstrated that alternate sedimented control measurers are not needed. This area is therefore classified as an exempt area. (See Vol. 5 Sec. 21 and 21 (a))

Area 25. This area goes from overland conveyor bent 155 to bent 154a, shown on Map 3.2.3-3a. This area is permitted but has no disturbance within it. The overland conveyor does span across this area.

Area 26. This area goes from the vicinity of overland conveyor bent 147 down to bent 145 as shown on Map 3.2.3-3a. This area contains six bent leg concrete supports. These supports are approximately 24 inches in diameter. These supports are the only area that was disturbed. The topsoil and subsoil was removed and the hole filled with concrete. Since these disturbed areas have no exposed disturbance, the area is classified as an exempt area.

Area 27. This area is located at overland conveyor bents 137, 136 and 135 (as shown on Map 3.2.3-3B). Bents 137 and 136 each have one bent leg support just outside the boundary of ASCA Area 10 and bent 135 has two. These supports are approximately 24 inches in diameter. These support areas are the only areas that was disturbed. The topsoil and subsoil was removed and the hole filled with concrete. Since these disturbed areas have no exposed disturbance, the area is classified as an exempt area.

Area 28. This area is located at overland conveyor bents 97 thru 94 (as shown on Map 3.2.3-3C). Bents 97, 96, and 94 each have one bent leg support just outside the boundary of ASCA area 10 and bent 95 has two. These supports vary from 18 to 48 inches in diameter. The support areas are the only areas that were disturbed. The topsoil and subsoil was removed from the holes and then filled with concrete. Since these areas have no exposed disturbance, the area is classified as an exempt area.

Area 29. The area is located at bents 90, 89, 88, 87, 86, 85, 84 and 83 (as shown on Maps 3.2.3.3D and 3.2.3.3E). All of these bents have one bent leg support just outside the boundary of ASCA area 10, except bents 89 and 83 which have two leg supports. These leg supports vary from 18 to 36 inches in diameter. The support areas are the only areas that were disturbed. The topsoil and subsoil was removed from the holes and then filled with concrete. Since the areas have no exposed disturbance, the area is classified as an exempt area.

Area 30. The area is located at bents 68 through GB-6 (as shown on Maps 3.2.3-3E and 3.2.3-3F). There are 150 support legs in this area. They vary in size from 12 inches in diameter to a 24" x 60" area. The topsoil and subsoil was removed from each support leg area and then filled with concrete. Since there is no exposed disturbance, this area is classified as an exempt area, except for areas described in Area 30a.

Area 30a. In 2005 this area was reclassified as a "Small Area Exemption" based on a demonstration of adequate vegetative cover (see Sec. 21 (a), Vol. 5 for demonstration). Silt fences at Bent 59 and 44 were used in the demonstration. The area consisted of construction and operational disturbances that were previously not fully re-vegetated at the following locations: (1) Bent 59, The upper 24" diameter support; (2) Bent 44, the lower 24" diameter leg support; (3) Bent 36, the upper 30" leg support; (4) Bent 32, both leg supports; (5) Bents 28, 26 and 22, all leg supports; and (6) the area from Bent GB6 to approximately midway of truss No. 3 has been disturbed due to a coal spill and is classified as an ASCA area. The area from Bent GB6 is the only portion of the area still classified as an ASCA and will be treated with straw bales and/or silt fences. Area 30a is mis-labeled on Plates 3.2.3-3E and -3F as Area 10a, and will be corrected at a future date.

Area 31. This area is a topsoil storage area in the South Fork of Eccles Creek drainage, as shown on Map 3.2.11-1. This area was mulched and seeded in the fall of 1989. A thick cover of vegetation has become established. There is no visible evidence of soil movement. The permittee has run a Sedcad program to demonstrate the run-off, so that this area can be classified as an exempt area. (See Vol. 5 Sec. 21)

Area 32. This area is a topsoil storage area in a side drainage of the South Fork of Eccles Creek, as shown on Map 3.2.11-1. This area is an old roadbed that has been filled in with topsoil from the South Fork Breakout. The area was mulched and seeded in the fall of 1989. A thick cover has become established. There is no visible evidence of soil movement. The permittee has run a Sedcad program to demonstrate the run-off, so that this area can be classified as an exempt area. (See Vol. 5 Sec. 21). The area was re-disturbed in 2003 to reclaim the South Fork Breakout area. The area was roughened and seeded in 2003, then re-disturbed in 2005 to eliminate the footprint of the former roadbed. Extreme surface roughening is the only form of sediment control until vegetation is established.

Area 33. This area is a snow storage area and is adjacent to State Highway 264 and is directly south of the docking station for the overland conveyor, as shown on Map 3.2.3-3. This area is what is commonly referred to as the UDOT pad and has been used by UDOT as a snow storage area. Part of the pad to be used is within the UDOT right-of-way and the remainder of the pad is owned by Canyon Fuel Company,

LLC. Exhibit B shows the letter from UDOT giving permission to use its portion of the pad and indicating that the post-mining land use as a snow storage pad. The post-mining land use for the Canyon Fuel Co., LLC, portion of the pad will also be a snow storage pad. The configuration of the pad is such that all of the drainage will be directed to straw bales and/or silt fencing for treatment before entering the natural drainage (see Volume 5, Section 6 for the design). This area contains 0.64 acres and is classified as an Alternate Sediment Control Area.

No salt or other deicing chemicals will be used on the snow placed on this area. Each spring, following use of the pad, after the snow placed on the pad has melted any sediment or coal fines which have accumulated on the site will be removed.

Area 34. This area is located on road outcrops at the waste-rock disposal site as shown on Map 3.2.8-4. In order to make the road more usable for third parties, minor gravel fills were placed at the locations shown on the map. Silt fences were placed at the base of gravel fills, then later removed once the gravel fills were fully compacted. Since the fills are constructed of gravel they will not erode.

Area 35 and 36. These areas are the James Canyon road from the forest Service Mounment Peck Road to the drill pad and includes the buried pipeline to Electric Lake. The James Canyon road is graveled with water bars approximately every 150 feet. Road runoff water flows to a water bar and is directed to a silt fence for sediment control. The buried pipeline disturbed area has been regraded and deep gouged. The area has been reseeded. Water bars have been constructed approximately every 150 feet. In 2005, both the drill pad topsoil pile (see plate 3.4-1) and the reseeded area was reclassified as a "Small Area Exemption" based on a demonstration of adequate vegetative cover (see Sec. 21 (a), Vol. 5 for demonstration). All silt fences were removed from these areas.

On all areas not reporting to a sediment pond, and classified as Alternate Sediment Control Areas, the alternate sediment control measure such as straw bales, silt fences, catch basins, excelsior mats, etc. will be maintained until there is adequate vegetative cover to properly filter any surface runoff (see Sec. 20, Vol. 5 for design). When this can be demonstrated, the alternate control measures will be removed and the area reclassified as an "Exempt area". (See Sec. 21, Vol. 5 for Demonstrations) On all areas classified as Exempt Areas, if they should become redisturbed they will be reclassified as ASCA areas and will have the runoff treated with a designed treatment.

**VEGETATION & GROUND
COVER MONITORING FOR
SEDIMENT CONTROL
2005**

**AT THE
SKYLINE MINE**



Prepared by

MT. NEBO SCIENTIFIC, INC.

330 East 400 South, Suite 6

Springville, Utah 84663

(801) 489-6937

Patrick D. Collins, Ph.D.

for

CANYON FUEL COMPANY, LLC.

Skyline Mines

HC 35 Box 380

Helper, Utah 84526



September 2005

TABLE OF CONTENTS

INTRODUCTION	1
METHODS	2
Comparison Areas	2
Transect and Quadrat Placement	3
Cover and Composition	3
Statistical Comparisons	3
Photographs	4
Raw Data	4
RESULTS	4
DISCUSSION & CONCLUSIONS	8
COLOR PHOTOGRAPHS	12
RAW DATA	Appendix

INTRODUCTION

The Skyline Mine has several disturbed sites where methods were employed to control the sediments caused by erosion prior to establishment of adequate vegetation. More specifically, silt fences were installed followed by seeding of native plant species for erosion and sediment control. Since that time, vegetation has become established within these disturbed areas. In an attempt to quantify the amount of vegetative, litter and rock cover at each site and compare these values to native, undisturbed areas that were chosen to represent "background" conditions, quantitative sampling was conducted. The background plant communities chosen to represent the conditions prior to disturbance have been called **Comparison Areas** in this report. The sites where silt fences have been constructed and maintained are called **Sediment Control Areas**. A list of all areas sampled is shown below.

Sediment Control Areas

Waste Rock Hillside

Rail Loadout (east side road at upper entrance)

Rail Loadout (west side of road at upper entrance)

Conveyor Loops (near support structures)

Conveyor Slope (near entrance)

South Fork Topsoil Pile

James Canyon Topsoil Pile

James Canyon Reclaimed Road

Comparison Areas

Sagebrush/Grass (lower elevation)

Sagebrush/Grass/Aspen (upper elevation)

This study could be used as a demonstration to show whether or not the disturbed areas where sediments that have been controlled by silt fences have as much or more vegetative and ground cover than the background conditions and whether or not removal of these fences may be warranted.

METHODS

Methodologies used herein were performed in accordance with the general sampling guidelines supplied by the State of Utah, Division of Oil, Gas and Mining (DOGGM). Sampling was conducted in September 2005. Quantitative and qualitative data were recorded from the vegetation of the Sediment Control Areas and, depending on the native plant community chosen to represent background conditions, they were compared to one of the two Comparison Areas mentioned above.

Comparison Areas

Although somewhat similar by species present, the Comparison Areas were chosen at two elevations and were quite dissimilar to each other in other quantitative attributes. The lower Comparison Area was located on an undisturbed sagebrush/grass slope near the Waste Rock Site; the upper Comparison Area was located in an undisturbed sagebrush/grass/aspens community in James Canyon. Due to the length of the Reclaimed Road in James Canyon, it passes from aspen/grass to sagebrush/grass communities and the transition zones between the two (see photographs K and L for a visual comparison). For this reason, transect lines in the Comparison Area in James Canyon included both of these communities in the approximate proportion of the Reclaimed Road areas prior to road construction. GPS coordinates of the locations of the Comparison Areas were taken.

Transect and Quadrat Placement

Random numbers were generated and used to place sample quadrats in most of the study areas. However, some areas were too confined to follow this protocol. For example, quadrat placement in the Reclaimed Road in James Canyon was predetermined to be placed at the inside-center of the silt fence at each site along the road. Cover was recorded at all silt fences locations on the Reclaimed Road.

Cover and Composition

Total cover estimates were made using ocular methods with meter square quadrats. Species composition, cover by species, and relative frequencies were also assessed from the quadrats. Additional information recorded on the raw data sheets were: estimated precipitation, slope, exposure, grazing use, animal disturbance and other appropriate notes. Plant nomenclature follows "A Utah Flora" (Welsh et al., 2003).

Statistical Comparisons

Student's t-tests were employed to compare the cover data sets.

Photographs

Color photographs of the sample areas were taken at the time of sampling and have been submitted with this report.

Raw Data

The raw data for cover and composition have been summarized on a spreadsheet and are included in this report.

RESULTS

For visual comparisons, color photographs were taken at each study site and have been included in this report. Listed below are the summary tables for total cover at each of the study sites. The tables show the total living cover including overstory and understory cover. Additionally, the tables show the remaining values recorded in the sample quadrats including litter and rock cover. Moreover, bareground measurements have also been shown in the tables. Finally, the **total cover values** which includes the sum of overstory, understory, litter and rock cover has been calculated in the summary tables.

Although not used in the statistical analyses in this study, plant cover by species in the study areas were also recorded. This was done because, if living cover is used for sediment control

measures, the living cover should be comprised of desirable plant species such as native perennials, sod-forming grasses, and woody species rather than weedy exotics or annual species that would have much less impact on erosion control. The species present in the test plot were dominated by desirable species and are all shown in the raw data in the Appendix of this report.

Table 1: Cover of the Reclaimed Hillside at the Waste Rock Site for the Skyline Mine.

TOTAL COVER	Mean	Std.Dev.
Overstory	0.00	0.00
Understory	54.00	17.58
Litter	11.80	5.67
Bareground	15.20	6.81
Rock	19.00	12.61
Total Living + Litter + Rock	84.80	6.81

Table 2: Cover of the Rail Loadout (east side of road at upper entrance).

TOTAL COVER	Mean	Std.Dev.
Overstory	0.00	0.00
Understory	80.00	8.37
Litter	9.00	3.74
Bareground	6.90	4.74
Rock	4.10	3.21
Total Living + Litter + Rock	93.10	4.74

**Table 3: Cover of the Rail Load Out Loops
(west side of road at upper entrance).**

TOTAL COVER	Mean	Std.Dev.
Overstory	0.00	0.00
Understory	49.50	9.07
Litter	21.00	7.00
Bareground	10.00	3.87
Rock	19.50	9.34
Total Living + Litter + Rock	90.00	3.87

**Table 4: Cover of the Conveyor Loops (near
T-43 & T-60).**

TOTAL COVER	Mean	Std.Dev.
Overstory	0.00	0.00
Understory	40.83	12.05
Litter	30.00	9.57
Bareground	11.67	6.87
Rock	17.50	5.59
Total Living + Litter + Rock	88.33	6.87

**Table 5: Cover of the Conveyor Entrance
(Near T-172).**

TOTAL COVER	Mean	Std.Dev.
Overstory	2.50	7.50
Understory	44.50	10.59
Litter	23.00	10.77
Bareground	13.50	5.50
Rock	19.00	6.63
Total Living + Litter + Rock	86.50	5.50

Table 6: Cover of the Waste Rock Site Sagebrush/Grass Reference Area.

TOTAL COVER	Mean	Std.Dev.
Overstory	0.00	0.00
Understory	57.00	7.48
Litter	15.50	6.10
Bareground	16.50	5.94
Rock	11.00	8.00
Total Living + Litter + Rock	83.50	5.94

Table 7: Cover of the Reclaimed Topsoil Pile in South Fork Canyon.

TOTAL COVER	Mean	Std.Dev.
Overstory	0.00	0.00
Understory	53.00	17.78
Litter	19.50	12.93
Bareground	11.80	3.76
Rock	15.70	6.20
Total Living + Litter + Rock	88.20	3.76

Table 8: Cover of the Drill Pad Topsoil Pile in James Canyon.

TOTAL COVER	Mean	Std.Dev.
Overstory	0.00	0.00
Understory	76.00	6.63
Litter	9.50	7.23
Bareground	8.70	4.08
Rock	5.80	3.76
Total Living + Litter + Rock	91.30	4.08

Table 9: Cover of the Sediment Control Fence Areas on the James Canyon Reclaimed Road.

TOTAL COVER	Mean	Std.Dev.
Overstory	1.61	8.83
Understory	65.52	14.49
Litter	12.35	6.39
Bareground	14.00	7.68
Rock	8.13	4.89
Total Living + Litter + Rock	89.30	11.54

Table 10: Cover of the Reference Area for the Sediment Control Fence Areas on the James Canyon Reclaimed Road .

TOTAL COVER	Mean	Std.Dev.
Overstory	11.50	21.40
Understory	66.75	12.77
Litter	17.70	7.84
Bareground	12.45	13.90
Rock	3.10	1.95
Total Living + Litter + Rock	99.05	18.64

DISCUSSION & CONCLUSIONS

Because sediment control is affected by cover of both living and non-living material, the total cover values (including total living, litter and rock) of each site were compared statistically to the native, undisturbed plant communities chosen as Comparison Areas, or background conditions.

Table 11 shows the results of these statistical analyses.

Table 11 suggests that the cover of nearly all of the Sediment Control Areas was either significantly higher or was not significantly different than their respective Comparison Areas. These analyses suggest that the silt fences could probably be removed in most areas because the vegetation, litter and rock cover values were as high or higher than the native plant communities chosen as background conditions.

There was, however, one exception as shown on Table 11 – the Reclaimed Road in James Canyon. Although the significance level suggests the Comparison Area was higher than the Reclaimed Road with a probability level of 0.05 ($p < .05$), it barely made this benchmark. Nonetheless, it does suggest a difference in the cover values with respect to the Comparison Area.

Even though this analysis suggested a difference in ground cover between these sites, arguments to support removal of the silt fences here too could also be made. First, the cover values were very close and barely made the statistical significance level set beforehand.

Next, unlike the other sample areas in this study, additional sediment control features were implemented along the entire length of the reclaimed road. These features were the gouges or deep depressions created on the surface of the ground. These gouges were artificially created to control erosion and harvest water to enhance plant establishment. In many revegetation projects, gouging the seedbed alone (without other treatments such as silt fencing) prior to seeding is considered adequate for sediment control prior to plant establishment.

Also worth mentioning is that the vegetative cover was somewhat less in the lower elevation portions of the reclaimed road (or closer to Electric Lake). The cover differences can be observed visually by comparing Photographs H and I. Photograph H shows the upper portions of the reclaimed road, whereas Photograph I shows the lower areas. Sample quadrats placed in the upper areas were located more in the aspens where cover was greatest and overstory was present in the Comparison Area. Photograph I shows the lower cover areas located primarily in the sagebrush/grass areas. As one can see from Photograph I, although the reclaimed road has less cover here, there are dense stands of sagebrush and grass species on the left side of the photograph where the silt fences are located, and where the runoff water would ultimately report in those storm events where the water overflows the gouges. In other words, there is a great deal of vegetative cover to treat any runoff that may come from the road.

Finally, when total living cover values only (in other words, by subtracting litter and rock from the cover equation) were compared between the Reclaimed Road in James Canyon and its Comparison Area, the same statistical test suggested no significant difference between the two areas ($t=1.725$; $p = N.S.$).

In conclusion, based on the quantitative data, summaries, and statistical analyses presented in this report, it appears that total cover of the disturbed areas (along with other ground surface techniques mentioned) should control sediments as well or better than background conditions and removal of the silt fences may be warranted.

Table 11: Student's T-Test Analyses of the Sediment Control Areas and Reference Areas at the Skyline Mine (2005)

Site	\bar{x}	s	n	t	df	S.L.
Waste Rock Hillside Sediment Control Area	84.80	6.81	10			
Sagebrush/Grass Reference Area	83.50	5.94	10	0.455	18	N.S.
Rail Load Out (east side of road) Sediment Control Area	93.10	4.74	10			
Sagebrush/Grass Reference Area	83.50	5.94	10	3.995	18	p<.05
Rail Load Out Loops (west side of road) Sediment Control Area	90.00	3.87	10			
Sagebrush/Grass Reference Area	83.50	5.94	10	2.899	18	p<.05
Conveyor Loops (near T-43 & T60) Sediment Control Area	83.33	6.87	6			
Sagebrush/Grass Reference Area	83.50	5.94	10	-0.052	14	N.S.
Conveyor Entrance (near T-172) Sediment Control Area	86.50	5.50	10			
Sagebrush/Grass Reference Area	83.50	5.94	10	1.172	18	N.S.
South Fork Topsoil Pile Sediment Control Area	88.20	3.76	10			
Sagebrush/Grass/Aspen Reference Area	99.05	18.64	20	-1.807	28	N.S.
James Canyon Drill Pad Topsoil Pile	91.30	4.08	10			
Sagebrush/Grass/Aspen Reference Area	99.05	18.64	20	-1.289	28	N.S.
James Canyon Reclaimed Road Sediment Control Area	89.30	11.54	31			
Sagebrush/Grass/Aspen Reference Area	99.05	18.64	20	-2.312	49	p<.05
\bar{x} = % mean cover s = standard deviation n = sample size t = Student's t value df = degrees of freedom S.L. = significance level N.S. = nonsignificant p< = probability level						

COLOR PHOTOGRAPHS
OF THE
SAMPLE AREAS



A. Waste Rock Reclaimed Hillside



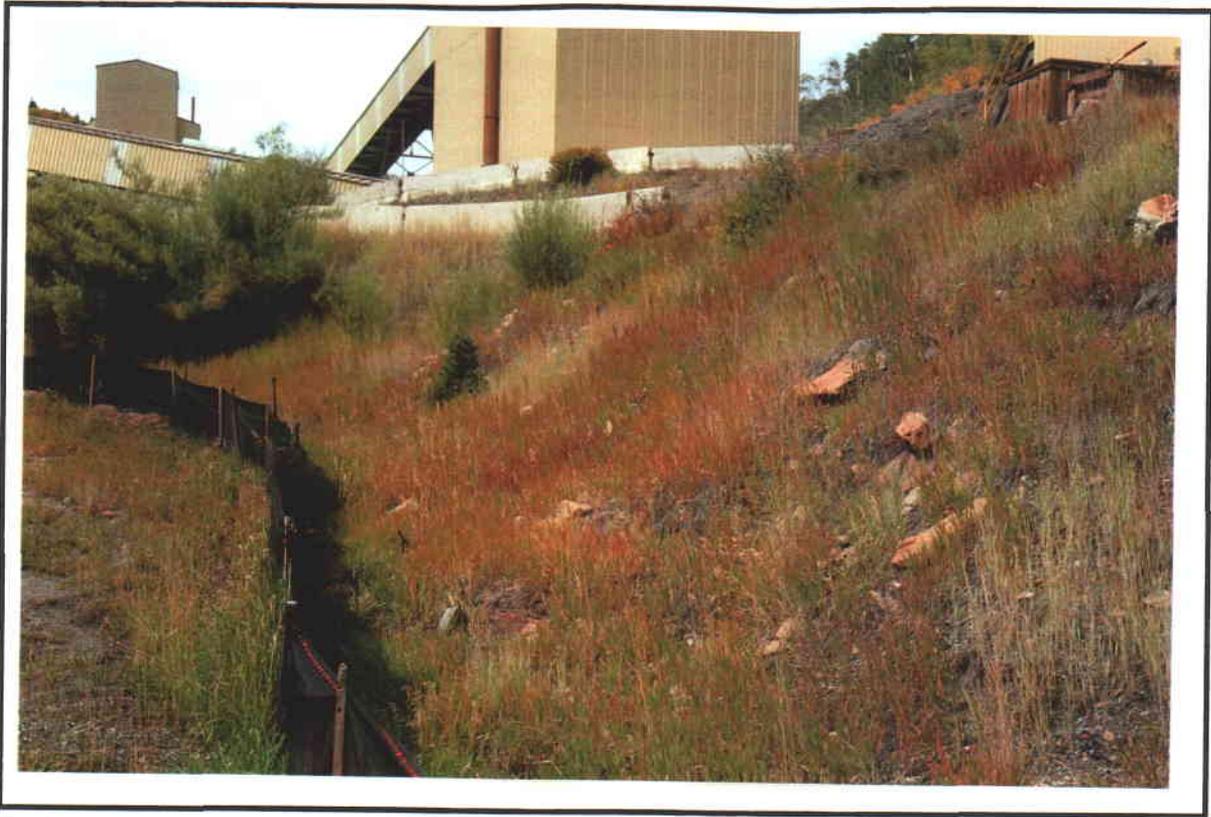
B. Rail Loadout (east side road at upper entrance)



C. Rail Loadout (west side road at upper entrance)



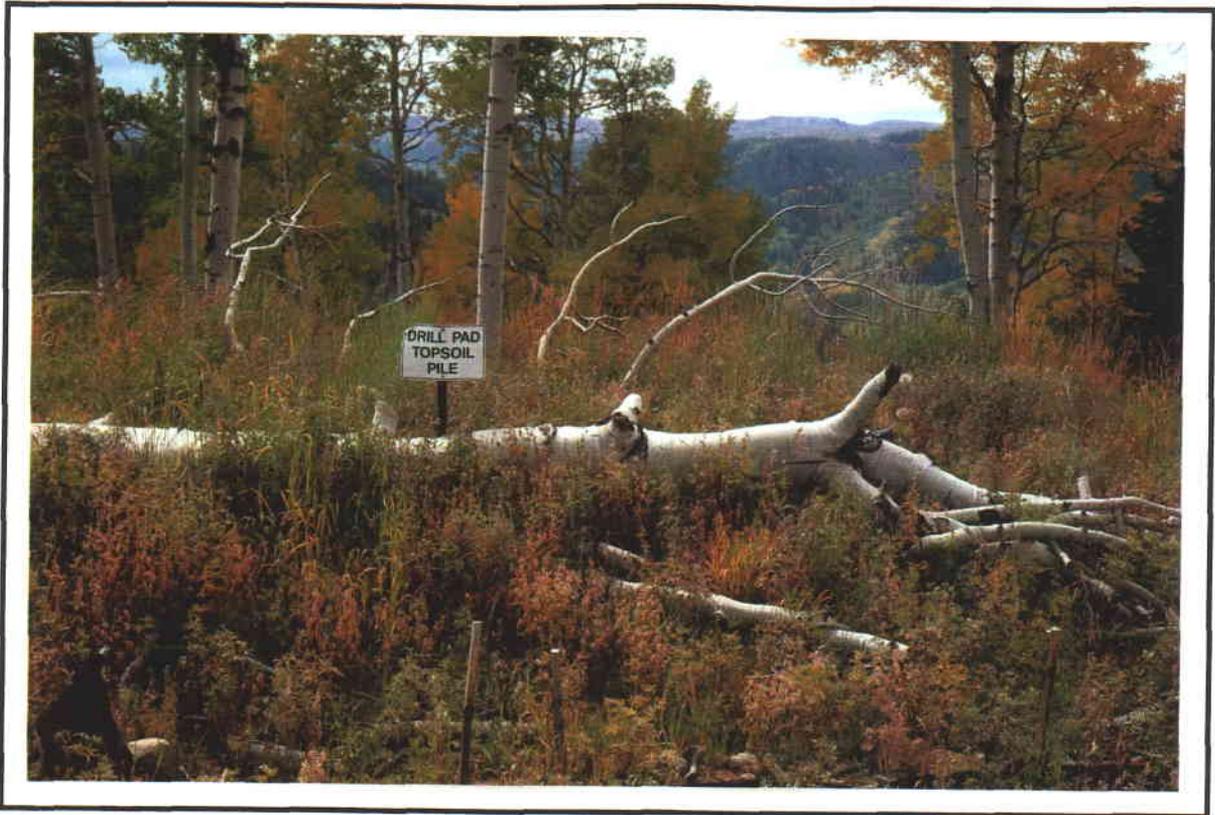
D. Conveyor Loop (near support structures)



E. Conveyor Slope (near entrance)



F. South Fork Topsoil Pile



G. James Canyon Topsoil Pile



H. James Canyon Reclaimed Road (1 of 2)



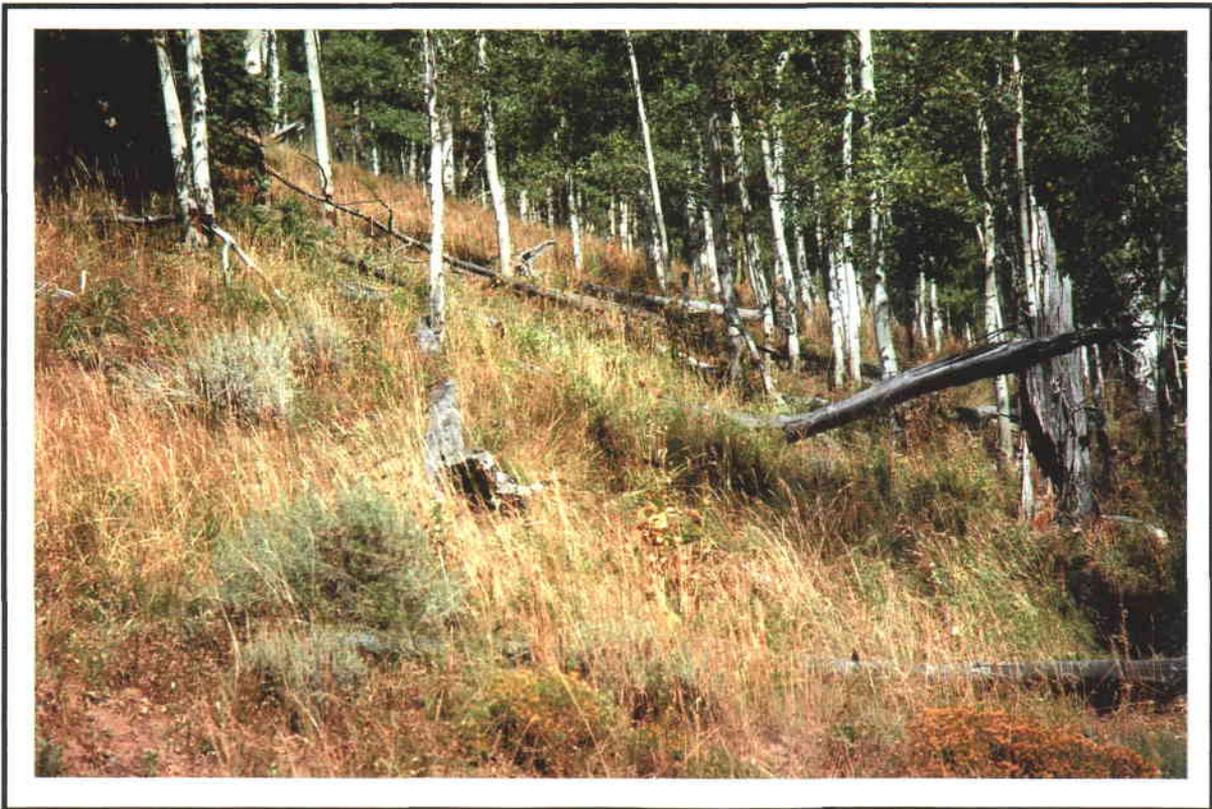
I. James Canyon Reclaimed Road (2 of 2)



J. Comparison Area - Sagebrush/Grass (lower elevation)



K. Comparison Area - Sagebrush/Grass/ Aspen (upper elevation; 1 of 2)



L. Comparison Area - Sagebrush/Grass/ Aspen (upper elevation; 2 of 2)

APPENDIX

(Raw Data)

CANYON FUELS

Skyline Mine

Reclaimed Hillside

Sagebrush/ Grass

Slope: 25-30 deg

Exposure: SW

Sample Date: 23 Sept 2005

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Artemisia tridentata</i>	0.00	0.00	0.00	0.00	45.00	0.00	0.00
<i>Chrysothamnus nauseosus</i>	0.00	0.00	7.00	0.00	0.00	0.00	0.00
<i>Prunus virginiana</i>	0.00	0.00	8.00	0.00	0.00	0.00	0.00
<i>Symphoricarpos oreophilus</i>	0.00	0.00	0.00	0.00	0.00	5.00	5.00

FORBS

<i>Aster glaucodes</i>	0.00	0.00	40.00	0.00	0.00	0.00	0.00
<i>Cynoglossum officinalis</i>	0.00	0.00	0.00	0.00	0.00	5.00	0.00
<i>Penstemon sp.</i>	0.00	5.00	0.00	0.00	0.00	0.00	0.00
<i>Rumex crispus</i>	0.00	0.00	0.00	0.00	0.00	0.00	5.00
<i>Salsola pestifer</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Verbascum thapsus</i>	0.00	0.00	0.00	0.00	0.00	0.00	5.00

GRASSES

<i>Elymus hispidus</i>	60.00	0.00	0.00	65.00	20.00	0.00	0.00
<i>Elymus lanceolatus</i>	5.00	5.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus smithii</i>	0.00	25.00	5.00	15.00	0.00	15.00	25.00
<i>Triticum aestivum</i>	0.00	0.00	10.00	0.00	5.00	25.00	0.00

COVER

Understory	65.00	35.00	70.00	80.00	70.00	50.00	40.00
Litter	15.00	25.00	10.00	8.00	10.00	15.00	10.00
Bareground	10.00	20.00	10.00	7.00	10.00	20.00	10.00
Rock	10.00	20.00	10.00	5.00	10.00	15.00	40.00

% COMPOSITION

Shrubs	0.00	0.00	21.43	0.00	64.29	10.00	12.50
Forbs	0.00	14.29	57.14	0.00	0.00	10.00	25.00
Grasses	100.00	85.71	21.43	100.00	35.71	80.00	62.50

Living + Litter + Rock	90.00	80.00	90.00	93.00	90.00	80.00	90.00
------------------------	-------	-------	-------	-------	-------	-------	-------

CANYON FUELS
 Skyline Mine
 Reclaimed Hillside
 Sagebrush/ Grass
 Slope: 25-30 deg
 Exposure: SW
 Sample Date: 23 Sept 2005

8.00	9.00	10.00	Mean	SDev	Freq	
<hr/>						SHRUBS
0.00	0.00	0.00	4.50	13.50	10.00	<i>Artemisia tridentata</i>
0.00	0.00	0.00	0.70	2.10	10.00	<i>Chrysothamnus nauseosus</i>
0.00	0.00	0.00	0.80	2.40	10.00	<i>Prunus virginiana</i>
0.00	0.00	0.00	1.00	2.00	20.00	<i>Symphoricarpos oreophilus</i>
<hr/>						FORBS
0.00	0.00	0.00	4.00	12.00	10.00	<i>Aster glaucodes</i>
0.00	5.00	0.00	1.00	2.00	20.00	<i>Cynoglossum officinalis</i>
0.00	0.00	5.00	1.00	2.00	20.00	<i>Penstemon sp.</i>
0.00	0.00	0.00	0.50	1.50	10.00	<i>Rumex crispus</i>
0.00	5.00	0.00	0.50	1.50	10.00	<i>Salsola pestifer</i>
0.00	0.00	0.00	0.50	1.50	10.00	<i>Verbascum thapsus</i>
<hr/>						GRASSES
0.00	0.00	0.00	14.50	24.74	30.00	<i>Elymus hispidus</i>
0.00	0.00	45.00	5.50	13.31	30.00	<i>Elymus lanceolatus</i>
20.00	50.00	0.00	15.50	14.91	70.00	<i>Elymus smithii</i>
0.00	0.00	0.00	4.00	7.68	30.00	<i>Triticum aestivum</i>
<hr/>						COVER
20.00	60.00	50.00	54.00	17.58		Understory
5.00	5.00	15.00	11.80	5.67		Litter
30.00	15.00	20.00	15.20	6.81		Bareground
45.00	20.00	15.00	19.00	12.61		Rock
<hr/>						% COMPOSITION
0.00	0.00	0.00	10.82	19.18		Shrubs
0.00	16.67	10.00	13.31	16.74		Forbs
100.00	83.33	90.00	75.87	26.21		Grasses
<hr/>						
70.00	85.00	80.00	84.80	6.81		Living + Litter + Rock

CANYON FUELS

Skyline Mine

Rail Load Out

Sediment Fence Area East

Slope: 2-10 deg

Exposure: SE

Sample Date: 23 Sept 2005

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

FORBS

<i>Cynoglossum officinalis</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Urtica dioica</i>	0.00	45.00	30.00	35.00	10.00	35.00	25.00

GRASSES

<i>Bromus carinatus</i>	0.00	0.00	0.00	0.00	0.00	10.00	0.00
<i>Elymus smithii</i>	75.00	0.00	0.00	0.00	0.00	10.00	0.00
<i>Poa pratensis</i>	0.00	35.00	60.00	55.00	75.00	30.00	50.00

COVER

Understory	75.00	80.00	90.00	90.00	85.00	85.00	75.00
Litter	10.00	15.00	5.00	5.00	5.00	10.00	10.00
Bareground	5.00	4.00	4.00	3.00	9.00	4.00	8.00
Rock	10.00	1.00	1.00	2.00	1.00	1.00	7.00

% COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	0.00	56.25	33.33	38.89	11.76	41.18	33.33
Grasses	100.00	43.75	66.67	61.11	88.24	58.82	66.67

Living + Litter + Rock	95.00	96.00	96.00	97.00	91.00	96.00	92.00
------------------------	-------	-------	-------	-------	-------	-------	-------

CANYON FUELS
 Skyline Mine
 Rail Load Out
 Sediment Fence Area East
 Slope: 2-10 deg
 Exposure: SE
 Sample Date: 23 Sept 2005

8.00	9.00	10.00	Mean	SDev	Freq
------	------	-------	------	------	------

SHRUBS

0.00	10.00	10.00	2.00	4.00	20.00
70.00	60.00	35.00	34.50	19.81	90.00

FORBS
Cynoglossum officinalis
Urtica dioica

0.00	0.00	0.00	1.00	3.00	10.00
10.00	10.00	15.00	12.00	21.70	50.00
0.00	0.00	0.00	30.50	27.52	60.00

GRASSES
Bromus carinatus
Elymus smithii
Poa pratensis

80.00	80.00	60.00	80.00	8.37
5.00	10.00	15.00	9.00	3.74
7.00	5.00	20.00	6.90	4.74
8.00	5.00	5.00	4.10	3.21

COVER
 Understory
 Litter
 Bareground
 Rock

0.00	0.00	0.00	0.00	0.00
87.50	87.50	75.00	46.47	28.41
12.50	12.50	25.00	53.53	28.41

% COMPOSITION
 Shrubs
 Forbs
 Grasses

93.00	95.00	80.00	93.10	4.74
-------	-------	-------	-------	------

Living + Litter + Rock

CANYON FUELS
 Skyline Mine
 Rail Load Out
 Sediment Fence Loops

1 thru 5 East Loop

Slope:

Exposure:

Sample Date: 23 Sept 2005

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

FORBS

<i>Convolvulus arvensis</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Equisetum arvensis</i>	0.00	0.00	5.00	10.00	0.00	0.00	0.00

GRASSES

<i>Bromus carinatus</i>	40.00	45.00	20.00	25.00	55.00	65.00	40.00
<i>Dactylis glomeratus</i>	0.00	0.00	5.00	0.00	0.00	0.00	0.00
<i>Elymus smithii</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Poa pratensis</i>	10.00	10.00	10.00	10.00	10.00	0.00	0.00

COVER

Understory	50.00	55.00	40.00	45.00	65.00	65.00	40.00
Litter	35.00	20.00	10.00	20.00	15.00	15.00	20.00
Bareground	5.00	10.00	10.00	5.00	5.00	10.00	15.00
Rock	10.00	15.00	40.00	30.00	15.00	10.00	25.00

% COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	0.00	0.00	12.50	22.22	0.00	0.00	0.00
Grasses	100.00	100.00	87.50	77.78	100.00	100.00	100.00

Living + Litter + Rock	95.00	90.00	90.00	95.00	95.00	90.00	85.00
------------------------	-------	-------	-------	-------	-------	-------	-------

CANYON FUELS
 Skyline Mine
 Rail Load Out
 Sediment Fence Loops

6 thru 10 West Loop

Slope:
 Exposure:
 Sample Date: 23 Sept 2005

8.00	9.00	10.00	Mean	SDev	Freq	
<hr/>						SHRUBS
<hr/>						FORBS
0.00	5.00	5.00	1.00	2.00	20.00	<i>Convolvulus arvensis</i>
0.00	0.00	0.00	1.50	3.20	20.00	<i>Equisetum arvensis</i>
<hr/>						GRASSES
30.00	45.00	40.00	40.50	12.74	100.00	<i>Bromus carinatus</i>
0.00	0.00	0.00	0.50	1.50	10.00	<i>Dactylis glomeratus</i>
10.00	0.00	0.00	1.00	3.00	10.00	<i>Elymus smithii</i>
0.00	0.00	0.00	5.00	5.00	50.00	<i>Poa pratensis</i>
<hr/>						COVER
40.00	50.00	45.00	49.50	9.07		Understory
25.00	30.00	20.00	21.00	7.00		Litter
15.00	10.00	15.00	10.00	3.87		Bareground
20.00	10.00	20.00	19.50	9.34		Rock
<hr/>						% COMPOSITION
0.00	0.00	0.00	0.00	0.00		Shrubs
0.00	10.00	11.11	5.58	7.50		Forbs
100.00	90.00	88.89	94.42	7.50		Grasses
<hr/>						
85.00	90.00	85.00	90.00	3.87		Living + Litter + Rock

CANYON FUELS

Skyline Mine

Conveyor Loops

Sage/Grass/

Slope: 35 deg

Exposure: SW

Sample Date: 23 Sept 2005

1 thru 3 T-43

4 thru 6 T-60

1.00 2.00 3.00 4.00 5.00 6.00 Mean

SHRUBS

<i>Mahonia repens</i>	5.00	0.00	0.00	0.00	0.00	0.00	0.83
<i>Symphoricarpos oreophilus</i>	0.00	15.00	25.00	5.00	50.00	25.00	20.00

FORBS

<i>Geranium richardsonii</i>	0.00	5.00	0.00	0.00	0.00	0.00	0.83
------------------------------	------	------	------	------	------	------	------

GRASSES

<i>Bromus carinatus</i>	25.00	0.00	10.00	35.00	8.00	5.00	13.83
<i>Elymus smithii</i>	0.00	10.00	0.00	0.00	7.00	15.00	5.33

COVER

Understory	30.00	30.00	35.00	40.00	65.00	45.00	40.83
Litter	40.00	40.00	35.00	30.00	15.00	20.00	30.00
Bareground	15.00	5.00	5.00	20.00	5.00	20.00	11.67
Rock	15.00	25.00	25.00	10.00	15.00	15.00	17.50

% COMPOSITION

Shrubs	16.67	50.00	71.43	12.50	76.92	55.56	47.18
Forbs	0.00	16.67	0.00	0.00	0.00	0.00	2.78
Grasses	83.33	33.33	28.57	87.50	23.08	44.44	50.04

Living + Litter + Rock	85.00	95.00	95.00	80.00	95.00	80.00	88.33
------------------------	-------	-------	-------	-------	-------	-------	-------

CANYON FUELS
 Skyline Mine
 Conveyor Loops
 Sage/Grass/
 Slope: 35 deg
 Exposure: SW
 Sample Date: 23 Sept 2005

SDev	Freq	
1.86	16.67	SHRUBS
16.33	83.33	<i>Mahonia repens</i>
		<i>Symphoricarpos oreophilus</i>

1.86	16.67	FORBS
		<i>Geranium richardsonii</i>

12.18	83.33	GRASSES
5.82	50.00	<i>Bromus carinatus</i>
		<i>Elymus smithii</i>

12.05		COVER
9.57		Understory
6.87		Litter
5.59		Bareground
		Rock

24.78		% COMPOSITION
6.21		Shrubs
25.85		Forbs
		Grasses

6.87		Living + Litter + Rock
------	--	------------------------

CANYON FUELS

Skyline Mine

Conveyor Entrance (at T-172)

Sage/Grass

Slope: 35 deg

Exposure: S

Sample Date: 23 Sept 2005

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
--	------	------	------	------	------	------	------

OVERSTORY

<i>Salix exigua</i>	0.00	0.00	25.00	0.00	0.00	0.00	0.00
---------------------	------	------	-------	------	------	------	------

UNDERSTORY

SHRUBS

<i>Salix exigua</i>	0.00	0.00	10.00	0.00	0.00	0.00	0.00
---------------------	------	------	-------	------	------	------	------

FORBS

<i>Iva axillaris</i>	5.00	0.00	0.00	0.00	0.00	0.00	0.00
----------------------	------	------	------	------	------	------	------

GRASSES

<i>Bromus carinatus</i>	0.00	40.00	30.00	20.00	20.00	20.00	60.00
<i>Elymus lanceolatus</i>	30.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus smithii</i>	0.00	0.00	0.00	15.00	20.00	20.00	0.00
<i>Phleum pratensis</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COVER

Overstory	0.00	0.00	25.00	0.00	0.00	0.00	0.00
Understory	35.00	40.00	40.00	35.00	40.00	40.00	60.00
Litter	15.00	20.00	40.00	35.00	20.00	35.00	25.00
Bareground	20.00	15.00	5.00	15.00	15.00	10.00	10.00
Rock	30.00	25.00	15.00	15.00	25.00	15.00	5.00

% COMPOSITION

Shrubs	0.00	0.00	25.00	0.00	0.00	0.00	0.00
Forbs	14.29	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	85.71	100.00	75.00	100.00	100.00	100.00	100.00

Overstory + Understory	35.00	40.00	65.00	35.00	40.00	40.00	60.00
------------------------	-------	-------	-------	-------	-------	-------	-------

Living + Litter + Rock	80.00	85.00	95.00	85.00	85.00	90.00	90.00
------------------------	-------	-------	-------	-------	-------	-------	-------

CANYON FUELS
 Skyline Mine
 Conveyor Entrance (at T-172)
 Sage/Grass/
 Slope: 35 deg
 Exposure: S
 Sample Date: 23 Sept 2005

8.00	9.00	10.00	Mean	SDev	Freq	
0.00	0.00	0.00	2.50	7.50	10.00	OVERSTORY <i>Salix exigua</i>
0.00	0.00	0.00	1.00	3.00	10.00	UNDERSTORY SHRUBS <i>Salix exigua</i>
0.00	0.00	0.00	0.50	1.50	10.00	FORBS <i>Iva axillaris</i>
30.00	0.00	40.00	26.00	17.44	80.00	GRASSES <i>Bromus carinatus</i>
0.00	0.00	25.00	5.50	11.06	20.00	<i>Elymus lanceolatus</i>
0.00	35.00	0.00	9.00	12.00	40.00	<i>Elymus smithii</i>
25.00	0.00	0.00	2.50	7.50	10.00	<i>Phleum pratensis</i>
0.00	0.00	0.00	2.50	7.50		COVER Overstory
55.00	35.00	65.00	44.50	10.59		Understory
5.00	25.00	10.00	23.00	10.77		Litter
20.00	20.00	5.00	13.50	5.50		Bareground
20.00	20.00	20.00	19.00	6.63		Rock
0.00	0.00	0.00	2.50	7.50		% COMPOSITION Shrubs
0.00	0.00	0.00	1.43	4.29		Forbs
100.00	100.00	100.00	96.07	8.21		Grasses
55.00	35.00	65.00	47.00	12.08		Overstory + Understory
80.00	80.00	95.00	86.50	5.50		Living + Litter + Rock

CANYON FUELS

Skyline Mine

Reclaimed Topsoil Pile

South Fork

Aspen /Sage/Fir

Slope: 2 deg

Exposure: NW

Sample Date: 23 Sept 2005

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

FORBS

<i>Achillea millefolium</i>	15.00	20.00	5.00	5.00	15.00	15.00	20.00
<i>Descurainia pinnata</i>	0.00	0.00	0.00	0.00	5.00	0.00	0.00
<i>Penstemon sp.</i>	0.00	0.00	0.00	0.00	5.00	10.00	0.00
<i>Taraxacum officinalis</i>	0.00	10.00	5.00	0.00	0.00	10.00	5.00

GRASSES

<i>Bromus carinatus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Bromus japonicus</i>	10.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Dactylis glomeratus</i>	0.00	0.00	0.00	15.00	0.00	0.00	5.00
<i>Elymus junceus</i>	0.00	10.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus lanceolatus</i>	0.00	0.00	40.00	0.00	15.00	0.00	0.00
<i>Elymus smithii</i>	10.00	35.00	0.00	0.00	0.00	20.00	0.00
<i>Phleum pratensis</i>	35.00	0.00	10.00	0.00	0.00	0.00	0.00
<i>Poa pratensis</i>	0.00	0.00	5.00	0.00	0.00	0.00	0.00
<i>Triticum aestivum</i>	0.00	0.00	0.00	0.00	0.00	0.00	5.00

COVER

Understory	70.00	75.00	65.00	20.00	40.00	55.00	35.00
Litter	5.00	15.00	10.00	45.00	25.00	15.00	20.00
Bareground	10.00	3.00	10.00	15.00	15.00	15.00	15.00
Rock	15.00	7.00	15.00	20.00	20.00	15.00	30.00

% COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	21.43	40.00	15.38	25.00	62.50	63.64	71.43
Grasses	78.57	60.00	84.62	75.00	37.50	36.36	28.57

Living + Litter + Rock	90.00	97.00	90.00	85.00	85.00	85.00	85.00
------------------------	-------	-------	-------	-------	-------	-------	-------

CANYON FUELS
 Skyline Mine
 Reclaimed Topsoil Pile
 South Fork
 Aspen /Sage/Fir
 Slope: 2 deg
 Exposure: NW
 Sample Date: 23 Sept 2005

8.00	9.00	10.00	Mean	SDev	Freq	
<hr/>						
SHRUBS						
FORBS						
20.00	10.00	15.00	14.00	5.39	100.00	<i>Achillea millefolium</i>
0.00	0.00	0.00	0.50	1.50	10.00	<i>Descurainia pinnata</i>
5.00	5.00	10.00	3.50	3.91	50.00	<i>Penstemon sp.</i>
0.00	5.00	10.00	4.50	4.15	60.00	<i>Taraxacum officinalis</i>
GRASSES						
15.00	0.00	0.00	1.50	4.50	10.00	<i>Bromus carinatus</i>
0.00	0.00	0.00	1.00	3.00	10.00	<i>Bromus japonicus</i>
0.00	0.00	0.00	2.00	4.58	20.00	<i>Dactylis glomeratus</i>
0.00	0.00	0.00	1.00	3.00	10.00	<i>Elymus junceus</i>
0.00	5.00	0.00	6.00	12.21	30.00	<i>Elymus lanceolatus</i>
0.00	5.00	20.00	9.00	11.58	50.00	<i>Elymus smithii</i>
0.00	45.00	0.00	9.00	15.94	30.00	<i>Phleum pratensis</i>
0.00	0.00	0.00	0.50	1.50	10.00	<i>Poa pratensis</i>
0.00	0.00	0.00	0.50	1.50	10.00	<i>Triticum aestivum</i>
COVER						
40.00	75.00	55.00	53.00	17.78		Understory
40.00	5.00	15.00	19.50	12.93		Litter
10.00	10.00	15.00	11.80	3.76		Bareground
10.00	10.00	15.00	15.70	6.20		Rock
% COMPOSITION						
0.00	0.00	0.00	0.00	0.00		Shrubs
62.50	26.67	63.64	45.22	20.49		Forbs
37.50	73.33	36.36	54.78	20.49		Grasses
90.00	90.00	85.00	88.20	3.76		Living + Litter + Rock

CANYON FUELS

Skyline Mine

James Canyon

Drill Pad Topsoil Pile

Aspen/Sagebrush

Slope: 20-25 deg

Exposure: Variable

Sample Date: 23 Sept 2005

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

FORBS

<i>Linum lewisii</i>	50.00	20.00	15.00	5.00	25.00	0.00	0.00
<i>Lupinus alpestris</i>	25.00	20.00	65.00	40.00	15.00	25.00	20.00

GRASSES

<i>Bromus carinatus</i>	0.00	15.00	0.00	5.00	0.00	5.00	55.00
<i>Elymus hispidus</i>	0.00	5.00	0.00	0.00	0.00	20.00	0.00
<i>Elymus trachycaulus</i>	0.00	0.00	0.00	0.00	25.00	0.00	0.00
<i>Elymus glaucus</i>	0.00	0.00	0.00	0.00	0.00	25.00	0.00
<i>Elymus spicatus</i>	0.00	0.00	0.00	5.00	20.00	0.00	0.00
<i>Phleum pratensis</i>	0.00	10.00	0.00	10.00	0.00	10.00	0.00
<i>Poa pratensis</i>	0.00	5.00	0.00	0.00	0.00	0.00	0.00

COVER

Understory	75.00	75.00	80.00	65.00	85.00	85.00	75.00
Litter	5.00	5.00	5.00	30.00	10.00	10.00	5.00
Bareground	15.00	10.00	5.00	4.00	4.00	4.00	10.00
Rock	5.00	10.00	10.00	1.00	1.00	1.00	10.00

% COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	100.00	53.33	100.00	69.23	47.06	29.41	26.67
Grasses	0.00	46.67	0.00	30.77	52.94	70.59	73.33

Living + Litter + Rock	85.00	90.00	95.00	96.00	96.00	96.00	90.00
------------------------	-------	-------	-------	-------	-------	-------	-------

CANYON FUELS
 Skyline Mine
 James Canyon
 Drill Pad Topsoil Pile
 Aspen/Sagebrush
 Slope: 20-25 deg
 Exposure: Variable
 Sample Date: 23 Sept 2005

8.00	9.00	10.00	Mean	SDev	Freq	
<hr/>						
SHRUBS						
FORBS						
20.00	0.00	15.00	15.00	14.66	70.00	<i>Linum lewisii</i>
35.00	45.00	35.00	32.50	14.19	100.00	<i>Lupinus sp.</i>
GRASSES						
0.00	0.00	10.00	9.00	16.09	50.00	<i>Bromus carinatus</i>
0.00	0.00	0.00	2.50	6.02	20.00	<i>Elymus hispidus</i>
0.00	0.00	0.00	2.50	7.50	10.00	<i>Elymus trachycaulus</i>
0.00	0.00	0.00	2.50	7.50	10.00	<i>Elymus glaucus</i>
10.00	20.00	20.00	7.50	8.73	50.00	<i>Elymus spicatus</i>
0.00	0.00	0.00	3.00	4.58	30.00	<i>Phleum pratensis</i>
0.00	10.00	0.00	1.50	3.20	20.00	<i>Poa pratensis</i>
<hr/>						
COVER						
65.00	75.00	80.00	76.00	6.63		Understory
10.00	10.00	5.00	9.50	7.23		Litter
15.00	10.00	10.00	8.70	4.08		Bareground
10.00	5.00	5.00	5.80	3.76		Rock
<hr/>						
% COMPOSITION						
0.00	0.00	0.00	0.00	0.00		Shrubs
84.62	60.00	62.50	63.28	24.59		Forbs
15.38	40.00	37.50	36.72	24.59		Grasses
<hr/>						
85.00	90.00	90.00	91.30	4.08		Living + Litter + Rock

CANYON FUELS
 Skyline Mine
 James Canyon
 Reclaimed Road Sediment Fences
 Slope: 1-3 deg
 Exposure: E
 Sample Date: 16 Sept 2005

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
OVERSTORY							
<i>Populus tremuloides</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UNDERSTORY							
SHRUBS							
<i>Artemisia tridentata var. vaseyana</i>	0.00	0.00	2.00	0.00	0.00	0.00	0.00
<i>Rosa woodsii</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FORBS							
<i>Achillea millefolium</i>	0.00	0.00	5.00	0.00	15.00	0.00	0.00
<i>Carduus nutans</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Cirsium sp.</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Epilobium halleanum</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Fragaria vesca</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Lathyrus pauciflorus</i>	0.00	0.00	0.00	25.00	0.00	0.00	15.00
<i>Linum lewisii</i>	0.00	0.00	5.00	0.00	0.00	0.00	0.00
<i>Lupinus alpestris</i>	15.00	25.00	13.00	0.00	25.00	20.00	0.00
<i>Melilotus officinalis</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Penstemon sp.</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Tragopogon dubius</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GRASSES							
<i>Bromus carinatus</i>	0.00	0.00	0.00	0.00	0.00	0.00	45.00
<i>Dactylis glomeratus</i>	38.00	15.00	30.00	45.00	15.00	35.00	0.00
<i>Elymus glaucus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus spicatus</i>	0.00	0.00	0.00	0.00	0.00	10.00	0.00
<i>Elymus trachycaulus</i>	0.00	0.00	10.00	0.00	10.00	25.00	0.00
<i>Phleum pratensis</i>	40.00	25.00	0.00	23.00	10.00	0.00	0.00
<i>Poa pratensis</i>	0.00	0.00	0.00	0.00	10.00	0.00	0.00
COVER							
Overstory	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Understory	93.00	65.00	65.00	93.00	85.00	90.00	60.00
Litter	2.00	20.00	15.00	2.00	5.00	4.00	5.00
Bareground	3.00	10.00	10.00	4.00	5.00	5.00	25.00
Rock	2.00	5.00	10.00	1.00	5.00	1.00	10.00
% COMPOSITION							
Shrubs	0.00	0.00	3.08	0.00	0.00	0.00	0.00
Forbs	16.13	38.46	35.38	26.88	47.06	22.22	25.00
Grasses	83.87	61.54	61.54	73.12	52.94	77.78	75.00
Overstory + Understory	93.00	65.00	65.00	93.00	85.00	90.00	60.00
Living + Litter + Rock	97.00	90.00	90.00	96.00	95.00	95.00	75.00

8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00
0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00
0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	5.00	0.00	0.00	0.00	15.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	45.00	25.00	0.00	0.00	0.00	10.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00	5.00
0.00	0.00	0.00	20.00	10.00	0.00	40.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35.00	45.00	20.00	0.00	0.00	35.00	0.00	0.00	60.00	0.00
0.00	0.00	0.00	10.00	0.00	0.00	0.00	10.00	0.00	0.00
25.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00
0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00
80.00	70.00	45.00	35.00	55.00	60.00	40.00	65.00	75.00	70.00
15.00	25.00	10.00	20.00	15.00	10.00	25.00	10.00	15.00	15.00
5.00	2.00	25.00	25.00	20.00	20.00	25.00	20.00	5.00	10.00
0.00	3.00	20.00	20.00	10.00	10.00	10.00	5.00	5.00	5.00
0.00	0.00	44.44	0.00	0.00	0.00	0.00	0.00	0.00	14.29
12.50	0.00	0.00	14.29	81.82	41.67	0.00	23.08	0.00	57.14
87.50	100.00	55.56	85.71	18.18	58.33	100.00	76.92	100.00	28.57
80.00	70.00	45.00	35.00	55.00	60.00	90.00	65.00	75.00	70.00
95.00	98.00	75.00	75.00	80.00	80.00	125.00	80.00	95.00	90.00

18.00	19.00	20.00	21.00	22.00	23.00	24.00	25.00	26.00	27.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	10.00	5.00	30.00	40.00	0.00	5.00	15.00	10.00	5.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	5.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	15.00	30.00	0.00	0.00	5.00	5.00	10.00	5.00	5.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	10.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	10.00	35.00	10.00	15.00	60.00	45.00	25.00	20.00	50.00
30.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65.00	65.00	70.00	85.00	75.00	65.00	65.00	65.00	45.00	65.00
5.00	10.00	15.00	5.00	10.00	10.00	10.00	10.00	20.00	15.00
20.00	20.00	5.00	5.00	10.00	15.00	15.00	15.00	20.00	10.00
10.00	5.00	10.00	5.00	5.00	10.00	10.00	10.00	15.00	10.00
15.38	15.38	7.14	35.29	53.33	0.00	7.69	23.08	22.22	7.69
23.08	46.15	0.00	0.00	26.67	0.00	0.00	23.08	0.00	7.69
61.54	38.46	92.86	64.71	20.00	100.00	92.31	53.85	77.78	84.62
65.00	65.00	70.00	85.00	75.00	65.00	65.00	65.00	45.00	65.00
80.00	80.00	95.00	95.00	90.00	85.00	85.00	85.00	80.00	90.00

CANYON FUELS
 Skyline Mine
 James Canyon
 Reclaimed Road Sediment
 Slope: 1-3 deg
 Exposure: E
 Sample Date: 16 Sept 20C

28.00	29.00	30.00	31.00	Mean	SDev	Freq	
<hr/>							OVERSTORY
0.00	0.00	0.00	0.00	1.61	8.83		<i>Populus tremuloides</i>
<hr/>							UNDERSTORY
<hr/>							SHRUBS
10.00	25.00	0.00	0.00	6.35	9.96		<i>Artemisia tridentata var. va:</i>
5.00	0.00	0.00	0.00	0.16	0.88		<i>Rosa woodsii</i>
<hr/>							FORBS
0.00	0.00	0.00	0.00	0.97	3.22		<i>Achillea millefolium</i>
0.00	0.00	0.00	0.00	0.32	1.77		<i>Carduus nutans</i>
0.00	0.00	0.00	5.00	0.81	2.87		<i>Cirsium sp.</i>
10.00	0.00	0.00	0.00	0.97	3.90		<i>Epilobium halleanum</i>
0.00	0.00	0.00	0.00	0.48	2.65		<i>Fragaria vesca</i>
0.00	0.00	0.00	0.00	4.68	10.39		<i>Lathyrus pauciflorus</i>
0.00	0.00	0.00	0.00	0.16	0.88		<i>Linum lewisii</i>
0.00	0.00	0.00	15.00	4.45	7.99		<i>Lupinus alpestris</i>
0.00	0.00	10.00	0.00	0.32	1.77		<i>Mellilotus officinalis</i>
0.00	0.00	0.00	0.00	0.48	1.95		<i>Penstemon sp.</i>
0.00	0.00	0.00	0.00	0.16	0.88		<i>Tragopogon dubius</i>
<hr/>							GRASSES
10.00	0.00	0.00	0.00	5.65	10.38		<i>Bromus carinatus</i>
0.00	0.00	0.00	0.00	8.00	14.10		<i>Dactylis glomeratus</i>
0.00	0.00	0.00	0.00	2.74	8.41		<i>Elymus glaucus</i>
0.00	0.00	0.00	0.00	0.32	1.77		<i>Elymus spicatus</i>
0.00	0.00	0.00	15.00	8.87	15.54		<i>Elymus trachycaulus</i>
15.00	10.00	55.00	15.00	15.90	17.68		<i>Phleum pratensis</i>
0.00	20.00	0.00	0.00	3.71	7.93		<i>Poa pratensis</i>
<hr/>							COVER
0.00	0.00	0.00	0.00	1.61	8.83		Overstory
50.00	55.00	65.00	50.00	65.52	14.49		Understory
25.00	10.00	10.00	15.00	12.35	6.39		Litter
15.00	25.00	20.00	20.00	14.00	7.68		Bareground
10.00	10.00	5.00	15.00	8.13	4.89		Rock
<hr/>							% COMPOSITION
30.00	45.45	0.00	0.00	10.47	15.57		Shrubs
20.00	0.00	15.38	40.00	20.76	20.06		Forbs
50.00	54.55	84.62	60.00	68.77	22.52		Grasses
<hr/>							Overstory + Understory
50.00	55.00	65.00	50.00	69.80	15.18		
<hr/>							Living + Litter + Rock
85.00	75.00	80.00	80.00	89.30	11.54		

CANYON FUELS
 Skyline Mine
 Waste Rock Reference Area
 Sagebrush/ Grass
 Slope: 30 deg
 Exposure: W
 Sample Date: 23 Sept 2005

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
--	------	------	------	------	------	------	------

SHRUBS

<i>Artemisia tridentata</i>	15.00	15.00	20.00	30.00	20.00	15.00	0.00
<i>Chrysothamnus viscidiflorus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Gutierrezia sarothrae</i>	0.00	0.00	0.00	0.00	0.00	20.00	5.00
<i>Purshia tridentata</i>	25.00	5.00	25.00	15.00	10.00	0.00	0.00

FORBS

<i>Hedysarum boreale</i>	0.00	5.00	0.00	0.00	0.00	0.00	5.00
<i>Penstemon sp.</i>	0.00	0.00	0.00	0.00	10.00	5.00	5.00

GRASSES

<i>Bromus carinatus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus salinus</i>	10.00	0.00	15.00	20.00	5.00	10.00	30.00
<i>Poa pratensis</i>	0.00	20.00	0.00	0.00	15.00	10.00	0.00

COVER

Understory	50.00	45.00	60.00	65.00	60.00	60.00	45.00
Litter	15.00	20.00	10.00	20.00	5.00	10.00	10.00
Bareground	15.00	20.00	20.00	10.00	30.00	20.00	15.00
Rock	20.00	15.00	10.00	5.00	5.00	10.00	30.00

% COMPOSITION

Shrubs	80.00	44.44	75.00	69.23	50.00	58.33	11.11
Forbs	0.00	11.11	0.00	0.00	16.67	8.33	22.22
Grasses	20.00	44.44	25.00	30.77	33.33	33.33	66.67

Living + Litter + Rock	85.00	80.00	80.00	90.00	70.00	80.00	85.00
------------------------	-------	-------	-------	-------	-------	-------	-------

CANYON FUELS
 Skyline Mine
 Waste Rock Reference Area
 Sagebrush/ Grass
 Slope: 30 deg
 Exposure: W
 Sample Date: 23 Sept 2005

8.00	9.00	10.00	Mean	SDev	Freq	
<hr/>						SHRUBS
10.00	25.00	10.00	16.00	8.00	90.00	<i>Artemisia tridentata</i>
10.00	5.00	10.00	2.50	4.03	30.00	<i>Chrysothamnus viscidiflorus</i>
0.00	0.00	0.00	2.50	6.02	20.00	<i>Gutierrezia sarothrae</i>
10.00	10.00	20.00	12.00	8.72	80.00	<i>Purshia tridentata</i>
 						FORBS
0.00	0.00	0.00	1.00	2.00	20.00	<i>Hedysarum boreale</i>
5.00	0.00	0.00	2.50	3.35	40.00	<i>Penstemon sp.</i>
 						GRASSES
0.00	0.00	5.00	0.50	1.50	10.00	<i>Bromus carinatus</i>
20.00	25.00	20.00	15.50	8.79	90.00	<i>Elymus salinus</i>
0.00	0.00	0.00	4.50	7.23	30.00	<i>Poa pratensis</i>
<hr/>						COVER
55.00	65.00	65.00	57.00	7.48		Understory
25.00	20.00	20.00	15.50	6.10		Litter
15.00	10.00	10.00	16.50	5.94		Bareground
5.00	5.00	5.00	11.00	8.00		Rock
<hr/>						% COMPOSITION
54.55	61.54	61.54	56.57	18.34		Shrubs
9.09	0.00	0.00	6.74	7.70		Forbs
36.36	38.46	38.46	36.68	11.99		Grasses
<hr/>						
85.00	90.00	90.00	83.50	5.94		Living + Litter + Rock

CANYON FUELS
 Skyline Mine
 James Canyon Reference Area
 Sagebrush/ Grass /Aspen
 Slope:

Exposure: E

Sample Date: 16 Sept 2005

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
--	------	------	------	------	------	------	------

OVERSTORY

<i>Populus tremuloides</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
----------------------------	------	------	------	------	------	------	------

UNDERSTORY

SHRUBS

<i>Artemisia tridentata</i>	15.00	10.00	0.00	30.00	45.00	30.00	50.00
<i>Chrysothamnus viscidiflorus</i>	10.00	35.00	0.00	0.00	0.00	0.00	0.00
<i>Populus tremuloides</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FORBS

<i>Lathyrus pauciflorus</i>	0.00	0.00	35.00	0.00	10.00	15.00	0.00
<i>Penstemon sp.</i>	0.00	0.00	0.00	25.00	0.00	10.00	0.00
<i>Thalictrum fendleri</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

<i>Bromus carinatus</i>	5.00	10.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus spicatus</i>	10.00	0.00	40.00	15.00	20.00	10.00	20.00
<i>Elymus lanceolatus</i>	0.00	10.00	0.00	0.00	0.00	0.00	0.00
<i>Poa pratensis</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COVER

Overstory	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Understory	40.00	65.00	75.00	70.00	75.00	65.00	70.00
Litter	10.00	25.00	15.00	10.00	20.00	30.00	15.00
Bareground	45.00	5.00	7.00	15.00	4.00	4.00	10.00
Rock	5.00	5.00	3.00	5.00	1.00	1.00	5.00

% COMPOSITION

Shrubs	62.50	69.23	0.00	42.86	60.00	46.15	71.43
Forbs	0.00	0.00	46.67	35.71	13.33	38.46	0.00
Grasses	37.50	30.77	53.33	21.43	26.67	15.38	28.57

Overstory + Understory	40.00	65.00	75.00	70.00	75.00	65.00	70.00
------------------------	-------	-------	-------	-------	-------	-------	-------

Living + Litter + Rock	55.00	95.00	93.00	85.00	96.00	96.00	90.00
------------------------	-------	-------	-------	-------	-------	-------	-------

8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.00	35.00
55.00	50.00	20.00	35.00	35.00	35.00	45.00	30.00	0.00	0.00
0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	0.00	10.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	10.00	25.00	0.00	0.00	0.00	0.00	5.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	15.00	10.00	10.00	20.00	25.00	0.00	35.00	0.00	30.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	10.00	0.00	10.00	10.00	40.00	0.00	30.00	20.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.00	35.00
85.00	70.00	60.00	75.00	65.00	70.00	85.00	65.00	35.00	60.00
10.00	25.00	15.00	20.00	25.00	20.00	5.00	30.00	5.00	10.00
4.00	4.00	20.00	4.00	9.00	5.00	5.00	4.00	55.00	25.00
1.00	1.00	5.00	1.00	1.00	5.00	5.00	1.00	5.00	5.00
64.71	78.57	33.33	46.67	53.85	50.00	52.94	46.15	0.00	0.00
23.53	0.00	33.33	40.00	0.00	0.00	0.00	0.00	14.29	16.67
11.76	21.43	33.33	13.33	46.15	50.00	47.06	53.85	85.71	83.33
85.00	70.00	60.00	75.00	65.00	70.00	85.00	65.00	110.00	95.00
96.00	96.00	80.00	96.00	91.00	95.00	95.00	96.00	120.00	110.00

CANYON FUELS
 Skyline Mine
 James Canyon Reference Area
 Sagebrush/ Grass /Aspen
 Slope:
 Exposure: E
 Sample Date: 16 Sept 2005

18.00	19.00	20.00	Mean	SDev	Freq	
<hr/>						OVERSTORY
35.00	50.00	35.00	11.50	21.40	25.00	<i>Populus tremuloides</i>
<hr/>						UNDERSTORY
<hr/>						SHRUBS
0.00	0.00	0.00	24.25	19.25	70.00	<i>Artemisia tridentata</i>
0.00	0.00	0.00	2.50	7.83	15.00	<i>Chrysothamnus viscidiflorus</i>
0.00	5.00	0.00	0.25	1.09	5.00	<i>Populus tremuloides</i>
<hr/>						FORBS
25.00	20.00	10.00	7.50	10.19	45.00	<i>Lathyrus pauciflorus</i>
0.00	0.00	0.00	3.75	7.73	25.00	<i>Penstemon sp.</i>
5.00	0.00	0.00	0.75	2.38	10.00	<i>Thalictrum fendleri</i>
<hr/>						GRASSES
0.00	0.00	0.00	0.75	2.38	10.00	<i>Bromus carinatus</i>
50.00	50.00	40.00	20.50	15.32	85.00	<i>Elymus spicatus</i>
0.00	0.00	0.00	0.50	2.18	5.00	<i>Elymus lanceolatus</i>
0.00	0.00	0.00	6.00	11.14	30.00	<i>Poa pratensis</i>
<hr/>						COVER
35.00	50.00	35.00	11.50	21.40		Overstory
80.00	75.00	50.00	66.75	12.77		Understory
14.00	20.00	30.00	17.70	7.84		Litter
5.00	4.00	15.00	12.45	13.90		Bareground
1.00	1.00	5.00	3.10	1.95		Rock
<hr/>						% COMPOSITION
0.00	6.67	0.00	39.25	27.00		Shrubs
37.50	26.67	20.00	17.31	16.41		Forbs
62.50	66.67	80.00	43.44	22.75		Grasses
<hr/>						Overstory + Understory
115.00	125.00	85.00	78.25	19.70		
<hr/>						Living + Litter + Rock
130.00	146.00	120.00	99.05	18.64		