CANYON FUEL COMPANY, LLC
SKYLINE MINE
C/007/005

WASTE ROCK PILE EXPANSION
Deficiency Response
Task ID #2844

December 2007

2.1.2 Threatened and Endangered Species

No currently approved threatened or endangered species, plant or animal, have been identified on the project or adjacent areas with the exception of an occasional transient Bald Eagle, which may pass through the project area during the winter. The mining operation has no impact on these transitory birds. However, a northern goshawk, a candidate for T&E listing, has been identified as a resident adjacent to the permit area. A plan for monitoring and protection of raptors may be found in Sec. 4.18.

Should any threatened or endangered species be identified in the future, their discovery will be promptly reported to the Division.

The Scofield Waste Rock site was expanded into approximately 5 acres of previously undisturbed ground in 2007. Surveys were conducted to identify T&E species of both plants and animals. The surveys did not find any such species. Species listed in Carbon County are found in different elevations and habitats. Results of the surveys are located in Appendix A-2, Volume 2. Additional discussions on vegetation and wildlife are discussed in Sections 2.7 and 2.9, respectively.

Confidential
Shelf
Expandable
Refer to Record No 0078 Date 12/03/07
In C/007/0005, 2007, Incoming
For additional information

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of riparian habitat, the Permittee commits to using the best technology currently available (BTCA)to mitigate the damage. The repair efforts will be coordinated and agreed upon by Mine, DOGM, and USFS personnel. Repairs related to disruption of a water supply are addressed in Section 2.5.3.

2.7.7 VEGETATION OF THE SCOFIELD WASTE ROCK SITE

The Scofield Waste Rock site was expanded in 2007 into areas (approximately 5.13 acres) that were previously undisturbed by mining activities. In the 1990s the northern and eastern portions of the area were disturbed with logging activities. Soils and Vegetation information that was collected in 1981-82 was updated in 2007 with information specific to the Refuse pile expansion. The 2007 information is grouped into two (2) separate reports, the first report summarizing the preliminary qualitative vegetation data with the second compiling the remaining qualitative and quantitative data. Quantitative data was not collected during the preliminary report due to the season of data collection (late Fall 2006). The 2007 reports focused on baseline information for reclamation and identification of threatened and endangered species. No threatened or endangered species were identified. The 1981-82 information is located in Appendix Volume A-2, with the 2007 reports being located in Appendix Volume A-2, Volume 2, respectively.

Vegetation resources are protected and enhanced at the Waste Rock site through contemporaneous reclamation of the site as it is being filled. The 2007 vegetation study established a reference area for a reclamation standard and also insured no sensitive, threatened or endangered species exist at the site. For additional information on revegetation of the site, see Sections 3.2.8 - Plan for Disposal of Waste Rock, and 4.7 - Revegetation Plan of the M&RP.

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Huntington Creek has a diverse aquatic community with macroinvertebrate taxa representing all trophic levels. The successful cutthroat trout spawning and high number of resident trout evidence the high quality waters and habitat of Huntington Creek plus the ability of the macroinvertebrate community to support quality fisheries. Cutthroat trout, according to Utah Division of Wildlife Resources (UDWR) surveys, are increasing in numbers in Huntington Creek above Electric Lake. Trout produced in Huntington Creek provide an important part of the total number of fish in Electric Lake.

Winter Quarters Canyon Creek

As indicated in the 1995 environmental assessment prepared by the Forest Service and the Bureau of Land Management Winters Quarters Canyon Creek has a moderate population of macroinvertebrates. Perennial flow in the canyon has produced Stonefly larvae as far up as Box and Bob's Canyons. Mayfly nymphs were also found present in waters tested. Cutthroat trout were found within the creek east of the Forest Boundary on June 7, 1994 indicating fish are likely within perennial sections of the creek containing significant flows. A survey conducted in Winter Quarters Canyon Creek in October 2002 indicated similar conditions and species (See Appendix Volume A-3, Volume 2).

Woods Canyon Creek

As indicated in the 1995 Environmental Assessment, Mayfly nymphs were found within the upper portions of Woods Canyon Creek in higher quantities than those found within Winter Quarters Canyon. Stonefly larvae were also found as high as the fork in the stream near the center of Section 34 (T 12 S, R 6 E). No fish were seen during the 1994 field survey although some may have been present. A survey conducted in Woods Canyon Creek in October 2002 indicated similar conditions (See Appendix Volume A-3, Volume 2).

UP Canyon - Scofield Waste Rock site

The Scofield Waste Rock site is located in UP Canyon at the confluence of two ephemeral unnamed drainages. No aquatic wildlife habitat has been noted in either drainage.

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2.9.3 Endangered and Threatened Species

Passage of the Endangered Species Act of 1973 (Public Law 23-205) provided a legal basis for establishment of lists of endangered and threatened plants and wildlife (Tables 2.9-4, 2.9-5, and 2.9-6).

According to National Wildlife Federation (1977), Dalton (1978) and the Federal Register (1979), there are no endangered or threatened species of amphibians or reptiles, or any threatened mammals that inhabit the south-eastern region of Utah. Dalton (1978), however, indicates that one endangered species, the black-footed ferret, might be found in the Wasatch Plateau east of the Skyline Drive. Durrant (1952) reports that he knows "...of no occurrence of the black-footed ferret north of the Colorado River in Utah...". There are unconfirmed reports of black-footed ferrett sightings east of Castle Dale and Ferron in Emery County, Utah. Many hours have been spent trying to verify the presence of these animals. Up to now these efforts have been unsuccessful. Observations on all of the Skyline lease and immediate surrounding areas show no signs of prairie dog colonies nor sufficient ground squirrel populations to support ferret populations (Fig. 2.9.3-A).

In recent decades, the bald eagle has recovered from the endangered status and is now listed as threatened. Despite the recovery, very few nests have been identified in Utah as of 2000. The golden eagle is quite common in Utah and is not listed as threatened or endangered. The Skyline Mine permit area was flown in 2005 by DWR and no nests were identified for either eagle.

2.9.4 Impact Analysis and Protection of Wildlife

Numerous precautions were taken during construction of Skyline Mine to protect the wildlife resources. While the disturbances during the operational phase are greatly reduced, the following concerns have been and are still being considered: (1) surface disturbance, (2) loss of habitat, (3) noise, (4) human activity and (5) air pollution. Any one, all or a combination of the above perturbations can impact terrestrial vertebrates.

Table 2.9-4
~~Federal Listed and Proposed Endangered Species in Utah~~
~~November 1999~~

~~Plants~~		~~Status~~
~~Autumn Buttercup~~	~~Ranunculus acriformis var. aestivalis~~	~~E~~
~~Barneby Reed-Mustard~~	~~Schoenocrambe barnebyi~~	~~E~~
~~Barneby Ridge-Cress~~	~~Lepidium barnebyanum~~	~~E~~
~~Clay Phacelia~~	~~Phacelia argillacea~~	~~E~~
~~Clay Reed-Mustard~~	~~Schoenocrambe argillacea~~	~~T~~
~~Desert Milkvetch~~	~~Astragalus desereticus~~	~~T~~
~~Dwarf Bear-Poppy~~	~~Arctomecon bumili~~	~~E~~
~~Heliotrope Milk-Vetch~~	~~Astragalus montii~~	~~T~~
~~Jones Cycladenia~~	~~Cycladenis humilis var. jonesii~~	~~T~~
~~Kodachrome Bladderpod~~	~~Lesquerella tumulosa~~	~~E~~
~~Last Chance Townsendia~~	~~Townsendia aprica~~	~~T~~
~~Maguire Daisy~~	~~Erigeron maguirei~~	~~T~~
~~Maguire Primrose~~	~~Primula maguirei~~	~~T~~
~~Novajo Sedge[5]~~	~~Carex specuicola~~	~~T~~
~~San Rafael Cactus~~	~~Pediocactus despainii~~	~~E~~
~~Shrubby Reed-Mustard~~	~~Schoencrambe suffrutescens~~	~~E~~
~~Siler Pincushion Cactus~~	~~Pediocactus sileri~~	~~T~~
~~Uinta Basin Hookless Cactus~~	~~Sclerocactus glaucus~~	~~T~~
~~Ute Ladies'-Tresses~~	~~Spiranthes diluvialis var. maguirei~~	~~T~~
~~Welsh's Milkweed~~	~~Asclepias welshii~~	~~T~~
~~Wright Fishhook Cactus~~	~~Sclerocactus wrightiae~~	~~E~~
~~Winkler Cactus~~	~~Pediocactus winkleri~~	~~T~~
~~**Mammals**~~		
~~Canada Lynx~~	~~Lynx canadensis~~	~~T~~
~~Black-Footed Ferret[1]~~	~~Mustela nigripes~~	~~E~~
~~Utah Prairie Dog~~	~~Cynomys parvidens~~	~~T~~
~~**Birds**~~		
~~Bald Eagle[4]~~	~~Haliaeetus leucocephalus~~	~~T~~
~~Mexican Spotted Owl~~	~~Strix occidentalis lucida~~	~~T~~
~~Southwest Willow Flycatcher~~	~~Empidonax traillii extimus~~	~~E~~
~~Whopping Crane[3]~~	~~Grus americanus~~	~~E~~
~~Mountain Plover~~	~~Charadrius montanus~~	~~PE~~
~~**Fish**~~		
~~Bonytail Chub~~	~~Gila elegans~~	~~E~~
~~Colorado Squawfish~~	~~Ptychocheilus lucius~~	~~E~~
~~Humpback Chub~~	~~Gila cypha~~	~~E~~
~~June Sucker[5]~~	~~Chasmistes liorus~~	~~E~~
~~Lahontan Cutthroat Trout~~	~~Oncorhynchus Clarki henshawi~~	~~T~~
~~Razorback Sucker~~	~~Xyrauchen texanus~~	~~E~~
~~Virgin River Chub[6]~~	~~Gila robusta seminuda~~	~~E~~
~~Woundfin~~	~~Plagopterus argentissumus~~	~~E~~

~~Reptiles~~		~~Status~~

~~Desert Tortoise[5] (Mojave population)~~	~~Gopherus agassizii~~	~~T~~

~~**Snails**~~

~~Kanab Ambersnail[7]~~	~~Oxyloma haydeni kanabensis~~	~~E~~
~~Utah Valvata Snail~~	~~Valvata utahensis~~	~~E~~

~~[1]Two confirmed sightings we made in Utah in 1982.~~
~~[2]Nests in Utah.~~
~~[3]Migrates through Utah, no resident population.~~
~~[4]Wintering populations)only two known nesting pairs in southeastern Utah).~~
~~[5]Critical habitat designated.~~
~~[6]Critical habitat proposed.~~
~~[7]Emergency listing.~~

~~E - Endangered PE - Proposed Endangered T - Threatened PT - Proposed Threatened~~

~~For additional information contact: U. S. Fish and Wildlife Service, 2078 Administration Building, 1745 West 1700 South, Salt Lake City, Utah 84204-5110~~
~~Telephone: Commercial (801) 524-5001~~

Table 2.9-4

County Lists for Carbon and Emery County of Federally Listed Threatened(T), Endangered(E), and Candidate(C) Species

August 2007

Carbon County

Common Name	Scientific Name	Status
Uinta Basin Hookless Cactus	*Sclerocactus glaucus*	T
Graham Beardtongue	*Penstemon grahamii*	T Proposed
Humpback Chub	*Gila cypha*	E
Bonytail	*Gila elegans*	E
Colorado Pikeminnow	*Ptychocheilus lucius*	E
Razorback Sucker	*Xyrauchen texanus*	E
Yellow-billed Cuckoo - Possibly	*Coccyzus americanus*	C
Mexican Spotted Owl - Possibly	*Strix occidentalis lucida*	T
Black-footed Ferret - Unconfirmed	*Mustela nigripes*	E Extirpated

Emery County

Common Name	Scientific Name	Status
Jones Cycladenia	*Cycladenia humilis var jonesii*	T
Maguire Daisy	*Erigeron maguirei*	T
Last Chance Townsendia	*Townsendia aprica*	T
Barneby Reed-mustard	*Schoenocrambe barnebyi*	E
San Rafael Cactus	*Pediocactus despainii*	E
Winkler Pincushion Cactus	*Pediocactus winkleri*	T
Wright Fishhook Cactus	*Sclerocactus wrightiae*	E
Humpback Chub	*Gila cypha*	E

Bonytail	*Gila elegans*	E

Colorado Pikeminnow	*Ptychocheilus lucius*	E
Razorback Sucker	*Xyrauchen texanus*	E
Yellow-billed Cuckoo - Possibly	*Coccyzus americanus*	C
Mexican Spotted Owl	*Strix occidentalis lucida*	T
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	E
Black-footed Ferret - Unconfirmed	*Mustela nigripes*	E Extirpated

E - Endangered PE - Proposed Endangered T - Threatened PT - Proposed Threatened

For additional information contact: U. S. Division of Wildlife Resources, 1594 W. North Temple, Salt Lake City, Utah 84116

Telephone:(801) 538-4745

Table 2.9-5
~~Native Utah Wildlife Species of Special Interest~~
~~February 1999 (Revised)~~

~~Mammals~~		~~Status~~
~~Grizzly Bear~~	~~Ursus arctos~~	~~EX~~
~~Fisher~~	~~Martes pennanti~~	~~EX~~
~~Gray Wolf~~	~~Canis lupus~~	~~EX~~
~~Black-footed Ferret~~	~~Mustela nigripes~~[4]	~~EN~~
~~Utah Prairie Dog~~	~~Cynomys parvidens~~[2]	~~T~~
~~Wolverine~~	~~Gulo gulo~~	~~T~~
~~Spotted Bat~~	~~Euderma maculatum~~	~~SP~~
~~Allen's Big-eared Bat~~	~~Idionycteris phyllotis~~	~~SD~~
~~Fringer Myotis~~	~~Myotis thysanodes~~	~~SD~~
~~Dwarf Shrew~~	~~Sorex nanus~~	~~SD~~
~~Desert Shrew~~	~~Notiosorex crawfordi~~	~~SD~~
~~Abert's Squirrel~~	~~Sciurus aberti navajo~~	~~SD~~
~~Belding ground Squirrel~~	~~Spermophilus beldingi~~	~~SD~~
~~Thirteen-lined Ground Squirrel~~	~~Spermophilus tridecemlineatus~~	~~SD~~
~~Spotted Ground Squirrel~~	~~Spermophilus spilosoma~~	~~SD~~
~~Wyoming Ground Squirrel~~	~~Spermophilus elegans~~	~~SD~~
~~Yellow Pine Chipmunk~~	~~Tamias amoenus~~	~~SD~~
~~Rock Pocket Mouse~~	~~Chaetodipus intermedius~~	~~SD~~
~~Olive-backed Pocket Mouse~~	~~Perognathus fasciatus~~	~~SD~~
~~Merriam's Kangaroo Rat~~	~~Dipodomys merriami~~	~~SD~~
~~Chisel-toothed Kangaroo Rat~~	~~Dipodomys microps celsus~~	~~SD~~
~~Cactus Mouse~~	~~Peromyscus eremicus~~	~~SD~~
~~Southern Grasshopper Mouse~~	~~Onychomys torridus~~	~~SD~~
~~Marten~~	~~Martes americana~~	~~SD~~
~~Pika~~	~~Ochotona princeps~~	~~SD~~
~~Ringtail~~	~~Bassariscus astutus~~	~~SD~~
~~Northern Flying Squirrel~~	~~Glaucomys sabrinus~~	~~SD~~
~~Western Red Bat~~	~~Lasiurus blossevillii~~	~~SP/SD~~
~~Big Free-tailed Bat~~	~~Nyctinomops macrotis~~	~~SP/SD~~
~~Brazilian Free-tailed Bat~~	~~Tadarida brasiliensis mexicana~~	~~SP/SD~~
~~Townsend's Big-eared Bat~~	~~Plecotus townsendii~~	~~SP/SD~~
~~Desert Kangaroo Rat~~	~~Dipodomys deserti~~	~~SP/SD~~
~~Northern Rock Mouse~~	~~Peromyscus nasutus~~	~~SP/SD~~
~~Stephen's Woodrat~~	~~Neotoma stephensi~~	~~SP/SD~~
~~Virgin River Montane Vole~~	~~Microtus montanus rivularis~~	~~SP/SD~~
~~Mexican Vole~~	~~Microtus mexicanus~~	~~SP/SD~~
~~Northern River Otto~~	~~Lutra canadensis~~	~~SP/SD~~
~~North American Lynx~~	~~Felis lynx canadensis~~	~~SP/SD~~

~~Birds~~		~~Status~~
~~Passenger Pigeon~~	~~Ectopistes migratorius~~	~~E~~
~~Southern Willow Flycatcher~~	~~Empidonax traillii extimus~~[4]	~~EN~~
~~Bald Eagle~~	~~Haliaeetus leucocephalus~~[2]	~~T~~
~~Ferruginous Hawk~~	~~Buteo regalis~~	~~T~~
~~Yellow-billed Cuckoo~~	~~Coccyzus americanus occidentalis~~	~~T~~
~~Mexican Spotted Owl~~	~~Strix occidentalis lucida~~[2]	~~T~~
~~Northern Goshawk~~	~~Accipiter gentilis~~	~~SP~~
~~Swainson's Hawk~~	~~Buteo swainsoni~~	~~SP~~
~~Caspian Tern~~	~~Sterna caspia~~	~~SP~~
~~Black Tern~~	~~Chlidonias niger~~	~~SP~~
~~Burrowing Owl~~	~~Athene cunicularia~~	~~SP~~
~~Common Yellowthroat~~	~~Geothlypis trichas~~	~~SP~~
~~Short-eared Owl~~	~~Asio flammeus~~	~~SP~~
~~American White Pelican~~	~~Pelecanus erythrorhynchos~~	~~SD~~
~~California Condor~~	~~Gymnogyps californianus~~	~~SD~~
~~Osprey~~	~~Pandion haliaetus~~	~~SD~~
~~Sharp-tailed Grouse~~	~~Tympanuchus phasianellus columbianus~~	~~SD~~
~~Williamson's Sapsucker~~	~~Sphyrapicus thyroideus~~	~~SD~~
~~Three-toed Woodpecker~~	~~Picoides tridactylus~~	~~SD~~
~~Sage Grouse~~	~~Centrocerus urophasianus~~	~~SP/SD~~
~~Mountain Plover~~	~~Charadrius montanus~~[3]	~~SP/SD~~
~~Long-bill Curlew~~	~~Numenius americanus~~	~~SP/SD~~
~~Black Swift~~	~~Cypseloides niger~~	~~SP/SD~~
~~Lewis' Woodpecker~~	~~Melanerpes lewis~~	~~SP/SD~~
~~Crissal Thrasher~~	~~Toxostoma crissale~~	~~SP/SD~~
~~Bell's Vireo~~	~~Vireo bellii~~	~~SP/SD~~
~~Blue Grosbeak~~	~~Guiraca caerulea~~	~~SP/SD~~
~~Grasshopper Sparrow~~	~~Ammodramus savannarum~~	~~SP/SD~~
~~Bobolink~~	~~Dolichonyx oryzivorus~~	~~SP/SD~~

~~Fish~~		
~~Utah Lake Sculpin~~	~~Cottus echinatus~~	~~E~~
~~Bonytail~~	~~Gila elegans~~[4]	~~EN~~
~~Colorado Squawfish~~	~~Ptychocheilus lucius~~[4]	~~EN~~
~~Humpback Chub~~	~~Gila cypha~~[4]	~~EN~~
~~Razorback Sucker~~	~~Xyrauchen texanus~~[4]	~~EN~~
~~Woundfin~~	~~Plagopterus argentissumus~~[4]	~~EN~~
~~Virgin River Chub~~	~~Gila seminuda~~[4]	~~EN~~
~~June Sucker~~	~~Chasmistes liorus~~[4]	~~EN~~
~~Lahontan Cutthroat Trout~~	~~Oncorhynchus clarki henshawi~~[2]	~~T~~
~~Roundtail Chub~~	~~Gila robusta~~	~~T~~
~~Leatherside Chub~~	~~Gila copei~~	~~SP~~
~~Flannelmouth Sucker~~	~~Catostomus latipinnis~~	~~SP~~
~~Bluehead Sucker~~	~~Catostomus discobolus~~	~~SP~~
~~Bonneville Cisco~~	~~Prosopium gemmiferun~~	~~SD~~
~~Bonneville Whitefish~~	~~Prosopuim spilonotus~~	~~SD~~
~~Bear Lake Whitefish~~	~~Prosopium abyssicola~~	~~SD~~
~~Bear Lake Sculpin~~	~~Cottus extensus~~	~~SD~~
~~Desert Sucker~~	~~Catostomus clarki~~	~~SD~~
~~Colorado River Cutthroat Trout~~	~~Oncorhynchus clarki pleuriticus~~	~~C~~
~~Bonneville Cutthroat Trout~~	~~Oncorhynchus clarki utah~~	~~C~~
~~Virgin Spinedace~~	~~Lepidomeda mollispinis mollispinis~~	~~C~~
~~Least Chub~~	~~Iotichthys phlegethontis~~[3]	~~C~~

~~Reptiles and Amphibians~~		~~Status~~
~~Banded Gila Monster~~	~~Heloderma suspectus cinctum~~	~~EN~~
~~Desert Tortoise~~	~~Gopherus agassizii~~[2]	~~EN~~
~~Utah Mountain Kingsnake~~	~~Lampropeltis pyromelana infralabialis~~	~~SP~~
~~Utah Milk Snake~~	~~Lampropeltis triangulum taylori~~	~~SP~~
~~Desert Iguana~~	~~Dipsosaurus dorsalis~~	~~SD~~
~~Utah Banded Gecko~~	~~Coleonyx variegatus utahensis~~	~~SD~~
~~Utah Night Lizard~~	~~Xantusia vigilis utahensis~~	~~SD~~
~~Desert Night Lizard~~	~~Xantusia vigilis vigilis~~	~~SD~~
~~Mojave Zebra-tailed Lizard~~	~~Callisaurus draconoides rhodostictus~~	~~SD~~
~~California Kingsnake~~	~~Lampropeltis getula californiae~~	~~SD~~
~~Southwestern Black-headed Snake~~	~~Tantilla hobartsmithi~~	~~SD~~
~~Desert Glossy Snake~~	~~Arizona elegans eburnata~~	~~SD~~
~~Painted Desert Glossy Snake~~	~~Arizona elegans philipi~~	~~SD~~
~~Sonora Lyre Snake~~	~~Trimorpodon biscutatus lambda~~	~~SD~~
~~Utah Blind Snake~~	~~Leptotyphlops humilis utahensis~~	~~SD~~
~~Mojave Patch-nosed Snake~~	~~Salvadora hexalepis mojavensis~~	~~SD~~
~~Southwestern Speckled Rattlesnake~~	~~Crotalus mitchellii pyrrhus~~	~~SD~~
~~Mojave Rattlesnake~~	~~Crotalus scutulatus scutulatus~~	~~SD~~
~~Mojave Desert Sidewinder~~	~~Crotalus cerastes cerastes~~	~~SD~~
~~Western Chuckwalla~~	~~Sauromalus obesus obesus~~	~~SP/SD~~
~~Glen Canyon Chuckwalla~~	~~Sauromalus obesus multiforaminatus~~	~~SP/SD~~
~~Many-lined Skink~~	~~Eumeces multivirgatus gaigeae~~	~~SP/SD~~
~~Plateau Striped Whiptail~~	~~Cnemidopherus velox~~	~~SP/SD~~
~~Great Plains Rat Snake~~	~~Elaphe guttata emoryi~~	~~SP/SD~~
~~Smooth Green Snake~~	~~Opheodrys vernalis~~	~~SP/SD~~
~~Relict Leopard Frog~~	~~Rana onca~~	~~E~~
~~Boreal Toad~~	~~Bufo boreas boreas~~[3]	~~SP~~
~~Arizona Toad~~	~~Bufo microscaphus microscaphus~~	~~SP~~
~~Lowland Leopard Frog~~	~~Rana yavapaiensis~~	~~SP~~
~~Pacific Chorus Frog~~	~~Pseudacris regilla~~	~~SD~~
~~Spotted Frog~~	~~Rana pretiosa~~[3]	~~C~~
~~**MOLLUSK**~~		
~~Kanab Ambersnail~~	~~Oxyloma haydeni kanabensis~~[4]	~~E~~
~~Fish Springs Pond Snail~~	~~Stagnicola pilsbryi~~	~~E~~
~~Utah Valvatasnail~~	~~Valvata utahensis~~[4]	~~E~~
~~California Floater~~	~~Anodota californiensis~~	~~T~~
~~Thickshell Pondsnail [Utah Band Snail]~~	~~Stagnicola utahensis~~	~~T~~
~~Round Mouth Valvata~~	~~Valvata humeralis~~	~~SP~~
~~Clinton Cave Snail~~	~~Pristiloma subrupicola~~	~~SD~~
~~Eureka Mountainsnail~~	~~Oreohelix eurekensis eurekensis~~	~~SD~~
~~Lyrate Mountainsnail~~	~~Oreohelix haydeni haydeni~~	~~SD~~
~~Ogden Rocky Mountainsnail~~	~~Oreohelix peripherica wasatchensis~~[3]	~~SD~~
~~Wet-rock Physa [Zion Canyon Snail]~~	~~Physella zionis~~	~~SD~~
~~Yavapai Mountainsnail~~	~~Oreohelix yavapai~~	~~SD~~
~~Brian Head Mountainsnail~~	~~Oreohelix parowanensis~~	~~SP/SD~~
~~Fat-whorled Pondsnail~~	~~Stagnicola bonnevillensis~~[3]	~~SP/SD~~

~~Utah Physa~~		
~~[Utah Bubble Snail]~~	~~Physella utahensis~~	~~SP/SD~~
~~Uinta Mountainsnail~~	~~Oreohelix eurekensis uinta~~	~~SP/SD~~
~~Desert Spring Snail~~	~~Pyrgulopsis deserta~~	~~SP/SD~~
~~Fish Lake Physa Snail~~	~~Physella microstriata~~	~~SP/SD~~

~~[4]Species is federally listed as Endangered~~
~~[2]Species is federally listed as Threatened~~
~~[3]Species is federally listed as Candidate~~

~~E - Extinct;~~ ~~Any wildlife species that has disappeared in the world.~~

~~EX - Extirpated:~~ ~~Any wildlife species that has disappeared from Utah since 1800.~~

~~EN - Endangered:~~ ~~Any wildlife species or subspecies which is threatened with extirpation from Utah or extinction resulting from very low or declining numbers, alteration and/or reduction of habitat, detrimental environmental changes, or any combination of the above. Continued long-term survival is unlikely without implementation of special measures.~~

~~T - Threatened:~~ ~~Any wildlife species or subspecies which is likely to an endangered species within the foreseeable future throughout all or a significant part of its range in Utah or the world.~~

~~SP - Special Concern:~~ ~~Any wildlife species or subspecies which has experienced a substantial decrease in population, distribution and/or habitat availability.~~

~~SD - Special Concern:~~ ~~Any wildlife species or subspecies which occurs in limited areas and/or numbers due to a restricted or specialized habitat.~~

~~SP/SD - Special Concern:~~ ~~Any wildlife species or subspecies which has both a declining population and a limited range.~~

~~C - Conservation:~~ ~~Any wildlife species or subspecies, except those species currently listed under the Endangered Species Act as Threatened or Endangered, that meets the state criteria of Endangered, Threatened or of Special Concern, but is currently receiving sufficient special management under a Conservation Agreement developed and/or implemented by the state to preclude its listing above. In the event that the conservation agreement is not implemented, the species will be elevated to appropriate category.~~

~~Utah Division of Wildlife Resources, 1596 West North Temple, Salt Lake City, Utah 84116-3195~~

Table 2.9-5

Federally Listed Sensitive Species List of Utah

Department of Natural Resources
Division of Wildlife Resources
October 2006

Fishes

Conservation Agreement Species

Bonneville cutthroat trout	*Oncorhynchus clarkii utah*
Colorado River cutthroat trout	*Oncorhynchus clarkii pleuriticus*
Virgin spinedace	*Lepidomeda mollispinis mollispinis*
least chub	*Iotichthys phlegethontis*
roundtail chub	*Gila robusta*
bluehead sucker	*Catostomus discobolus*
flannelmouth sucker	*Catostomus latipinnis*

Wildlife Species of Concern

leatherside chub	*Gila copei*
desert sucker	*Catostomus clarkii*
Yellowstone cutthroat trout	*Oncorhynchus clarkii bouvieri*
Bear Lake whitefish	*Prosopium abyssicola*
Bonneville cisco	*Prosopium gemmifer*
Bonneville whitefish	*Prosopium spilonotus*
Bear Lake sculpin	*Cottus extensus*

Amphibians

Conservation Agreement Species

Columbia spotted frog	*Rana luteiventris*

Wildlife Species of Concern

western toad	*Bufo boreas*
Arizona toad	*Bufo microscaphus*

Reptiles

Conservation Agreement Species

(None)

Wildlife Species of Concern

zebra-tailed lizard	*Callisaurus draconoides*
western banded gecko	*Coleonyx variegatus*

desert iguana	*Dipsosaurus dorsalis*
Gila monster	*Heloderma suspectum*
common chuckwalla	*Sauromalus ater*
desert night lizard	*Xantusia vigilis*
sidewinder	*Crotalus cerastes*
speckled rattlesnake	*Crotalus mitchellii*
Mojave rattlesnake	*Crotalus scutulatus*
cornsnake	*Elaphe guttata*
smooth greensnake	*Opheodrys vernalis*
western threadsnake	*Leptotyphlops humilis*

Birds

Conservation Agreement Species

Northern Goshawk	*Accipiter gentilis*

Wildlife Species of Concern

Grasshopper Sparrow	*Ammodramus savannarum*
Short-eared Owl	*Asio flammeus*
Burrowing Owl	*Athene cunicularia*
Ferruginous Hawk	*Buteo regalis*
Greater Sage-grouse	*Centrocercus urophasianus*
Black Swift	*Cypseloides niger*
Bobolink	*Dolichonyx oryzivorus*
Lewis's Woodpecker	*Melanerpes lewis*
Long-billed Curlew	*Numenius americanus*
American White Pelican	*Pelecanus erythrorhynchos*
Three-toed Woodpecker	*Picoides tridactylus*
Sharp-tailed Grouse	*Tympanuchus phasianellus*

Mammals

Conservation Agreement Species

(None)

Wildlife Species of Concern

Preble's shrew	*Sorex preblei*
Townsend's big-eared bat	*Corynorhinus townsendii*
spotted bat	*Euderma maculatum*
Allen's big-eared bat	*Idionycteris phyllotis*
western red bat	*Lasiurus blossevillii*
fringed myotis	*Myotis thysanodes*
big free-tailed bat	*Nyctinomops macrotis*

pygmy rabbit	*Brachylagus idahoensis*
Gunnison's prairie-dog	*Cynomys gunnisoni*
white-tailed prairie-dog	*Cynomys leucurus*
silky pocket mouse	*Perognathus flavus*
dark kangaroo mouse	*Microdipodops megacephalus*
Mexican vole	*Microtus mexicanus*
kit fox	*Vulpes macrotis*

Mollusks

Conservation Agreement Species
(None)

Wildlife Species of Concern

southern tightcoil	*Ogaridiscus subrupicola*
Eureka mountainsnail	*Oreohelix eurekensis*
lyrate mountainsnail	*Oreohelix haydeni*
Brian Head mountainsnail	*Oreohelix parawanensis*
Deseret mountainsnail	*Oreohelix peripherica*
Yavapai mountainsnail	*Oreohelix yavapai*
cloaked physa	*Physa megalochlamys*
Utah physa	*Physella utahensis*
wet-rock physa	*Physella zionis*
longitudinal gland pyrg	*Pyrgulopsis anguina*
smooth Glenwood pyrg	*Pyrgulopsis chamberlini*
desert springsnail	*Pyrgulopsis deserta*
Otter Creek pyrg	*Pyrgulopsis fusca*
Hamlin Valley pyrg	*Pyrgulopsis hamlinensis*
carinate Glenwood pyrg	*Pyrgulopsis inopinata*
Ninemile pyrg	*Pyrgulopsis nonaria*
bifid duct pyrg	*Pyrgulopsis peculiaris*
Bear Lake springsnail	*Pyrgulopsis pilsbryana*
Black Canyon pyrg	*Pyrgulopsis plicata*
sub-globose Snake pyrg	*Pyrgulopsis saxatilis*
southern Bonneville pyrg	*Pyrgulopsis transversa*
northwest Bonneville pyrg	*Pyrgulopsis variegata*
California floater	*Anodonta californiensis*
western pearlshell	*Margaritifera falcata*

For additional information contact: U. S. Division of Wildlife Resources, 1594 W. North Temple, Salt Lake City, Utah 84116

Telephone:(801) 538-4745

Table 2.9-6
~~USDA- FS Region 4 Sensitive Species~~
~~January 1999~~

~~Plants~~		~~Status~~
~~Link Trail Columbine~~	~~Aquilegia flavescens var. rubicunda~~	~~S~~
~~Cruetzfeldii Cryptantha~~	~~Cryptantha creutzfeldii~~	~~S~~
~~Carrington Daisy~~	~~Erigeron carringtoniae~~	~~S~~
~~Canyon Sweetvetch~~	~~Hedysarum occidentale var. canone~~	~~S~~
~~Maguire Campoin~~	~~Silene petersonii~~	~~S~~
~~Musinea Groundsel~~	~~Senecio musinensis~~	~~S~~
~~Arizona Willow~~	~~Salix arizonica~~	~~S~~
~~**Mammals**~~		
~~Townsend's Big-eared Bat~~	~~Corynothinus townsedii~~	~~S~~
~~Spotted Bat~~	~~Euderma maculatum~~	~~S~~
~~**Birds**~~		
~~Northern Goshawk~~	~~Accipiter gentilis~~	~~S~~
~~Flammulated Owl~~	~~Otus flammeolus~~	~~S~~
~~Northern Three-toed Woodpecker~~	~~Picoides tridactylus~~	~~S~~
~~**Amphibians**~~		
~~Spotted Frog~~	~~Rana pretiosa~~	~~S~~

~~S - Sensitive: Any species which, although still occurring in numbers adequate for survival, has been greatly depleted or occurring in limited areas and/or numbers due to a restricted or specialized habitat.~~

~~USDA-Manti-LaSal National Forest, 599 Price River Dr., Price , Utah 84501~~

Table 2.9-6

Sensitive Plant, Wildlife and Fish Species of Manti-La Sal National Forest December 2007

Intermountain Regional Forester's list of sensitive plant, wildlife, and fish species that could occur on the Manti Division of the Manti-La Sal National Forest (MLNF).

SPECIES	SPECIES INFORMATION
Plants	
Arizona Willow *Salix arizonica*	*Salix arizonica* occurs in wet meadows along perennial streams and occurs only in the Muddy Creek drainage on the MLNF (NatureServe 2007, UNPS 2007, USDA NRCS 2007).
Canyon Sweet-vetch *Hedysarum occidentale var. canone*	*Hedysarum occidentale var. canone* is found on sites with a high water table, near springs or stream beds within the pinyon/juniper vegetation type at 5,500 to 7,000 ft. elevation. River birch and squaw brush are associated species. It is endemic to Duchesne, Carbon and Emery counties (NatureServe 2007, UNPS 2007, USDA NRCS 2007).
Carrington Daisy *Erigeron carringtoniae*	*Erigeron carringtoniae* occurs in limestone outcrops and escarpments in subalpine vegetation type on wind blown ridge tops and snowdrift sites at high elevations of the Wasatch Plateau (9,000 to 11,000 feet) (UNPS 2007, USU 2007, USDA NRCS 2007).
Creutzfeldt-flower *Cryptantha creutzfeldtii*	*Cryptantha creutzfeldtii* occurs in shallow, rocky, heavy clay soils; open Mancos shale slopes. It is endemic to central Utah in Carbon and Emery counties at 5,000 to 6,500 ft. elevation (NatureServe 2007, UNPS 2007, USDA NRCS 2007, USU 2007).
Link Trail Columbine *Aquilegia flavescens rubicunda*	*Aquilegia flavescens rubicunda* occurs near spring seeps and perennial wetland sites on the east side of the Wasatch Plateau (NatureServe 2007, UNPS 2007, USDA NRCS 2007).
Maguire Campion *Silene petersonii*	*Silene petersonii* occurs at high elevations (10,000 to 11,800 ft.) on open calcareous and igneous soils derived from Flagstaff Limestone (NatureServe 2007, UNPS 2007, USU 2007, Flora 2007, USDA NRCS 2007).

SPECIES	SPECIES INFORMATION
Musinea Groundsel *Senecio musiniensis*	*Senecio musiniensis* occurs on limestone barrens and talus slopes of the southern Wasatch Plateau (NatureServe 2007, UNPS 2007, USDA NRCS 2007). There are no limestone barrens or talus slopes in the project area.

Animals	
Bald Eagle *Haliaeetus leucocephalus*	The U.S. Fish and Wildlife Service have published the final rule to remove the Bald Eagle from the list of threatened and endangered species under the Endangered Species Act. The final rule was published in the federal register on July 9, 2007 (USDI FWS 2007); the rule became effective on August 8, 2007. Bald eagle nests are typically located in multi-storied (uneven-aged) coniferous forest stands that contain elements of old growth structure, and are located near bodies of water that support prey species. Important perch sites generally have three fundamental elements: a direct view of potential food sources, located within 50 meters of water, and are located in areas isolated from human disturbance. Roost sites generally provide thermal cover or shielding from wind, and are isolated from human disturbance (UDWR 2005, Spahr et al. 1991).
Bonneville Cutthroat Trout *Oncorhynchus clarki utah*	Bonneville cutthroat trout (BVCT) range from high-elevation streams with coniferous and deciduous riparian trees to low-elevation streams in sage-steppe grasslands containing herbaceous riparian zones to lakes. BVCT primarily occur in small headwater streams and slow, deep water with vegetated stream banks which provide shade, and bank stability (NatureServe 2007).
Colorado River Cutthroat Trout *Oncorhynchus clarki pleuriticus*	Colorado River cutthroat trout (CRCT) require cool, clear water with well-vegetated stream banks which provide cover, shade, and bank stability. CRCT tend to occupy headwater stream areas, especially when other trout species are present (NatureServe 2007).
Columbia Spotted Frog *Rana luteiuentris*	Spotted frogs are most commonly found in cold, still, permanent water in such habitats as marshy edges of ponds or lakes, in algae-grown overflow pools of streams, and near flat-water springs with emergent vegetation. The spotted frog may move considerable distances from water after breeding, often frequenting mixed conifer and sub-alpine forests, grasslands, and brush lands of sage and rabbit brush. No spotted frogs have been found on the Manti – La Sal National Forest, and they are not known or thought to occur on the Forest (Crockett et al. 2006).
Flammulated Owl *Otis flammeollus*	Flammulated owls prefer mature ponderosa pine/Douglas-fir forests with open canopies, but they can be found in second growth ponderosa pine, aspen and mixed conifer forests that contain a ponderosa pine component (McCallum 1994).

SPECIES	SPECIES INFORMATION
Greater Sage Grouse *Centrocercus urophasianus*	Sage grouse are generally found where there are large tracts of sagebrush habitat with a diverse and substantial understory of native grasses and forbs or in areas where there is a mosaic of sagebrush, grasslands, aspen. Wet meadows, springs, seeps, or other green areas within sagebrush shrublands are generally needed for the early brood-rearing period (Crawford et al. 2004).

Northern Goshawk *Accipiter gentilis*	In Utah, most nests can be found in mid-elevation sites occupied by quaking aspen or coniferous forest (Graham et al. 1999). Goshawks forage in fairly dense (generally greater than 40 percent canopy cover) conifer/aspen forests, and they nest in even denser stands (generally greater than 70 percent canopy cover).
Peregrine Falcon *Falco peregrinus*	Peregrine falcons may travel more than 18 miles from the nest site to hunt for food, however average foraging distance from the eyrie extends out to 10 miles, with 80 percent of peregrine falcon foraging occurring within a mile of the nest (Spahr et al. 1991).
Spotted Bat *Euderma maculatum*	In Utah, the spotted bat is likely found throughout the state. It is known to use a variety of vegetation types from approximately 2,500 to 9,500 feet, including riparian, desert shrub, spruce/fir, ponderosa pine, montane forests and meadows. Spotted bats roost alone in rock crevices high up on steep cliff faces (Oliver 2000).
Three-toed woodpecker *Picoides tridactylus*	Three-toed woodpeckers use forests containing spruce, grand fir, ponderosa pine, tamarack, and lodgepole pine. In Utah the species is considered to be a permanent resident of coniferous forests above 8,000 ft. Three-toed woodpeckers are dependent on live and dead trees for foraging and nesting (UDWR 2005).
Townsend's Big-eared Bat *Corynorhinus townsendii pallescens*	Townsend's big-eared bats use buildings, caves, and mines as day roosts, night roosts, and maternity roosts. In Utah, wintering habitats of this species is better known than any other bat species, where it is well known as a hibernator in Utah utilizing caves and mines as hibernaculum (Oliver 2000). This species uses a variety of habitat in Utah including: desert scrub, pinyon/juniper, sagebrush, mountain brush, mixed forest, and ponderosa pine.

2.9.6 WILDLIFE OF THE SCOFIELD WASTE ROCK EXPANSION (~5 ac.)

The Scofield Waste Rock site expansion encompasses approximately 5.13 acres of ground previously undisturbed by mining activities. The remainder of the approximately 37.5 acre Waste Rock permit area was a pre-SMCRA, pre-disturbed site.

Because only a minimal amount of acreage is anticipated to be disturbed at one time (approximately 3 acres) - and consistent with historic use of the site, little or no effect to the resident wildlife is expected. However, a review of the existing information in conjunction with additional studies was conducted.

Impact Analysis

The Waste Rock site is adjacent to the town of Scofield, Utah, and is considered a limited value wildlife use or 'occasional use area' since the area is used minimally as a big game migratory area. Figures 2.9.1-A and 2.9.2-B illustrate the summer range, winter range, and migratory routes for both elk and Mule deer. Utah Division of Wildlife personnel Leroy Mead, visited the site in April 2007 and conversed with Utah Division of Oil, Gas, and Mining personnel in September 2007 indicating impacts to big game would be minimal.

Impacts to Herpafuna are minimal because the drainages in the area are both ephemeral and the expansion activities do not add any additional impact to the stream courses.

A raptor survey was conducted in 2007. Two red-tailed hawks were encountered within a 1/4-mile of the site, but no goshawks were observed. An apparently inactive nest located approximately 1/8-mile west-southwest of the site was observed. This nest was not noted during a similar survey conducted in 1995. Skyline Mine has committed to observing the nest in 2008 to determine any use or activity. Findings will be reported in the Annual Report.

Threatened & Endangered Species

In 2007 the site was assessed for incidental species observations for the presence of threatened, endangered and special status species, management indicator species and important habitat (including elk calving, mule deer fawning, and sage grouse breeding and nesting) and migratory bird use with the project area. Findings of the surveys support extension of the Waste Rock area. The Scofield Waste Rock site does not have the correct habitat (too high of elevation) for the threatened and endangered species listed for Carbon county, Utah.

Habitat Loss

The amount of habitat loss due to surface disturbance is minimal when considering the extent of similar surrounding habitat, and areas of contemporaneous reclamation that were previously disturbed prior to the current mining activities. Disturbed areas will be minimized to approximately 3 acres as the area is contemporaneously reclaimed. Noise and human activity in the expansion area is consistent with the historic mining activities. Also, wildlife studies indicates the surrounding area is used as a migratory route between summer and winter ranges. Enhancement measures at reclamation will include the planting of seeds and woody species seedlings that are diverse and palatable to wildlife, and a pond to be used by both wildlife and livestock. The pond is being left intact at the landowner's request - historically the pond has only periodically retained a very limited water supply.

2.9.3 Endangered and Threatened Species

Passage of the Endangered Species Act of 1973 (Public Law 23-205) provided a legal basis for establishment of lists of endangered and threatened plants and wildlife (Tables 2.9-4, 2.9-5, and 2.9-6).

According to National Wildlife Federation (1977), Dalton (1978) and the Federal Register (1979), there are no endangered or threatened species of amphibians or reptiles, or any threatened mammals that inhabit the south-eastern region of Utah. Dalton (1978), however, indicates that one endangered species, the black-footed ferret, might be found in the Wasatch Plateau east of the Skyline Drive. Durrant (1952) reports that he knows "...of no occurrence of the black-footed ferret north of the Colorado River in Utah...". There are unconfirmed reports of black-footed ferrett sightings east of Castle Dale and Ferron in Emery County, Utah. Many hours have been spent trying to verify the presence of these animals. Up to now these efforts have been unsuccessful. Observations on all of the Skyline lease and immediate surrounding areas show no signs of prairie dog colonies nor sufficient ground squirrel populations to support ferret populations (Fig. 2.9.3-A).

In recent decades, the bald eagle has recovered from the endangered status and is now listed as threatened. Despite the recovery, very few nests have been identified in Utah as of 2000. The golden eagle is quite common in Utah and is not listed as threatened or endangered. The Skyline Mine permit area was flown in 2005 by DWR and no nests were identified for either eagle.

2.9.4 Impact Analysis and Protection of Wildlife

Numerous precautions were taken during construction of Skyline Mine to protect the wildlife resources. While the disturbances during the operational phase are greatly reduced, the following concerns have been and are still being considered: (1) surface disturbance, (2) loss of habitat, (3) noise, (4) human activity and (5) air pollution. Any one, all or a combination of the above perturbations can impact terrestrial vertebrates.

Table 2.9-4

County Lists for Carbon and Emery County of Federally Listed Threatened(T), Endangered(E), and Candidate(C) Species

August 2007

Carbon County

Common Name	Scientific Name	Status
Uinta Basin Hookless Cactus	*Sclerocactus glaucus*	T
Graham Beardtongue	*Penstemon grahamii*	T Proposed
Humpback Chub	*Gila cypha*	E
Bonytail	*Gila elegans*	E
Colorado Pikeminnow	*Ptychocheilus lucius*	E
Razorback Sucker	*Xyrauchen texanus*	E
Yellow-billed Cuckoo - Possibly	*Coccyzus americanus*	C
Mexican Spotted Owl - Possibly	*Strix occidentalis lucida*	T
Black-footed Ferret - Unconfirmed	*Mustela nigripes*	E Extirpated

Emery County

Common Name	Scientific Name	Status
Jones Cycladenia	*Cycladenia humilis var jonesii*	T
Maguire Daisy	*Erigeron maguirei*	T
Last Chance Townsendia	*Townsendia aprica*	T
Barneby Reed-mustard	*Schoenocrambe barnebyi*	E
San Rafael Cactus	*Pediocactus despainii*	E
Winkler Pincushion Cactus	*Pediocactus winkleri*	T
Wright Fishhook Cactus	*Sclerocactus wrightiae*	E
Humpback Chub	*Gila cypha*	E

Bonytail	*Gila elegans*	E
Colorado Pikeminnow	*Ptychocheilus lucius*	E
Razorback Sucker	*Xyrauchen texanus*	E
Yellow-billed Cuckoo - Possibly	*Coccyzus americanus*	C
Mexican Spotted Owl	*Strix occidentalis lucida*	T
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	E
Black-footed Ferret - Unconfirmed	*Mustela nigripes*	E Extirpated

E - Endangered PE - Proposed Endangered T - Threatened PT - Proposed Threatened

For additional information contact: U. S. Division of Wildlife Resources, 1594 W. North Temple, Salt Lake City, Utah 84116

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Table 2.9-5
Federally Listed Sensitive Species List of Utah
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October 2006

Fishes

Conservation Agreement Species

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roundtail chub	*Gila robusta*
bluehead sucker	*Catostomus discobolus*
flannelmouth sucker	*Catostomus latipinnis*

Wildlife Species of Concern

leatherside chub	*Gila copei*
desert sucker	*Catostomus clarkii*
Yellowstone cutthroat trout	*Oncorhynchus clarkii bouvieri*
Bear Lake whitefish	*Prosopium abyssicola*
Bonneville cisco	*Prosopium gemmifer*
Bonneville whitefish	*Prosopium spilonotus*
Bear Lake sculpin	*Cottus extensus*

Amphibians

Conservation Agreement Species

Columbia spotted frog	*Rana luteiventris*

Wildlife Species of Concern

western toad	*Bufo boreas*
Arizona toad	*Bufo microscaphus*

Reptiles

Conservation Agreement Species
(None)

Wildlife Species of Concern

zebra-tailed lizard	*Callisaurus draconoides*
western banded gecko	*Coleonyx variegatus*

desert iguana	*Dipsosaurus dorsalis*
Gila monster	*Heloderma suspectum*
common chuckwalla	*Sauromalus ater*
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Birds

Conservation Agreement Species

Northern Goshawk	*Accipiter gentilis*

Wildlife Species of Concern

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Three-toed Woodpecker	*Picoides tridactylus*
Sharp-tailed Grouse	*Tympanuchus phasianellus*

Mammals

Conservation Agreement Species

(None)

Wildlife Species of Concern

Preble's shrew	*Sorex preblei*
Townsend's big-eared bat	*Corynorhinus townsendii*
spotted bat	*Euderma maculatum*
Allen's big-eared bat	*Idionycteris phyllotis*
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big free-tailed bat	*Nyctinomops macrotis*

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Gunnison's prairie-dog	*Cynomys gunnisoni*
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silky pocket mouse	*Perognathus flavus*
dark kangaroo mouse	*Microdipodops megacephalus*
Mexican vole	*Microtus mexicanus*
kit fox	*Vulpes macrotis*

Mollusks

Conservation Agreement Species
(None)

Wildlife Species of Concern

southern tightcoil	*Ogaridiscus subrupicola*
Eureka mountainsnail	*Oreohelix eurekensis*
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Bear Lake springsnail	*Pyrgulopsis pilsbryana*
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southern Bonneville pyrg	*Pyrgulopsis transversa*
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California floater	*Anodonta californiensis*
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Telephone:(801) 538-4745

Table 2.9-6

Sensitive Plant, Wildlife and Fish Species of Manti-La Sal National Forest December 2007

Intermountain Regional Forester's list of sensitive plant, wildlife, and fish species that could occur on the Manti Division of the Manti-La Sal National Forest (MLNF).

SPECIES	SPECIES INFORMATION
Plants	
Arizona Willow *Salix arizonica*	*Salix arizonica* occurs in wet meadows along perennial streams and occurs only in the Muddy Creek drainage on the MLNF (NatureServe 2007, UNPS 2007, USDA NRCS 2007).
Canyon Sweet-vetch *Hedysarum occidentale var. canone*	*Hedysarum occidentale var. canone* is found on sites with a high water table, near springs or stream beds within the pinyon/juniper vegetation type at 5,500 to 7,000 ft. elevation. River birch and squaw brush are associated species. It is endemic to Duchesne, Carbon and Emery counties (NatureServe 2007, UNPS 2007, USDA NRCS 2007).
Carrington Daisy *Erigeron carringtoniae*	*Erigeron carringtoniae* occurs in limestone outcrops and escarpments in subalpine vegetation type on wind blown ridge tops and snowdrift sites at high elevations of the Wasatch Plateau (9,000 to 11,000 feet) (UNPS 2007, USU 2007, USDA NRCS 2007).
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Link Trail Columbine *Aquilegia flavescens rubicunda*	*Aquilegia flavescens rubicunda* occurs near spring seeps and perennial wetland sites on the east side of the Wasatch Plateau (NatureServe 2007, UNPS 2007, USDA NRCS 2007).
Maguire Campion *Silene petersonii*	*Silene petersonii* occurs at high elevations (10,000 to 11,800 ft.) on open calcareous and igneous soils derived from Flagstaff Limestone (NatureServe 2007, UNPS 2007, USU 2007, Flora 2007, USDA NRCS 2007).
Musinea Groundsel *Senecio musiniensis*	*Senecio musiniensis* occurs on limestone barrens and talus slopes of the southern Wasatch Plateau (NatureServe 2007, UNPS 2007, USDA NRCS 2007). There are no limestone barrens or talus slopes in the project area.

SPECIES	SPECIES INFORMATION
Animals	
Bald Eagle *Haliaeetus leucocephalus*	The U.S. Fish and Wildlife Service have published the final rule to remove the Bald Eagle from the list of threatened and endangered species under the Endangered Species Act. The final rule was published in the federal register on July 9, 2007 (USDI FWS 2007); the rule became effective on August 8, 2007. Bald eagle nests are typically located in multi-storied (uneven-aged) coniferous forest stands that contain elements of old growth structure, and are located near bodies of water that support prey species. Important perch sites generally have three fundamental elements: a direct view of potential food sources, located within 50 meters of water, and are located in areas isolated from human disturbance. Roost sites generally provide thermal cover or shielding from wind, and are isolated from human disturbance (UDWR 2005, Spahr et al. 1991).
Bonneville Cutthroat Trout *Oncorhynchus clarki utah*	Bonneville cutthroat trout (BVCT) range from high-elevation streams with coniferous and deciduous riparian trees to low-elevation streams in sage-steppe grasslands containing herbaceous riparian zones to lakes. BVCT primarily occur in small headwater streams and slow, deep water with vegetated stream banks which provide shade, and bank stability (NatureServe 2007).
Colorado River Cutthroat Trout *Oncorhynchus clarki pleuriticus*	Colorado River cutthroat trout (CRCT) require cool, clear water with well-vegetated stream banks which provide cover, shade, and bank stability. CRCT tend to occupy headwater stream areas, especially when other trout species are present (NatureServe 2007).
Columbia Spotted Frog *Rana luteiuentris*	Spotted frogs are most commonly found in cold, still, permanent water in such habitats as marshy edges of ponds or lakes, in algae-grown overflow pools of streams, and near flat-water springs with emergent vegetation. The spotted frog may move considerable distances from water after breeding, often frequenting mixed conifer and sub-alpine forests, grasslands, and brush lands of sage and rabbit brush. No spotted frogs have been found on the Manti – La Sal National Forest, and they are not known or thought to occur on the Forest (Crockett et al. 2006).
Flammulated Owl *Otis flammeollus*	Flammulated owls prefer mature ponderosa pine/Douglas-fir forests with open canopies, but they can be found in second growth ponderosa pine, aspen and mixed conifer forests that contain a ponderosa pine component (McCallum 1994).
Greater Sage Grouse *Centrocercus urophasianus*	Sage grouse are generally found where there are large tracts of sagebrush habitat with a diverse and substantial understory of native grasses and forbs or in areas where there is a mosaic of sagebrush, grasslands, aspen. Wet meadows, springs, seeps, or other green areas within sagebrush shrublands are generally needed for the early brood-rearing period (Crawford et al. 2004).

SPECIES	SPECIES INFORMATION
Northern Goshawk *Accipiter gentilis*	In Utah, most nests can be found in mid-elevation sites occupied by quaking aspen or coniferous forest (Graham et al. 1999). Goshawks forage in fairly dense (generally greater than 40 percent canopy cover) conifer/aspen forests, and they nest in even denser stands (generally greater than 70 percent canopy cover).
Peregrine Falcon *Falco peregrinus*	Peregrine falcons may travel more than 18 miles from the nest site to hunt for food, however average foraging distance from the eyrie extends out to 10 miles, with 80 percent of peregrine falcon foraging occurring within a mile of the nest (Spahr et al. 1991).
Spotted Bat *Euderma maculatum*	In Utah, the spotted bat is likely found throughout the state. It is known to use a variety of vegetation types from approximately 2,500 to 9,500 feet, including riparian, desert shrub, spruce/fir, ponderosa pine, montane forests and meadows. Spotted bats roost alone in rock crevices high up on steep cliff faces (Oliver 2000).
Three-toed woodpecker *Picoides tridactylus*	Three-toed woodpeckers use forests containing spruce, grand fir, ponderosa pine, tamarack, and lodgepole pine. In Utah the species is considered to be a permanent resident of coniferous forests above 8,000 ft. Three-toed woodpeckers are dependent on live and dead trees for foraging and nesting (UDWR 2005).
Townsend's Big-eared Bat *Corynorhinus townsendii pallescens*	Townsend's big-eared bats use buildings, caves, and mines as day roosts, night roosts, and maternity roosts. In Utah, wintering habitats of this species is better known than any other bat species, where it is well known as a hibernator in Utah utilizing caves and mines as hibernaculum (Oliver 2000). This species uses a variety of habitat in Utah including: desert scrub, pinyon/juniper, sagebrush, mountain brush, mixed forest, and ponderosa pine.

2.9.6 WILDLIFE OF THE SCOFIELD WASTE ROCK EXPANSION (~5 ac.)

The Scofield Waste Rock site expansion encompasses approximately 5.13 acres of ground previously undisturbed by mining activities. The remainder of the approximately 37.5 acre Waste Rock permit area was a pre-SMCRA, pre-disturbed site.

Because only a minimal amount of acreage is anticipated to be disturbed at one time (approximately 3 acres) - and consistent with historic use of the site, little or no effect to the resident wildlife is expected. However, a review of the existing information in conjunction with additional studies was conducted.

Impact Analysis

The Waste Rock site is adjacent to the town of Scofield, Utah, and is considered a limited value wildlife use or 'occasional use area' since the area is used minimally as a big game migratory area. Figures 2.9.1-A and 2.9.2-B illustrate the summer range, winter range, and migratory routes for both elk and Mule deer. Utah Division of Wildlife personnel Leroy Mead, visited the site in April 2007 and conversed with Utah Division of Oil, Gas, and Mining personnel in September 2007 indicating impacts to big game would be minimal.

Impacts to Herpafuna are minimal because the drainages in the area are both ephemeral and the expansion activities do not add any additional impact to the stream courses.

A raptor survey was conducted in 2007. Two red-tailed hawks were encountered within a 1/4-mile of the site, but no goshawks were observed. An apparently inactive nest located approximately 1/8-mile west-southwest of the site was observed. This nest was not noted during a similar survey conducted in 1995. Skyline Mine has committed to observing the nest in 2008 to determine any use or activity. Findings will be reported in the Annual Report.

Threatened & Endangered Species

In 2007 the site was assessed for incidental species observations for the presence of threatened, endangered and special status species, management indicator species and important habitat (including elk calving, mule deer fawning, and sage grouse breeding and nesting) and migratory bird use with the project area. Findings of the surveys support extension of the Waste Rock area. The Scofield Waste Rock site does not have the correct habitat (too high of elevation) for the threatened and endangered species listed for Carbon county, Utah.

Habitat Loss

The amount of habitat loss due to surface disturbance is minimal when considering the extent of similar surrounding habitat, and areas of contemporaneous reclamation that were previously disturbed prior to the current mining activities. Disturbed areas will be minimized to approximately 3 acres as the area is contemporaneously reclaimed. Noise and human activity in the expansion area is consistent with the historic mining activities. Also, wildlife studies indicates the surrounding area is used as a migratory route between summer and winter ranges. Enhancement measures at reclamation will include the planting of seeds and woody species seedlings that are diverse and palatable to wildlife, and a pond to be used by both wildlife and livestock. The pond is being left intact at the landowner's request - historically the pond has only periodically retained a very limited water supply.

Raptor surveys indicate that there may be raptors nesting in the vicinity of the Scofield Waste Rock Disposal site. A raptor survey was conducted in 1995 by Skyline Mines to determine if there were any active nests within a 1/2 mile radius of the disposal site. No nests were found by environmental personnel from Skyline Mine. Another raptor survey was conducted in 2007 for the waste rock expansion site and one raptor nest was identified within ¼ mile. According to the analysis, the nest has been in place for some time and the raptors have habituated to the activities of the waste rock site. This nest will be monitored in spring 2008 for its status. Results of the status will be reported in the Annual report.

2.10.1 Conclusion

Raptor species, normally found in conifer forests, occur in small numbers on the Skyline Mine area. Nesting habitat for tree nesting species provides the only readily available habitat there. Bald eagles pass through the area and stop over in adjacent regions during that migration. They, however, move on as winter sets in. Peregrine falcons may also pass over the area in migration, but any number that would do so is certainly small. No nesting sites of either species are known nor suspected in the Skyline area. The nearest known sites are in excess of 20 miles from the Skyline area. The overall elevation of the mining region is high enough and the habitat such as to restrict the density and diversity of raptors. It is concluded that development of the skyline Mine area will not have and adverse effect on critical raptor species, and any species that may be affected are common enough that the impact will be minimal on the populations.

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stratigraphic interval had preferred orientations, and tend to be stacked in echelon or otherwise concentrated along trends of high sandstone percentage.

Using these results, relative proportions of the several lithologies can be extrapolated to the portal area, even through individual channels may not be correlated between boreholes. In the 200 feet of strata immediately overlying the Aberdeen Sandstone, paleochannels have a preferred east-west orientation in the portal area. Based on extrapolation along this trend, percentages of lithotypes have been estimated for the portal area. For the described 200-foot stratigraphic interval, and excluding coal seams, the major lithologies are: sandstone 40%, siltstone 30%, and claystone 30%.

These lithologies have been described in detail in Section 2.2 (Geology) and in Volume A-3. The percentages may vary considerably from percentages in many boreholes drilled by D&M in the portal area. However, on the average these percentages are more representative of the character of the non-coal strata than estimated for individual boreholes.

Scofield Waste Rock Site

A complete description of the vegetation and soil is available in Appendix Volume A-2 in the report, "Report of Vegetation and Soils, Proposed Waste Rock Disposal Site", prepared by Endangered Plan Studies, Inc., November, 1981. Drawing Number 2.11-2 on Page 2-120(b) shows the soil typing of the waste rock area. A second soil survey report conducted in 2006 by Clement Drilling & Geophysical, Inc.",(Appendix Volume A-2, Volume 2) uses the United States Department of Agriculture (USDA), Natural Resources Conservation Services' (NRCS) WEB Soil Survey (WSS) utility. This survey was conducted in areas previously undisturbed by mining activities where topsoil exists. In 2007, the proposed disturbance is to expand the Waste Rock pile up the hill. The disturbance may eventually cover approximately 5.13 acres should be area expand to proposed capacity. Expansion of the pile will be done incrementally, stripping only the topsoil and subsoil necessary for the estimated area necessary for approximately one (1) to two (2) years of waste rock placement. Suitable topsoil and subsoil will be separated, stored, marked with appropriate signage for protection, to be used during reclamation of the site (Map 3.2.8-2). See Section 4.6.4.1 for additional information concerning the Topsoil/Subsoil Handling Plan.

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TABLE 2.12.2-1

GRAZING POTENTIAL FOR THE AREA TO BE AFFECTED BY MINING SURFACE OPERATIONS AND FACILITIES
(Does not include State Highway SR-264)

Surface Facilities Area	General Area Classification	Land Area (Acres)	Grazing Animal Units (AU)	Potential Animal Unit Month (AUM)
1. Portal Yard Area	Spruce-Fir	16.47	0.0	0.00
	Aspen	7.93	114.0	3.80
	Sagebrush	2.50	84.0	2.80
	Disturbed	8.50	0.0	0.00
	Riparian	1.00	38.0	1.30
Subtotal		36.40	236.0	7.90
2. Conveyor Corridor	Aspen	3.20	32.0	1.50
	Sagebrush	5.77	151.0	5.00
Subtotal		8.97	183.0	6.50
3. Railroad Loadout Area	Grass-Forb	10.32	126.0	4.20
	Spruce-Fir	3.50	0.0	0.0
	Riparian	.04	1.5	.05
Subtotal		13.86	127.5	4.25
4. Waste Rock Disposal Area	Disturbed (pre-SMCRA)	7.68	0.0	0.00
	Aspen	3.40	0.0	0.00
	Sagebrush/Grass	1.73	0.0	0.00
Subtotal		12.81	0.0	0.00
5. Water Tank and Well Pads South Fork Breakout	Aspen	.26	18.0	1.00
	Spruce-Fir	.96	0.0	0.00
Subtotal		1.22	18.0	1.00
TOTAL		68.13	564.5	19.65

ADDITION TO		TEXT		
Table 2.12.2-1	Page 2-128	Section 2.12	Page 2-128	Date 08/09/93

Surface Mined Areas

There have been no previous surface mines located within the mining plan area or adjacent areas. The waste rock disposal area was an abandoned strip mine. The Waste Rock site was expanded in 2007 into an area previously undisturbed by mining activities (approximately 5 acres). Areas previously disturbed by mining activities were contemporaneously reclaimed and made available to both livestock grazing and wildlife use. Land use for the area effectively remains the same with domestic livestock and wildlife. See Section 2.9 for details on Wildlife.

LOCAL LAND USE CLASSIFICATIONS

Both the county zoning ordinances and the "Land and Resource Management Plan" for the Manti-LaSal National Forest, prepared by the U.S. Forest Service (1986), classify local land-use for the lease area of the Skyline Mine as recreation, forestry and mining.

County Zoning Ordinances

The Emery County zoning map dated 1970 and the Carbon County zoning ordinance amended February 15, 1977 with a revised zoning map dated 1974 have zoned the Skyline property for recreation, forestry, and mining (RF&M). Section 8-7-1 of the Carbon County zoning ordinance states:

"Recreation, forestry, and mining zone has been established as a district in which the primary use of the land is for recreation, forestry, grazing, wildlife, and mining purposes. In general this zone....is characterized by...high grazing lands interspersed by ranches, recreational camps and resource outdoor recreational facilities and mines and facilities related thereto."

U.S. Forest Service Land Management Plan

The majority of the lease area lie within the boundary of the National Forest, and are therefore subject to the "Land and Resource Management Plan" for the Manti-LaSal National Forest prepared by the U.S. Forest Service (1986). National Forest System lands within the permit area include the following management units (Management emphasis for each unit is described):

RNG (Range) Management Unit - Emphasis is on production of forage and cover for domestic livestock and wildlife.

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<u>RNG (Range) Management Unit</u> - Emphasis is on production of forage and cover for domestic livestock and wildlife.

moderately-compacted final layer of fill should not, on the other hand, be an impermeable barrier which will redirect drainage.

The topsoil will be spread 12 inches thick in a manner to provide a roughened surface so that seed and mulch can remain during germination and initial growth of the seedlings. Topsoil depth was determined from soil pits in the reference area. Ripping the surface prior to planting seeds may be needed to provide the necessary roughened surface. Any rocks that are on the surface will be left in place to aid in the vegetation effort.

The potential for upward migration of salts is unknown for the top soil and cover material. The Permittee commits to analyze this material for electrical conductivity sodium content and sodium absorption ratio prior to revegetation efforts.

Fertilizer rates may change after the soil's analyses of the topsoil are completed. The Permittee plans to apply 100 pounds per acre of available nitrogen. Mulching will be done as outlined in Section 4.7.2. The Permittee's consultant has stated that phosphorous and potassium concentration based upon Skyline's data should be adequate in the aspen soils, and, therefore, since the topsoil will be an aspen type, no potassium or phosphorous is recommended. The Permittee plans to test the topsoil before it is seeded to determine the type and amount of fertilizer or neutralizer required. The soil's analyses will determine the following components: (a) micro-nutrients, (b) potassium, (c) calcium, (d) magnesium, (e) phosphorus, (f) nitrogen, (g) soil pH and salinity, and (h) soil texture.

The **majority of** drainage diversion ditch DD-17 will not be reclaimed as it expected to be fully revegetated and in stable condition. However, the lower portion will be reconstructed to direct any drainage into the natural drainage channel. ~~All new~~

~~disturbance will be reseeded and have silt fences and or straw bales to treat runoff from the disturbance until the area is released.~~

The Scofield Waste Disposal site was expanded into areas previously undisturbed by mining in 2007. The Disposal site and the surrounding area were evaluated using the United States Department of Agriculture (USDA), Natural Resources Conservation Services' (NRCS) WEB Soil Survey utility (See the Clement Soil Survey located in Appendix Volume A-2 Volume 2). Based on the soil survey, approximately 18-20 inches of the A-B horizon will be salvaged from the proposed Waste Rock Expansion area. Assuming the entire 5.13 acres of the proposed expansion are eventually disturbed, a total of approximately 13,822 cu-yds of topsoil (A/B horizon) would be salvaged and used in reclamation. These volumes will not be stored all at one time however, as expansion will only take place on an as-needed basis. The topsoil volumes will be identified in the field based on abundant root material, color, and general depth. No topsoil pile currently exists at the site, so all suitable topsoil will be salvaged as the site is expanded. The expansion will be incremental, with contemporaneous reclamation activities being conducted simultaneously. It is estimated that no than more than approximately 3-acres will be without topsoil at one time.

A stockpile of topsoil will likely not exceed approximately 4,500 cu-yds because it will be used in contemporaneous reclamation. Topsoil storage will be contained in areas identified on Plate 3.2.8.2. As stated in other sections of this M&RP the topsoil will be stored, marked with appropriate signage for protection, and used during reclamation. The topsoil placement will be stable, protected from wind and water erosion through prompt establishment of vegetative cover. Sediment control measures such as silt fencing or straw bales will be implemented temporarily at the base of pile until vegetation is established. Should other storage areas be necessary, the site will be located in an UDOGM-approved

location. Should a topsoil deficit exist at final reclamation, the necessary topsoil will be imported to the site.

At reclamation, cover will consist of the 18-20 inches of topsoil will be preceded by approximately 2.5 feet of the best available, non-toxic and noncombustible material, in a manner that does not impede drainage from the underdrains. As has been done historically, additional subsoil cover will be purchased from a commercial source to make up the difference between what is on site and a total soil / subsoil depth of approximately 28-inches. This is consistent with both R645-301-553.252 and placement of cover over portions of the Waste Rock site that were previously disturbed.

Skyline tests waste rock material every 2,000 tons for acid and toxic-forming materials. No waste rock analyzed has been found to be either acid or toxic-forming in the history of the mine.

Selenium and Acid Base Potential (T.S ABP) are two parameters for acid and toxic-forming materials tracked by Utah Oil Gas and Mining. The Selenium range is well within acceptable limits (unacceptable- ≥ 0.15 ppm soil). Unacceptable levels for Acid Base Potential are less than or equal to 0 tons $CaCO_3$ /1000 tons overburden - which is an indication of the materials neutralizing potential. The Waste Rock has better neutralizing potential than the C horizon. The waste rock is also considered to be non-combustible material. Waste rock samples associated with North Lease are representative of rock samples surrounding the Lower O'Conner B Seam. Mining the North Lease area will require mining through a graben zone. This material is not intended to be included in the Waste Rock Site and will be stored underground.

Based on the 2006 Clement Soil Survey, the proposed expansion site has approximately 38 in. (97 cm) of soil above bedrock. A large portion of the soil cover is BC or C material (starting at 14 in. and 22 in., respectively). Suitable topsoil was found to have a thickness range of 14-22 inches.

Averages and ranges of selected parameters from waste rock analyses performed from 2005 through 2007(Total samples = 53) are

presented in Table 4.6-5. Coupled with these data are averages and ranges for the same selected parameters for the C horizon (Total samples = 2) from Clement 2006 Soil Survey, holes SP-1 and SP-2 (depth for

Table 4.6-5

	pH	EC (dS/m)	SAR	Field Capacity (%)	Wilting Point (%)	N-Nitrate (ppm)	TKN (%)	Boron (ppm)	Seleniu m (ppm)	T.S ABP (t/1000t)
Avg. for Waste Rock '05-'07	7.98	1.41	2.91	12.49	7.73	0.70	0.84	0.66	<0.02	45.3
Range for Waste Rock	7.3-8.7	0.27-4.42	0.96-8.45	8.1-29.4	6.5-12.2	<0.2-1.74	0.05-1.3	0.39-1.23	<0.02-0.08	11.6- 142
Avg. for C Horizons	6.8	0.205	0.215	16.5	12.5	1.22	0.01	0.24	<0.02	5.4
Range for C Horizons	6.7-6.9	0.19-0.22	0.20-0.23	16-17	12-13	0.14-2.3	0.01	0.21-0.27	<0.02	4.5-6.4

both profiles = 38 in.). The comparison demonstrates the waste rock is slightly different from the C horizon material but the difference should not have an adverse effect on revegetation efforts.

- **EC-** The higher salts (EC) in the waste rock (1.4 dS/m) compared to C horizon (0.21 dS/m) should have little effect, if any, on the vegetation specified in the Mt. Nebo June 2007 vegetation report. The waste rock is considered to be non-saline. Of the literature available, several of the more common species of the vegetation report are moderately tolerant to salinity (up to 6 dS/m). The majority of roots resides in the upper horizons and would not be affected by a

slightly higher salinity in the waste rock.

- **SAR-** Sodium Adsorption Ratio (SAR) is higher for waste rock (2.91) than the soil (0.22) but still not within a range that would have a significant effect on growth and water penetration. The limit under the Guidelines for Management of Topsoil and Overburden- Utah Oil Gas and Mining for SAR is > 15.

- **Soil Nitrogen-** Total Kjehldahl Nitrogen (TKN) is the combination of organically bound nitrogen and ammonia. TKN

is much greater in waste rock; however, the waste rock has the same value (0.08 ppm) as the more nutrient rich A horizon of SP-2, illustrating that with respect to TKN the waste rock is an improvement over the C horizon. The comparison of the inorganic nitrogen, N-Nitrate, does not accurately express that the range for both waste rock and C horizon overlap and are not significantly different. Nitrogen is one of the most vital nutrients in the soil but the C horizon is an insignificant source for plant nutrients. The A horizon of both SP-1 and SP-2 has 5 to 10 times greater concentrations of N-Nitrate than the C horizon or waste rock. The C horizon starts at 18 in. and 23 in. which is well above the current practice of 28 in. of cover material over waste rock. The current practice would provide a greater quantity of nutrients in the cover material because of the greater depth, and the same or greater concentration of nitrogen in the waste rock.

- **Boron-** Boron (B) is a micronutrient and the Mancos Shale in eastern Utah can contain boron at high levels. The high B levels in the soil can cause plant toxicities when >5 ppm B. Both the waste rock and soil are at low concentrations and are within the limitations set by the Guidelines for Management of Topsoil and Overburden.

- **Field Capacity and Wilting Point**- The waste rock has a slightly decreased average field capacity (waste rock = 12.5%, C horizon = 16.5%) and wilting point (waste rock = 7.73%, C horizon = 12.5%) than the C horizon. However, the difference between field capacity and wilting point is to some extent more important. The difference indicates the amount of water available for plant uptake and it is slightly greater in waste rock (waste rock = 4.76%, C horizon = 4.0%), making the waste rock a better source of water at depth.

- **Root Zone**- Waste rock is compacted throughout the placement process for the purpose of stabilizing the waste and increasing storage efficiency. This compaction does not form an aquitard or restrict the penetration of deep rooted vegetation. Lab analysis of the waste rock indicates that the texture of the unconsolidated waste is mostly sand with some sandy loam, clay loam, and loamy sand. Most vegetation in both reference areas mentioned in the Mt. Nebo report have

shallow root systems and have the majority of their root systems in the A and B horizon (approximately 18-23 in.), making the material at depth less relevant.

Consultation with former Skyline personnel, Keith Zobell, indicated the currently approved plan (12in. topsoil, 16in. subsoil) was developed by himself and DOGM personnel Henry Sauer. Zobell and Sauer dug soil pits at the site to develop the current plan. Their findings (and the current plan) are consistent with the findings of the Clement Soil Survey.

Areas of the Waste Rock Site previously revegetated are shown below in Figures 4.6.4-1 and 4.6.4-2. The pictures represent the success of the current plan and were taken approximately 5 years after seeding. Woody species have not been planted in case in the future Skyline decides to mine and wash the waste rock for the purpose of selling.

Figure 4.6.4-1

Figure 4.6.4-1

Before any top soil was removed, all woody vegetation was removed from the project area. Soils are basically a sandy loam mixture and have been classified by the S.C.S. as Uinta Family loam/tozc Family fine Sandy loam. Core sampling in the area shows that the soils vary in depth from 24 - 36+" in depth.

moderately-compacted final layer of fill should not, on the other hand, be an impermeable barrier which will redirect drainage.

The topsoil will be spread 12 inches thick in a manner to provide a roughened surface so that seed and mulch can remain during germination and initial growth of the seedlings. Topsoil depth was determined from soil pits in the reference area. Ripping the surface prior to planting seeds may be needed to provide the necessary roughened surface. Any rocks that are on the surface will be left in place to aid in the vegetation effort.

The potential for upward migration of salts is unknown for the top soil and cover material. The Permittee commits to analyze this material for electrical conductivity sodium content and sodium absorption ratio prior to revegetation efforts.

Fertilizer rates may change after the soil's analyses of the topsoil are completed. The Permittee plans to apply 100 pounds per acre of available nitrogen. Mulching will be done as outlined in Section 4.7.2. The Permittee's consultant has stated that phosphorous and potassium concentration based upon Skyline's data should be adequate in the aspen soils, and, therefore, since the topsoil will be an aspen type, no potassium or phosphorous is recommended. The Permittee plans to test the topsoil before it is seeded to determine the type and amount of fertilizer or neutralizer required. The soil's analyses will determine the following components: (a) micro-nutrients, (b) potassium, (c) calcium, (d) magnesium, (e) phosphorus, (f) nitrogen, (g) soil pH and salinity, and (h) soil texture.

The **majority of** drainage diversion ditch DD-17 will not be reclaimed as it expected to be fully revegetated and in stable condition. However, the lower portion will be reconstructed to direct any drainage into the natural drainage channel. ~~All new~~

~~disturbance will be reseeded and have silt fences and or straw bales to treat runoff from the disturbance until the area is released.~~

The Scofield Waste Disposal site was expanded into areas previously undisturbed by mining in 2007. The Disposal site and the surrounding area were evaluated using the United States Department of Agriculture (USDA), Natural Resources Conservation Services' (NRCS) WEB Soil Survey utility (See the Clement Soil Survey located in Appendix Volume A-2 Volume 2). Based on the soil survey, approximately 18-20 inches of the A-B horizon will be salvaged from the proposed Waste Rock Expansion area. Assuming the entire 5.13 acres of the proposed expansion are eventually disturbed, a total of approximately 13,822 cu-yds of topsoil (A/B horizon) would be salvaged and used in reclamation. These volumes will not be stored all at one time however, as expansion will only take place on an as-needed basis. The topsoil volumes will be identified in the field based on abundant root material, color, and general depth. No topsoil pile currently exists at the site, so all suitable topsoil will be salvaged as the site is expanded. The expansion will be incremental, with contemporaneous reclamation activities being conducted simultaneously. It is estimated that no than more than approximately 3-acres will be without topsoil at one time.

A stockpile of topsoil will likely not exceed approximately 4,500 cu-yds because it will be used in contemporaneous reclamation. Topsoil storage will be contained in areas identified on Plate 3.2.8.2. As stated in other sections of this M&RP the topsoil will be stored, marked with appropriate signage for protection, and used during reclamation. The topsoil placement will be stable, protected from wind and water erosion through prompt establishment of vegetative cover. Sediment control measures such as silt fencing or straw bales will be implemented temporarily at the base of pile until vegetation is established. Should other storage areas be necessary, the site will be located in an UDOGM-approved

location. Should a topsoil deficit exist at final reclamation, the necessary topsoil will be imported to the site.

At reclamation, cover will consist of the 18-20 inches of topsoil will be preceded by approximately 2.5 feet of the best available, non-toxic and noncombustible material, in a manner that does not impede drainage from the underdrains. As has been done historically, additional subsoil cover will be purchased from a commercial source to make up the difference between what is on site and a total soil / subsoil depth of approximately 28-inches. This is consistent with both R645-301-553.252 and placement of cover over portions of the Waste Rock site that were previously disturbed.

Skyline tests waste rock material every 2,000 tons for acid and toxic-forming materials. No waste rock analyzed has been found to be either acid or toxic-forming in the history of the mine.

Selenium and Acid Base Potential (T.S ABP) are two parameters for acid and toxic-forming materials tracked by Utah Oil Gas and Mining. The Selenium range is well within acceptable limits (unacceptable- $\geq$ 0.15 ppm soil). Unacceptable levels for Acid Base Potential are less than or equal to 0 tons $CaCO_3$ /1000 tons overburden - which is an indication of the materials neutralizing potential. The Waste Rock has better neutralizing potential than the C horizon. The waste rock is also considered to be non-combustible material. Waste rock samples associated with North Lease are representative of rock samples surrounding the Lower O'Conner B Seam. Mining the North Lease area will require mining through a graben zone. This material is not intended to be included in the Waste Rock Site and will be stored underground.

Based on the 2006 Clement Soil Survey, the proposed expansion site has approximately 38 in. (97 cm) of soil above bedrock. A large portion of the soil cover is BC or C material (starting at 14 in. and 22 in., respectively). Suitable topsoil was found to have a thickness range of 14-22 inches.

Averages and ranges of selected parameters from waste rock analyses performed from 2005 through 2007(Total samples = 53) are

presented in Table 4.6-5. Coupled with these data are averages and ranges for the same selected parameters for the C horizon (Total samples = 2) from Clement 2006 Soil Survey, holes SP-1 and SP-2 (depth for

Table 4.6-5

	pH	EC (dS/m)	SAR	Field Capacity (%)	Wilting Point (%)	N-Nitrate (ppm)	TKN (%)	Boron (ppm)	Seleniu m (ppm)	T.S ABP (t/1000t)
Avg. for Waste Rock '05-'07	7.98	1.41	2.91	12.49	7.73	0.70	0.84	0.66	<0.02	45.3
Range for Waste Rock	7.3-8.7	0.27-4.42	0.96-8.45	8.1-29.4	6.5-12.2	<0.2-1.74	0.05-1.3	0.39-1.23	<0.02-0.08	11.6- 142
Avg. for C Horizons	6.8	0.205	0.215	16.5	12.5	1.22	0.01	0.24	<0.02	5.4
Range for C Horizons	6.7-6.9	0.19-0.22	0.20-0.23	16-17	12-13	0.14-2.3	0.01	0.21-0.27	<0.02	4.5-6.4

both profiles = 38 in.). The comparison demonstrates the waste rock is slightly different from the C horizon material but the difference should not have an adverse effect on revegetation efforts.

- **EC-** The higher salts (EC) in the waste rock (1.4 dS/m) compared to C horizon (0.21 dS/m) should have little effect, if any, on the vegetation specified in the Mt. Nebo June 2007 vegetation report. The waste rock is considered to be non-saline. Of the literature available, several of the more common species of the vegetation report are moderately tolerant to salinity (up to 6 dS/m). The majority of roots resides in the upper horizons and would not be affected by a

slightly higher salinity in the waste rock.

- **SAR-** Sodium Adsorption Ratio (SAR) is higher for waste rock (2.91) than the soil (0.22) but still not within a range that would have a significant effect on growth and water penetration. The limit under the Guidelines for Management of Topsoil and Overburden- Utah Oil Gas and Mining for SAR is > 15.

- **Soil Nitrogen-** Total Kjehldahl Nitrogen (TKN) is the combination of organically bound nitrogen and ammonia. TKN

is much greater in waste rock; however, the waste rock has the same value (0.08 ppm) as the more nutrient rich A horizon of SP-2, illustrating that with respect to TKN the waste rock is an improvement over the C horizon. The comparison of the inorganic nitrogen, N-Nitrate, does not accurately express that the range for both waste rock and C horizon overlap and are not significantly different. Nitrogen is one of the most vital nutrients in the soil but the C horizon is an insignificant source for plant nutrients. The A horizon of both SP-1 and SP-2 has 5 to 10 times greater concentrations of N-Nitrate than the C horizon or waste rock. The C horizon starts at 18 in. and 23 in. which is well above the current practice of 28 in. of cover material over waste rock. The current practice would provide a greater quantity of nutrients in the cover material because of the greater depth, and the same or greater concentration of nitrogen in the waste rock.

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Areas of the Waste Rock Site previously revegetated are shown below in Figures 4.6.4-1 and 4.6.4-2. The pictures represent the success of the current plan and were taken approximately 5 years after seeding. Woody species have not been planted in case in the future Skyline decides to mine and wash the waste rock for the purpose of selling.

Figure 4.6.4-1

Figure 4.6.4-1

Before any top soil was removed, all woody vegetation was removed from the project area. Soils are basically a sandy loam mixture and have been classified by the S.C.S. as Uinta Family loam/tozc Family fine Sandy loam. Core sampling in the area shows that the soils vary in depth from 24 - 36+" in depth.

moderately-compacted final layer of fill should not, on the other hand, be an impermeable barrier which will redirect drainage.

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performed from 2005 through 2007(Total samples = 53) are presented in Table 4.6-5. Coupled with these data are averages and ranges for the same selected parameters for the C horizon (Total samples = 2) from Clement 2006 Soil Survey, holes SP-1 and SP-2 (depth for

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Figure 4.6.4-1

Figure 4.6.4-1

4.6.5 South Fork Breakout

Before any top soil was removed, all woody vegetation was removed from the project area. Soils are basically a sandy loam mixture and have been classified by the S.C.S. as Uinta Family loam/tozc Family fine Sandy loam. Core sampling in the area shows that the soils vary in depth from 24 - 36+" in depth.

The rock wastes are hauled by truck from the Skyline Mine site (portal area) and the unit train loadout facility to the waste disposal area.

The rock disposal site and access road are located upon land owned by the Estate of George Telonis. The legal right of access and use of the lands for the disposal of rock waste has been granted to the Permittee by the heirs of the Estate in a lease effective January 1, 1982 and expiring, unless renewed on December 31 2011. The lease agreement was modified in 2006 and 2007 to include additional lands totaling approximately 37.5 acres and extending the lease through December 31, 2020. The access road ~~disposal site~~ and ~~access road~~ part of the disposal site are part of a larger area previously disturbed by surface and underground mining and never reclaimed. The 2007 expansion area was previously disturbed with timbering activities.

Portions of the surface affected have been used for grazing after abandonment of the strip pit, although the pre-existing conditions (lack of reclamation and underground coal fires) have greatly reduced the area's potential for grazing or for any other use. As the pit has been filled in with waste rock and contemporaneously reclaimed, the Landuse of the site has increasingly been used for livestock grazing and incidental wildlife use.

Investigations as to potential cultural resources within the area to be affected and the adjacent areas have been conducted.

Water is present only for a brief period during and immediately following precipitation events and/or during spring runoff.

The climate of the study area is similar to that described for the lower elevations of the Skyline permit area.

The Permittee uses the rock disposal site to dispose of underground rock waste produced during mining operations which cannot be permanently stored underground due to either the lack of adequate storage room or the content of coal exceeding the limits specified in 30 CFR:75.400 through 30CFR:75.403.

The volume of material which must be disposed of at a surface disposal site will be a very small fraction of the total rock waste produced because of the large volume of potential underground

The rock wastes are hauled by truck from the Skyline Mine site (portal area) and the unit train loadout facility to the waste disposal area.

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Portions of the surface affected have been used for grazing after abandonment of the strip pit, although the pre-existing conditions (lack of reclamation and underground coal fires) have greatly reduced the area's potential for grazing or for any other use. As the pit has been filled in with waste rock and contemporaneously reclaimed, the Landuse of the site has increasingly been used for livestock grazing and incidental wildlife use.

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The volume of material which must be disposed of at a surface disposal site will be a very small fraction of the total rock waste produced because of the large volume of potential underground

Raptor surveys indicate that there may be raptors nesting in the vicinity of the Scofield Waste Rock Disposal site. A raptor survey was conducted in 1995 by Skyline Mines to determine if there were any active nests within a 1/2 mile radius of the disposal site. No nests were found by environmental personnel from Skyline Mine. Another raptor survey was conducted in 2007 for the waste rock expansion site and one raptor nest was identified within ¼ mile. According to the analysis, the nest has been in place for some time and the raptors have habituated to the activities of the waste rock site. This nest will be monitored in spring 2008 for its status. Results of the status will be reported in the Annual report.

Additional information on wildlife can be found in this document in Section 2.9 - TERRESTRIAL WILDLIFE and Section 2.10 - RAPTORS.

The South Fork Breakout is located in an Elk Calving area. Construction of the face up area should be done after calving season. The tributary to South Fork is a contributing stream for aquatic insect drift to the fishery in Eccles Creek. Construction operations were done in a manner to minimize disturbances and influences on the stream.

James Canyon Area

Fish and Wildlife Enhancement Measures:

- Woody species seedlings will be planted.
- Seeds and seedlings planted during reclamation will include diverse palatable species.
- Rocks and/or logs will be placed on reclaimed road and drill pad area which can be used by small wildlife species as shelter.
- Erosion associated with rills and gullies will be monitored and repaired as described in Section 4.4.4.

The James Canyon Project construction was performed to comply with the commitments made in this "Fish and Wildlife Plan".

Revised ~~10-2002~~ 12-03-2007

Waste Rock Site

Fish and Wildlife Enhancement Measures:

- Species to be planted and the rates per acre will follow the specifications in Table 4.7-6A.
- Seeds and seedlings planted during reclamation will include diverse palatable species.
- See Section 2.9 for additional discussion of Wildlife at the Waste Rock site.

Raptor surveys indicate that there may be raptors nesting in the vicinity of the Scofield Waste Rock Disposal site. A raptor survey was conducted in 1995 by Skyline Mines to determine if there were any active nests within a 1/2 mile radius of the disposal site. No nests were found by environmental personnel from Skyline Mine. Another raptor survey was conducted in 2007 for the waste rock expansion site and one raptor nest was identified within ¼ mile. According to the analysis, the nest has been in place for some time and the raptors have habituated to the activities of the waste rock site. This nest will be monitored in spring 2008 for its status. Results of the status will be reported in the Annual report.

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- Rocks and/or logs will be placed on reclaimed road and drill pad area which can be used by small wildlife species as shelter.
- Erosion associated with rills and gullies will be monitored and repaired as described in Section 4.4.4.

The James Canyon Project construction was performed to comply with the commitments made in this "Fish and Wildlife Plan".

Waste Rock Site

Fish and Wildlife Enhancement Measures:

- Species to be planted and the rates per acre will follow the specifications in Table 4.7-6A.
- Seeds and seedlings planted during reclamation will include diverse palatable species.
- See Section 2.9 for additional discussion of Wildlife at the Waste Rock site.

CLEMENT DRILLING
& GEOPHYSICAL, INC.

4114 West 9950 North
Cedar Hills, Utah 84062
Phone 801-372-3685
Fax 801-785-5748

December 3, 2007

Mr. Gregg Galecki,
Skyline Mines
HC 35 Box 380
Helper, Utah 84526

Dear Mr. Galecki,

This letter report summarizes the methodology and results of the soil survey conducted by Clement Drilling & Geophysical, Inc. at the Waste Rock site, near Scofield, Utah.

NRCS Soil Data

The Waste Rock site and the surrounding area were evaluated using the United States Department of Agriculture (USDA), Natural Resources Conservation Services' (NRCS) WEB Soil Survey (WSS) utility. Figure 1 presents the map generated by the utility with annotation added showing the approximate location of the soil test pits.

The current NRCS data for the study area has been revised from the data presented in a previous soils report titled *Report of Vegetation and Soils, Proposed Waste Rock Disposal Site, Skyline Mine*, dated November 1981, prepared by Endangered Plant Studies, Inc, Orem, Utah. In the 1981 report the soils on the north-facing mountain slopes were correlated to the Croydon Series. The current NRCS soils data correlates the north-facing mountain slopes to the Pathead Series as presented on Figure1. The Pathead Series was established in 1982 in Carbon County, Utah. The soils correlated to the Trag Series in the 1981 report are still correlated as such in the current data. The official series descriptions for the Pathead and Trag soil series that occur in the study area are presented in Appendix A.

Site Reconnaissance

During the initial site visit to the proposed Waste Rock site the perimeter of the site was hiked and the staked and/or flagged boundaries of the site located. Several traverses of the site were made to determine the number of test pits necessary to represent the site. The soils exposed in several cuts in the hillside on the eastern portion of the site were inspected. The cuts appear to be related to previous logging activities at the site. A cut exposing soils near the southwest edge of the existing waste rock facility was also observed.

Soil Test Pits

Two soil test pits were excavated at the study area on December 8, 2006 at locations that appeared to be representative of each of the two soil series in the study area based on the site

reconnaissance. The locations of the test pits are approximately located on Figure 1 and coordinates collected using a GPS receiver are presented in the test pit logs. The test pits were excavated by hand to a depth of approximately 1 meter. A propane burner was used to thaw the uppermost, frozen soil to facilitate the excavation of the pits. The pits were logged and photographed. The logs are presented in Appendix B and the photographs in Appendix C. The soils observed in the test pits appear to generally correlate to the NRCS soil series map.

SP-1

The soil series represented by SP-1 is listed on the soils map as Curecanti family-Pathead complex. A soil series description of the Curecanti Series is included in Appendix A. The pH of the Curecanti family is listed as neutral and the clay content lower than that of the Pathead Series and corresponds to the analytical results of soil samples collected from SP-1.

SP-2

The 1982 Soil Conservation Service map for the Carbon County describes the area represented by SP-2 as Trag series with light brown, brown and dark brown colors derived from sandstones and shales. The soils adjacent to the Trag Series on the soils map are Trag-Beje-Senchert complex and Trag-Croydon complex. The descriptions for the Senchert and Croydon Series are included as Attachments B and C, respectively. Both series are described as derived from sandstone and shale. The NRCS soils map shows approximately 2.8% of the soil study area (SSA) that includes portions of Carbon and Emery counties as comprised of Trag Series (http://www.cei.psu.edu/soiltool/semtool.html?seriesname=TRAG). Neither granite nor schist occurs at or near the surface in the SSA.

The Figure 1 has been revised to show the area around SP-2 as the Senchert Series. The Senchert series is derived from dominantly from sandstone and shale. A description of the Senchert Series is included in Appendix A.

Please feel free to contact me if you have any questions regarding the results of the soil survey. I appreciate the opportunity to work with you on this project.

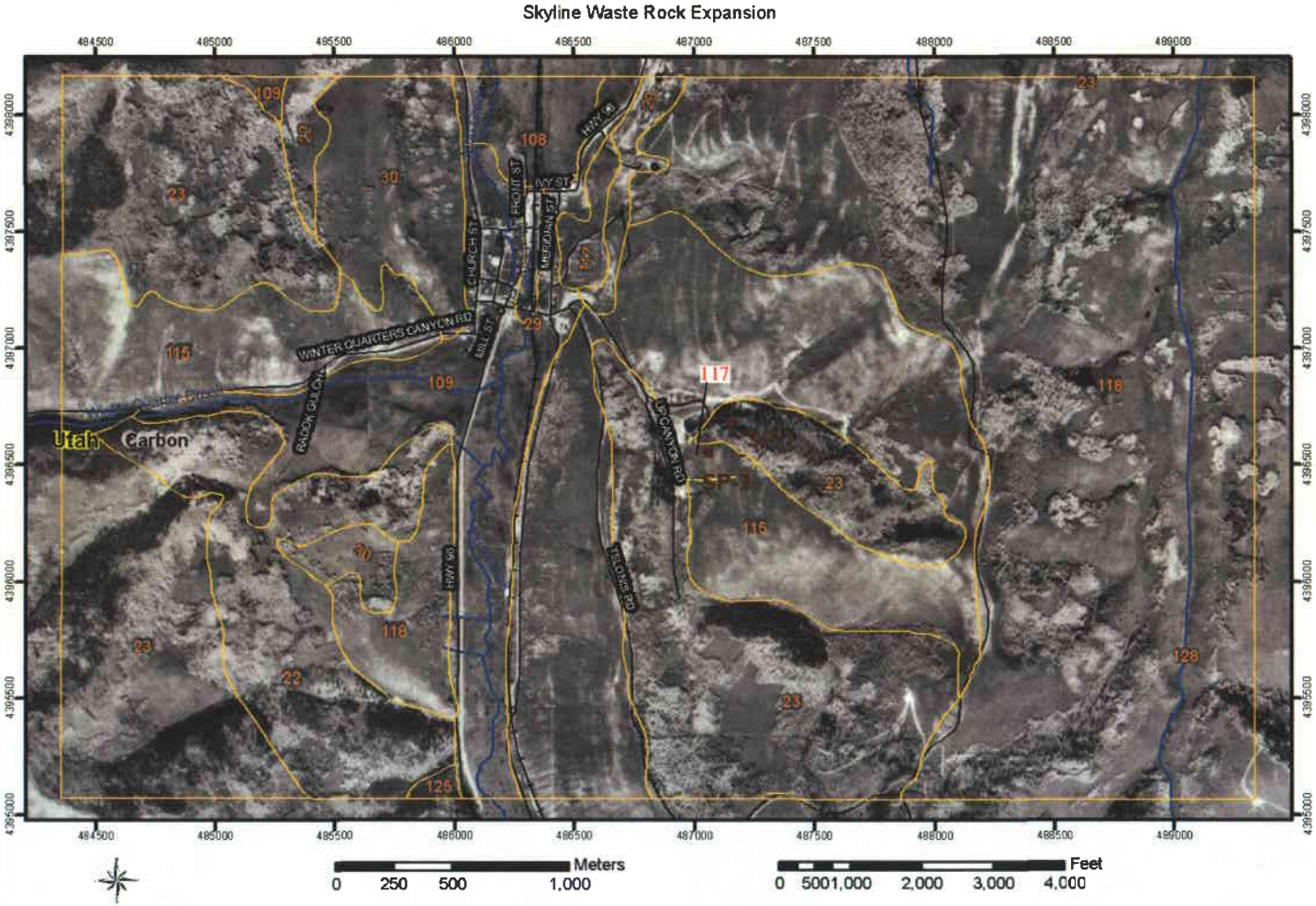
Sincerely,
Clement Drilling & Geophysical, Inc.

Craig M. Clement

Craig M. Clement, P.G.

Figures

SOIL SURVEY OF CARBON AREA, UTAH, PARTS OF CARBON AND EMERY COUNTIES



USDA Natural Resources Conservation Service

Web Soil Survey 1.1
National Cooperative Soil Survey

Figure 1
Soil Map and Location of Test Pits

Skyline Waste Rock Expansion

MAP LEGEND

- Soil Map Units
- Cities
- Detailed Counties
- Detailed States
- Interstate Highways
- Roads
- Rails
- Water
- Hydrography
- Oceans
- Escarpment, bedrock
- Escarpment, non-bedrock
- Gulley
- Levee
- Slope
- Blowout
- Borrow Pit
- Clay Spot
- Depression, closed
- Eroded Spot
- Gravel Pit
- Gravelly Spot
- Gulley
- Lava Flow
- Landfill
- Marsh or Swamp
- Miscellaneous Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Slide or Slip
- Sinkhole
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Perennial Water
- Wet Spot

SP-1 Location of Test Pits

MAP INFORMATION

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov

Coordinate System: UTM Zone 12

Soil Survey Area: Carbon Area, Utah, Parts of Carbon and Emery Counties
Spatial Version of Data: 1
Soil Map Compilation Scale: 1:24000

Map comprised of aerial images photographed on these dates:
9/30/1997; 10/5/1997

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

USDA Natural Resources Conservation Service

Web Soil Survey 1.1
National Cooperative Soil Survey

1/25/2007
Page 2 of 3

Figure 2
Soil Map Legend

Map Unit Legend Summary

Carbon Area, Utah, Parts of Carbon and Emery Counties

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
22	Croydon loam, 30 to 50 percent slopes	284.0	7.3
23	Curecanti family-Pathead complex	906.2	23.2
29	Dumps,mine	41.3	1.1
30	Falcon-Rock outcrop complex	165.7	4.2
108	Silas loam	56.6	1.4
109	Silas-Brycan loams	322.0	8.2
115	Trag stony loam, 30 to 60 percent slopes	798.5	20.4
117	Trag-Beje-Senchert complex	22.7	0.6
118	Trag-Croydon complex	1,308.5	33.5
125	Uinta-Toze families complex	5.3	0.1
128	Water	0.4	0.0

Figure 3
Soil Map Map Unit Legend

Appendix A

Soil Series Descriptions

CURECANTI SERIES DESCRIPTION

LOCATION CURECANTI CO+MT WY
Established Series
Rev. AEA/GB
02/1999
CURECANTI SERIES

The Curecanti series consists of deep, well drained soils that formed in mixed colluvium, alluvium, and glacial outwash. These soils are on old alluvial fans, toe slopes, fan terraces, or high terraces and have slopes of 1 to 70 percent. The average annual precipitation at the type location is about 18 inches and the mean annual temperature is 46 degrees F.

TAXONOMIC CLASS: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

TYPICAL PEDON: Curecanti very stony sandy loam - on a 36 percent concave south- facing toe slope. (Colors are for dry soil unless otherwise noted.)

A--0 to 6 inches; very dark grayish brown (10YR 3/2) very stony sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; slightly hard, very friable, slightly sticky; 50 percent rock fragments; neutral; clear smooth boundary. (4 to 9 inches thick)

BA--6 to 11 inches; dark grayish brown (10YR 4/2) very cobbly sandy loam, very dark grayish brown (10YR 3/2) moist; weak coarse prismatic structure parting to weak coarse subangular blocky; slightly hard, very friable, slightly sticky; few thin clay films on faces of peds; 35 to 50 percent rock fragments dominantly 1/8 to 10 inches in size; neutral; clear smooth boundary. (3 to 7 inches thick)

Bt1--11 to 23 inches; brown to dark brown (7.5YR 4/4) very cobbly sandy clay loam, dark brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky; common thin clay films on faces of peds; 35 to 60 percent rock fragments dominantly 1/8 to 10 inches in size; neutral; gradual smooth boundary. (4 to 20 inches thick)

Bt2--23 to 33 inches; brown to dark brown (7.5YR 4/4) very cobbly sandy clay loam, dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, sticky; common thin clay films on face of peds; 35 to 60 percent rock fragments dominantly 1/8 to 10 inches in size; neutral; gradual smooth boundary. (8 to 14 inches thick)

BC--33 to 60 inches; brown (7.5YR 5/4) very cobbly sandy clay loam, dark brown (7.5YR 4/4) moist; weak medium subangular blocky structure; hard, friable, sticky; 35 to 60 percent rock fragments dominantly 1/8 to 10 inches in size; neutral.

TYPE LOCATION: Jefferson County, Colorado; approximately 2 miles east of the community of Kittredge; 350 feet west and 400 feet north of the southeast corner of Sec. 30, T. 4 S., R. 70 W.

RANGE IN CHARACTERISTICS: Base saturation ranges from 60 to 100 percent, but usually is more than 90 percent. Depth to uniformly calcareous material ranges from 40 to more than 60 inches. Depth to the base of the argillic horizon ranges from 15 to 50 inches. Rock fragments range from 35 to 75 percent by volume in a major part of the solum and C horizon above a depth of 50 inches and dominantly ranges from 1/8 to 24 inches in diameter. The solum and C horizon ranges from medium acid to mildly alkaline. The mean annual soil temperature ranges from 42 to 47 degrees F, and the mean summer soil temperature ranges from 60 to 64 degrees F. The soil is usually moist when the soil temperature is greater than 41 degrees F.

The A horizon has hue of 2.5Y through 7.5YR, value of 3 through 5 dry, 2 or 3 moist, and chroma of 1 through 3.

The Bt horizon has hue of 2.5Y through 5YR, value of 4 through 7 dry, 2 through 6 moist, and chroma of 1 through 6. It is usually very cobbly, extremely stony, or extremely cobbly, sandy clay loam or clay loam, and the fine earth fraction has 18 to 35 percent clay, 5 to 55 percent silt, and 15 to 75 percent sand.

The BC or C horizons have hue of 2.5Y through 5YR, 5 or 6 dry, 4 or 5 moist and chroma of 2 through 4. Textures of the fine earth are clay loam or sandy clay loam.

Some pedons have a 2BC or 2C horizon which has hue of 2.5Y through 5YR. It is cobbly or very cobbly sandy loam, extremely cobbly or stony loam or sandy loam, very gravelly sandy loam, or very gravelly or extremely gravelly or cobbly loamy sand, sandy loam, or sand, and has less than 18 percent clay in the fine earth fraction.

COMPETING SERIES: These are the Beaverton, Harol, (T)Harpole, Hilger, (T) Holter, (T)Ironco, Shawmut, Shirttail, and Widtsoe series. The Beaverton, Hilgar, Shawmut, and Widtsoe soils have free carbonates within depths of 24 inches. Harol and (T)Harpole soils have lithologic discontinuities at depths of 20 to 40 inches and are moist in some part of the moisture control section only 50 to 60 percent of the time the soil temperature at 20 inches is greater than 41 degrees F. The Holter soils have a consistent K horizon at depths of 25 to 50 inches. (T)Ironco soils are greater than 50 inches thick to the base of the argillic layer. Shirttail soils have thinner Bt horizons that are only 8 to 12 inches thick.

GEOGRAPHIC SETTING: These soils are on alluvial fans, fan terraces, and colluvial toe slopes of high terraces. Slope gradients range from 1 to 70 percent. The soils formed in old alluvium and glacial outwash derived from mixed sources. The average annual precipitation is 15 to 18 inches with peak periods of precipitation during the spring and summer. The mean annual temperature ranges from 40 to 47 degrees F, and the mean summer temperature is 60 degrees F.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Cathedral, Lininger, and Ratake soils. Cathedral and Ratake soils have bedrock above 20 inches depth. Lininger soils have less than 35 percent rock fragments, and have bedrock between a depth of 20 to 40 inches.

DRAINAGE AND PERMEABILITY: Well drained; slow to rapid runoff; moderate to moderately slow permeability.

USE AND VEGETATION: These soils are used as native pastureland and for recreational purposes. Native vegetation is mainly winterfat, phlox, squirreltail, and blue grama.

DISTRIBUTION AND EXTENT: Mountain valleys of central Colorado. The series is of moderate extent.

MLRA OFFICE RESPONSIBLE: Lakewood, Colorado

SERIES ESTABLISHED: Saguache County (Gunnison Area), Colorado, 1974.

National Cooperative Soil Survey
U.S.A.

SENECHERT SERIES DESCRIPTION

LOCATION SENCHERT UT
Established Series
REV: EJ/JMD/RLM
02/1999
SENCHERT SERIES

The Senchert series consists of moderately deep, well drained, moderately permeable soils that formed in alluvium and colluvium derived dominantly from sandstone and shale. These soils are on mountainsides, ridges and plateaus. Slopes range from 1 to 50 percent. Mean annual temperature is 37 degrees F. and average annual precipitation is 22 inches.

TAXONOMIC CLASS: Fine-loamy, mixed, superactive Pachic Argicryolls

0--3 inches to 0; somewhat decomposed leaves and twigs.

A--0 to 4 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; soft, very friable; few fine and very fine roots; neutral (pH 7.2); abrupt smooth boundary. (2 to 11 inches thick)

Bt1--4 to 9 inches; brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few fine medium and coarse roots; few very fine and fine pores; few thin clay films on faces of peds and in pores; neutral (pH 7.2); clear smooth boundary. (4 to 16 inches thick)

Bt2--9 to 16 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; very hard, firm, slightly sticky and slightly plastic; few very fine, fine and medium roots; few very fine and fine pores; common, moderately thick clay films on faces of peds and in pores; mildly alkaline (pH 7.6); clear smooth boundary. (0 to 16 inches thick)

Bt3--16 to 35 inches; brown (10YR 5/3) clay loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; hard, firm, sticky and plastic; few very fine, fine and medium roots; few very fine and fine pores; few thin clay films on faces of peds and in pores; mildly alkaline (pH 7.6); abrupt smooth boundary. (0 to 19 inches thick)

R--35 inches; calcareous sandstone.

TYPE LOCATION: Carbon County, Utah, about 10 miles north and 2 miles west of East Carbon City; about 2,700 feet south and 1,000 feet east of the NW corner of sec. 4., T. 16 S., R. 16 E.
RANGE IN CHATACTERISTICS: The mollic epipedon and the solum are 16 to 35 inches thick. Depth to bedrock is 20 to 40 inches. Mean annual soil temperature ranges from 38 to 40 degrees F. The mean summer soil temperature is 44 to 47 degrees F.

The A horizon has value of 3 through 5 dry, 2 or 3 moist and chroma of 2 or 3. Clay content is 10 to 24 percent.

The Bt horizon has value of 4 or 5 dry and chroma of 2 or 3. Texture is loam or clay loam. Rock fragment content is 0 to 15 percent, which is mostly pebbles. Clay content is 18 to 35 percent. Reaction is neutral to mildly alkaline.

The C horizon where present is clay loam or silty clay.

COMPETING SERIES: These are Bachus, Benteen, Cambern, Clayburn, Decross, Demast, Dranyon, Echemoor, Gordo, Harmehl, Stubbs, Thulepah, and Winu series. Benteen soils have 20 to 40 percent limestone fragments in the lower profile. Cambern soils contain ash and tuff in the profile. Clayburn, Decross, Demast, Dranyon, Gordo, Thulepah soils lack bedrock within depths of 40 inches. Echemoor and Stubbs soils have paralithic contacts at depths of 20 to 40 inches. Harmehl and Winu soils have 15 to 35 percent rock fragments in the argillic horizon. Bachus soils are medium acid or slightly acid.

GEOGRAPHIC SETTING: Senchert soils are on mountainsides, ridges, plateaus and benches. Slopes are 1 to 50 percent. The soils formed in alluvium and colluvium from sandstone, shale, and siltstone. The elevation is 7,200 to 10,100 feet. The mean annual temperature is 36 to 38 degrees F. The average annual precipitation is 20 to 30 inches.

GEOGRAPHICALLY ASSOCIATED SOILS: These are Beenon, Toze and Trag soils. Beenon and Trag soils are associated with Senchert at the lower elevation and have mean annual temperature of 38 to 42 degrees F. Beenon soils are shallow and Trag soils are deep. Troze soils lack argillic horizon and have calcic horizon.

DRAINAGE AND PERMEABILITY: Well drained; runoff is slow or medium; moderate permeability.

USE AND VEGETATION: Rangeland and wildlife habitat. Some areas have been used for woodland. Present vegetation is Douglas-fir, Englemann spruce, white fir, quaking aspen, mountain big sagebrush, snowberry, and Thurber fescue.

DISTRIBUTION AND EXTENT: The Senchert soils are moderately extensive. They are in the high mountain areas of Carbon County, Utah.

MLRA OFFICE RESPONSIBLE: Lakewood, Colorado

SERIES ESTABLISHED: Carbon County, Utah, 1982 The name of this series is coined.

REMARKS:

National Cooperative Soil Survey
U.S.A.

Appendix B

Soil Test Pit Logs

Site **SP-1** Skyline Mine Waste Rock Expansion

Name	Craig Clement		**Drainage**	WD	Well Drained
Date	12/8/2006		**Flooding**	none	
Weather	Clear, 5°F		**Ponding**	none	
Location	N 39°43'11.935", W 111°8'58.731"		**Depth to Water Table**	245 ft	estimated
Datum	NAD 83		**Earth Cover**	TOC	Mixed aspen and conifer
Topographic Map	Scofield, UT; 1:24,000; 1997		**Parent Material**	COL	colluvium
Slope Aspect	NNW		**Bedrock, Kind**	SST, SIS, SHA	Interbedded sandstone, siltstone and shale
Slope Gradient	80%		**Bedrock, Fracture**	-	
Slope Complexity	Complex		**Bedrock, Hardness**	MO	Moderate
Slope Shape	LV	Linear, Convex	**Bedrock, Depth**	200 cm	estimated based on outcrops observed in nearby disturbed areas
Hillslope Profile Postion	BS	backslope	**Erosion, Kind**	G	gully
Geomorphic Component	SS	side slope	**Erosion, Degree**	1	>0 up to 25%
Microrelief	MH	microhigh	**Runoff**	VH	Very High
Drainage Pattern	dendritic		**Surface Fragments**	Stony	

Diagnostic Horizons	**Observation Method**	**Depth (cm)**		**Boundary**		**Color (moist)**		**Texture**	**Structure**	**Reaction (HCl)**	**% Rock Fragments & Size**	**% Roots, Size & Location**
		From	To	Distinctness	Topography							
A	SP	0	23	Gradual	Wavy	Brownish black	5YR 2/1	L to SIL w/ trace FS	1,VF,GR	VE	10%,GR to CB	15%, VF to C, T
B	SP	23	36	Gradual	Wavy	Moderate yellowish brown	10YR 5/4	SI, trace FS	1,VF,GR	VE	5%,GR to CB	5%,VF to M, T
BC	SP	36	46	Gradual	Wavy	Pale yellowish orange	10YR 8/6	FS	1,VF,GR	VE	10%,GR to CB	<2%,VF
C	SP	46	97	Gradual	Wavy	Grayish orange	10YR 7/4	SIC	1,VF,GR	VE	10%,GR to B	<2%,VF
Penetration with pick became very difficult												

Depth (cm)		**Description**
From	To	
0	23	Loam to silty loam with trace fine sand
23	36	Silt with trace fine sand, moderate amount of root material
36	46	Fine sand with minor amount of root material, moist
46	97	Clayey silt with sandstone clasts (up to ~ 30 cm in length, minor amount of root material, moist, some Fe staining along root traces.

Site **SP-2** Skyline Mine Waste Rock Expansion

Name	Craig Clement		**Drainage**	WD	Well Drained
Date	12/8/2006		**Flooding**	none	
Weather	Clear, 5°F		**Ponding**	none	
Location	N 39°43'9.294", W 111°9'5.541"		**Depth to Water Table**	245 ft	estimated
Datum	NAD 83		**Earth Cover**	SOS	Other shrub cover, primarily sagebrush
Topographic Map	Scofield, UT; 1:24,000; 1997		**Parent Material**	COL	colluvium
Slope Aspect	W		**Bedrock, Kind**	SST, SIS, SHA	Interbedded sandstone, siltstone and shale
Slope Gradient	80%		**Bedrock, Fracture**	-	
Slope Complexity	Complex		**Bedrock, Hardness**	MO	Moderate
Slope Shape	LV	Linear, Convex	**Bedrock, Depth**	200 cm	estimated based on cut at existing waste rock site
Hillslope Profile Postion	BS	backslope	**Erosion, Kind**	G	gully
Geomorphic Component	SS	side slope	**Erosion, Degree**	1	>0 up to 25%
Microrelief	ML	microlow	**Runoff**	VH	Very High
Drainage Pattern	dendritic		**Surface Fragments**	Stony	

Diagnostic Horizons	**Observation Method**	**Depth (cm)**		**Boundary**		**Color (moist)**		**Texture**	**Structure**	**Reaction (HCl)**	**% Rock Fragments & Size**	**% Roots, Size & Location**
		From	To	Distinctness	Topography							
A	SP	0	25	Gradual	Wavy	Moderate yellowish brown	10YR 5/4	SIC	1,VF,GR	VE	20%,GR to CB	5%, VF to M, T
B	SP	25	58	Gradual	Wavy	Dark yellowish orange	10YR 6/6	SIC w/ trace FS	1,VF,GR	VE	20%,GR to CB	2%,VF to M, T
BC	SP	58	97	Gradual	Wavy	Dark yellowish orange	10YR 6/6	SIC	1,VF,GR	VE	20%,GR to CB	<2%,VF

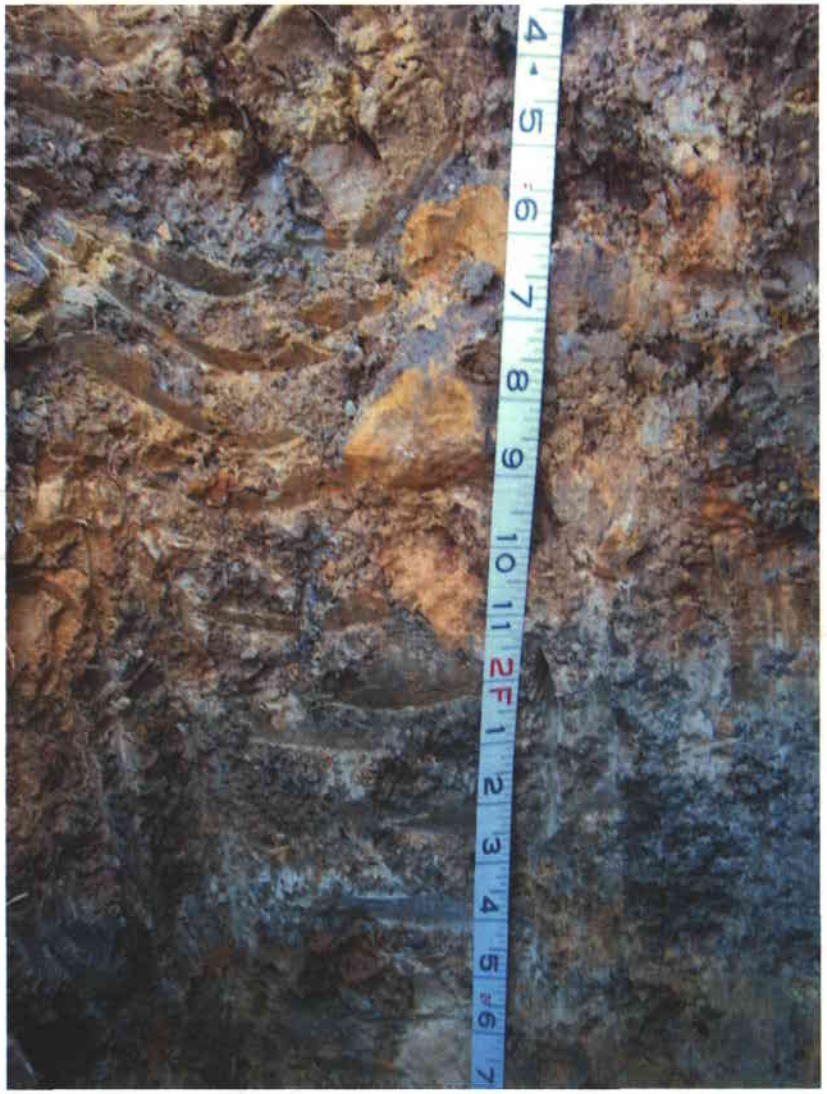
Penetration with pick became very difficult

Depth (cm)		**Description**
From	To	
0	25	Clayey silt with root material, sandstone clasts (up to ~ 20 cm in length), moist to frozen
25	58	Silt with clay and trace fine sand, some root material, Fe staining primarily around sandstone clasts (up to ~ 20 cm in length), moist
58	97	Clayey silt with little to no root material, abundant sandstone clasts (up to 15 cm in length) clasts are gray to rust colored, moist

Appendix C
Soil Test Pit Photographs

SP-2 Photograph 1
Looking E at Test Pit SP-2

SP-2 Photograph 2
Approximately 0″ to 18″



SP-2 Photograph 3
Approximately 16″ to 30″

SP-2 Photograph 4
Approximately 22” to 38”

SP-1 Photograph 5
Approximately 24″ to 38″

SP-1 Photograph 6
Closeup of Fe staining and Sandstone Clast

Canyon Fuel Company, LLC
A Subsidiary of Arch Western Bituminous Group, LLC.

Skyline Mine
Wess K. Sorensen
General Manager
HC35, Box 380
Helper, Utah 84526
(435) 448-2619
Fax (435) 448-2632

March 6, 2007

Telonis Family
c/o Nick Sampinos
190 North Carbon Avenue
Price, Utah 84501

Re: Lease and Easement Agreement dated effective August 1, 2006

Dear Mr. Sampinos,

Skyline Mine appreciates your time last Thursday, March 1, in meeting with Doug Downing, Carl Winters and Bill Prince representing Canyon Fuel Company in connection with the revised and restated Lease and Easement Agreement (Lease) between the Skyline Mine (Mine), through Ark Land Company, and the Telonis family adopted last year covering lands owned by the Telonis family for use by the Mine as a waste rock disposal site. This letter provides an outline of the issues discussed at that meeting.

The Mine has prepared, and submits with this letter a copy of, a revised reclamation drawing (Plat) depicting the final configuration of the Lease property, including the benched area, the access road and the stock watering pond. The final configuration satisfies the terms of the Lease and applicable regulatory requirements, but raises a couple of land use issues that Doug, Carl and Bill presented to you for review with the Telonis family.

Livestock Watering Pond. The Plat outlines two alternatives for a future pond on the property. The Telonis family has requested that the Mine preserve the sedimentation pond for future use as a livestock watering pond. The Mine previously contemplated that waste rock would be used to fill-in the current sedimentation pond (outlined in red on the Plat) and that a new sedimentation pond (outlined in blue on the Plat) would be constructed to the north of the existing sedimentation pond. The Mine had intended to preserve the new pond post reclamation for livestock use. You can get a sense of the relative locations and sizes of the two ponds from the Plat. In assessing the final configuration for permitting, the Mine has concluded that the new pond would be disadvantageous to livestock watering use because of its design resulting in steep sides and a deeper, narrower water source. We believe that rather than unnecessarily disturbing more of the natural state of the property, the old pond (which benefits from a shallow depth and gradual-sloping sides) should be retained and preserved post reclamation for livestock use.

Additional Lease Property. In reviewing the reclamation plan for the Lease property and preparing the attached Plat, we have concluded that a small additional strip of land located directly to the west of the current leased lands (just west of the stream) will provide a more reasonable working space in which to access and complete the reclamation contouring and final design and construction of the road and pond for long term use. The Plat outlines both the current Lease boundary (solid green line) and the proposed, revised Lease boundary (dashed orange line) incorporating approximately five and one-half additional acres. The Mine has no intention of conducting any surface disturbance in or across the stream. However, the additional land would help avoid impacts off the current leased property. Accordingly, the Mine requests consideration to

increase the leased lands to include the additional strip as outlined on the Plat. Upon approval of extending the leased area to the west, we can prepare a simple amendment with a revised description of the property covered by the lease for your review and execution by the parties

Configuration of Reclaimed Property As outlined on the attached Plat, the post reclamation configuration includes a benched area amenable to grazing uses, corrals, cabin sites or other development. As the parties have discussed many times, the property thus reclaimed will be perfectly suited to use for recreational and livestock purposes upon termination of the Lease. The drawing also shows the access road which will remain as depicted. In the event the Mine does not generate a sufficient volume of waste rock, the ultimate elevation of the benched area will obviously be lower than that shown on the Plat.

As a final matter, this meeting provided the Mine with the opportunity to outline the status of the improvements required to be completed by the Mine and as described in Exhibit C to the Lease. The Mine intends to complete the required survey of the property in 2007. The Mine also plans to complete the fencing work in 2007 as weather conditions permit and subject, as noted in the lease, to delays arising from ownership conflicts, if any.

As we discussed, the Mine is anxious to move forward with the revised surface plan for the waste rock site. We hope to complete a review process with the State Division of Oil, Gas and Mining in the next couple of weeks. We appreciate your commitment to getting this information to your client promptly. Please let us know if additional information would be helpful in addressing these issues. We value our relationship with the Telonis family and welcome comments and questions on any matter covered by this letter.

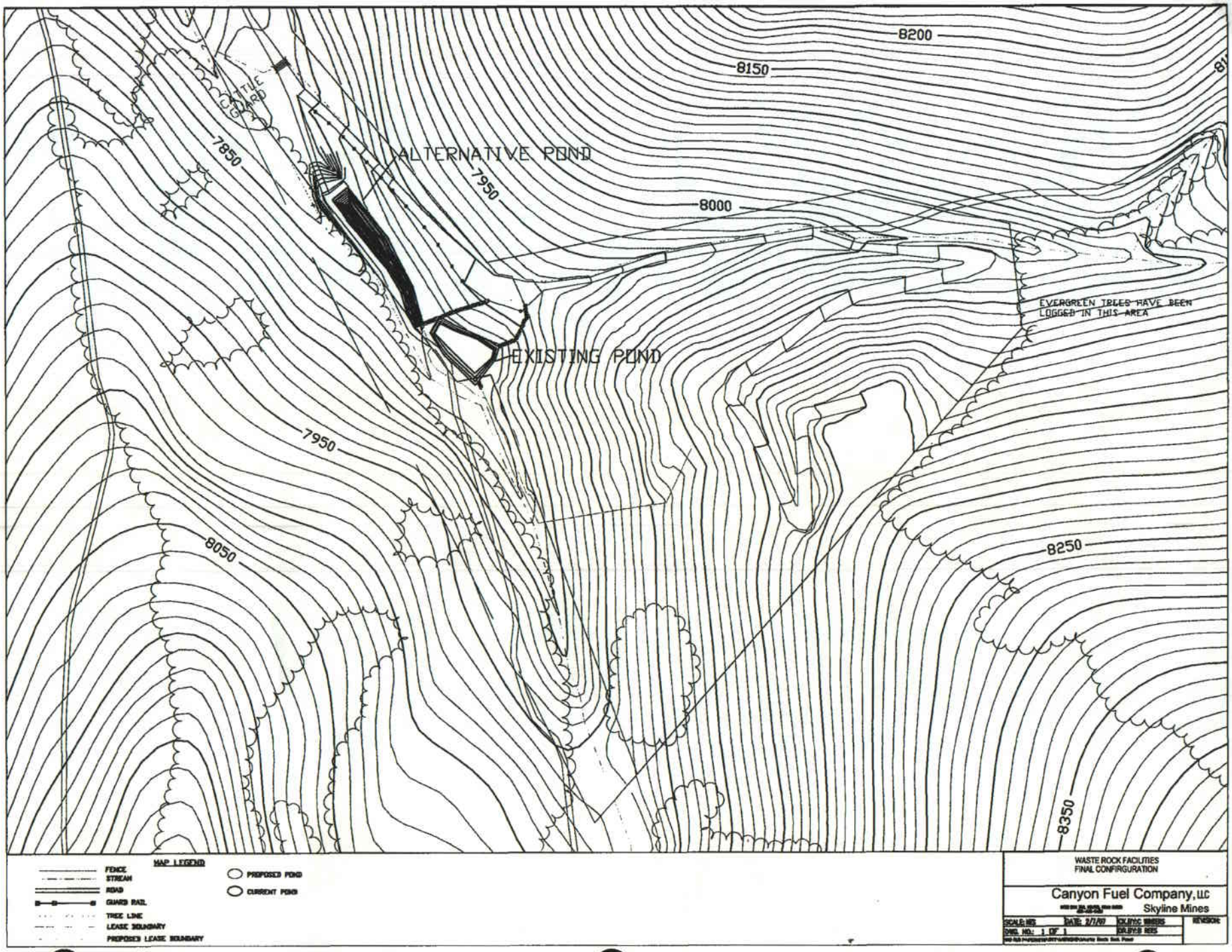
Very truly yours,

Wesley K. Sorensen

Wesley K. Sorensen
General Manager
Skyline Mine

Enc.

cc. Doug Downing
B. J. Sturgill
William B. Prince
Carl Winters


8200
8150
8000
7950
7850
8050
8250
8350
ALTERNATIVE POND
EXISTING POND
EVERGREEN TREES HAVE BEEN LOGGED IN THIS AREA
MAP LEGEND
FENCE
STREAM
ROAD
GUARD RAIL
TREE LINE
LEASE BOUNDARY
PROPOSED LEASE BOUNDARY
PROPOSED POND
CURRENT POND
WASTE ROCK FACILITIES
FINAL CONFIRGURATION
Canyon Fuel Company, LLC
Skyline Mines
SCALE: NTS
DATE: 2/7/07
DWG. NO.: 1 OF 1
REVISION: