Smoky Canyon Mine
Panels F & G Final EIS

TABLE OF CONTENTS

4.0 ENVIRONMENTAL CONSEQUENCES 4-1
4.1 Geology, Minerals, and Topography 4-2
4.1.1 Direct and Indirect Impacts 4-2
4.1.2 Mitigation Measures 4-14
4.1.3 Unavoidable (Residual) Adverse Impacts 4-14
4.1.4 Relationship of Short-term Uses and Long-term Productivity 4-14
4.1.5 Irreversible and Irretrievable Commitment of Resources 4-14
4.2 Air Resources and Noise 4-14
4.2.1 Air Resources – Direct and Indirect Impacts 4-15
4.2.2 Noise – Direct and Indirect Impacts 4-23
4.2.3 Mitigation Measures 4-29
4.2.4 Unavoidable (Residual) Adverse Impacts 4-30
4.2.5 Relationship of Short-Term Uses and Long-Term Productivity 4-30
4.2.6 Irreversible and Irretrievable Commitments of Resources 4-30
4.3 Water Resources 4-30
4.3.1 Groundwater – Direct and Indirect Impacts 4-31
4.3.2 Surface Water – Direct and Indirect Impacts 4-80
4.3.3 Mitigation Measures 4-107
4.3.4 Unavoidable (Residual) Adverse Impacts 4-108
4.3.5 Relationship of Short-Term Uses and Long-Term Productivity 4-109
4.3.6 Irreversible and Irretrievable Commitments of Resources 4-109
4.4 Soils 4-110
4.4.1 Direct and Indirect Impacts 4-110
4.4.2 Mitigation Measures 4-121
4.4.3 Unavoidable (Residual) Adverse Impacts 4-121
4.4.4 Relationship of Short-Term Uses and Long-Term Productivity 4-122
4.4.5 Irreversible and Irretrievable Commitment of Resources 4-122
4.5 Vegetation 4-122
4.5.1 Direct and Indirect Impacts 4-123
4.5.2 Mitigation Measures 4-130
4.5.3 Unavoidable (Residual) Adverse Impacts 4-131
4.5.4 Relationship of Short-Term Uses and Long-Term Productivity 4-131
4.5.5 Irreversible and Irretrievable Commitments of Resources 4-131
4.6 Wetlands 4-131
4.6.1 Direct and Indirect Impacts 4-131
4.6.2 Mitigation Measures 4-140
4.6.3 Unavoidable (Residual) Adverse Impacts 4-141
4.6.4 Relationship of Short-Term Uses and Long-Term Productivity 4-141
4.6.5 Irreversible and Irretrievable Commitments of Resources 4-142
4.7 Wildlife Resources 4-142
4.7.1 Direct and Indirect Impacts 4-142

4.7.2 Mitigation Measures 4-162
4.7.3 Unavoidable (Residual) Adverse Impacts.....4-163
4.7.4 Relationship of Short-Term Uses and Long-Term Productivity.4-163
4.7.5 Irreversible and Irretrievable Commitments of Resources.....4-163
4.8 Fisheries and Aquatics.....4-163
4.8.1 Direct and Indirect Impacts.....4-163
4.8.2 Mitigation Measures 4-174
4.8.3 Unavoidable (Residual) Adverse Impacts.....4-175
4.8.4 Relationship of Short-Term Uses and Long-Term Productivity.4-175
4.8.5 Irreversible and Irretrievable Commitments of Resources.....4-176
4.9 Grazing Management 4-176
4.9.1 Direct and Indirect Impacts.....4-176
4.9.2 Mitigation Measures 4-188
4.9.3 Unavoidable (Residual) Adverse Impacts.....4-188
4.9.4 Relationship of Short-Term Uses and Long-Term Productivity.4-188
4.9.5 Irreversible and Irretrievable Commitments of Resources.....4-188
4.10 Recreation and Land Use 4-189
4.10.1 Recreation – Direct and Indirect Impacts.....4-189
4.10.2 Land Use – Direct and Indirect Impacts.....4-194
4.10.3 Mitigation Measures 4-197
4.10.4 Unavoidable (Residual) Adverse Impacts.....4-197
4.10.5 Relationship of Short-Term Uses and Long-Term Productivity.4-197
4.10.6 Irreversible and Irretrievable Commitments of Resources.....4-198
4.11 Inventoried Roadless Areas/Recommended Wilderness and Research Natural Areas.....4-198
4.11.1 Direct and Indirect Impacts.....4-198
4.11.2 Mitigation Measures 4-208
4.11.3 Unavoidable (Residual) Adverse Impacts.....4-209
4.11.4 Relationship of Short-Term Uses and Long-Term Productivity.4-209
4.11.5 Irreversible and Irretrievable Commitments of Resources.....4-209
4.12 Visual and Aesthetic Resources 4-209
4.12.1 Direct and Indirect Impacts.....4-209
4.12.2 Mitigation Measures 4-216
4.12.3 Unavoidable (Residual) Adverse Impacts.....4-216
4.12.4 Relationship of Short-Term Uses and Long-Term Productivity.4-216
4.12.5 Irreversible and Irretrievable Commitments of Resources.....4-216
4.13 Cultural Resources 4-216
4.13.1 Direct and Indirect Impacts.....4-217
4.13.2 Mitigation Measures 4-222
4.13.3 Unavoidable (Residual) Adverse Impacts.....4-222
4.13.4 Relationship of Short-Term Uses and Long-Term Productivity.4-222
4.13.5 Irreversible and Irretrievable Commitments of Resources.....4-223
4.14 Native American Concerns and Treaty Rights Resources.....4-223
4.14.1 Direct and Indirect Impacts.....4-223
4.14.2 Mitigation Measures 4-231
4.14.3 Unavoidable (Residual) Adverse Impacts.....4-232

4.14.4 Relationship of Short-Term Uses and Long-Term Productivity.4-232
4.14.5 Irreversible and Irretrievable Commitments of Resources.....4-232
4.15 Transportation.....4-232
4.15.1 Direct and Indirect Impacts.....4-232
4.15.2 Mitigation Measures 4-238
4.15.3 Unavoidable (Residual) Adverse Impacts.....4-238
4.15.4 Relationship of Short-Term Uses and Long-Term Productivity.4-239
4.15.5 Irreversible and Irretrievable Commitments of Resources.....4-239
4.16 Social & Economic Resources.....4-239
4.16.1 Direct and Indirect Impacts.....4-240
4.16.2 Mitigation Measures 4-249
4.16.3 Unavoidable (Residual) Adverse Impacts.....4-250
4.16.4 Relationship of Short-Term Uses and Long-Term Productivity.4-250
4.16.5 Irreversible and Irretrievable Commitments of Resources.....4-250
4.17 Environmental Justice.....4-251
4.17.1 Direct and Indirect Impacts 4-251
4.17.2 Mitigation Measures.....4-253
4.17.3 Unavoidable (Residual) Adverse Impacts 4-253
4.17.4 Relationship of Short-Term Uses and Long-Term Productivity ..4-253
4.17.5 Irreversible and Irretrievable Commitments of Resources 4-253

LIST OF TABLES

Table 4.0-1 Agency Preferred Alternative Impacts 4-2
Table 4.1-1 Transportation Alternatives Approximate Cross Section Dimensions 4-11
Table 4.1-2 Transportation Alternatives Initial and Final Topographic Disturbance Areas 4-11
Table 4.2-1 Total Proposed Action Air Emissions (Tons) 4-16
Table 4.2-2 Alternative A Air Emissions (Tons) 4-18
Table 4.2-3 Alternative B Air Emissions (Tons) 4-18
Table 4.2-4 Alternative C Air Emissions (Tons).....4-19
Table 4.2-5 Alternative D Air Emissions (Tons).....4-19
Table 4.2-6 Alternative F Air Emissions (Tons) 4-20
Table 4.2-7 Proposed Action Air Emissions-Roads (Tons).....4-20
Table 4.2-8 Transportation Alternative Emissions (Tons).....4-21
Table 4.2-9 Measured Sound Levels for Applicable Noise Sources.....4-24
Table 4.2-10 Sound Levels for Access Road 4-29
Table 4.3-1 Results of Infiltration Modeling for Proposed Action (inch/year) 4-34
Table 4.3-2 Column Leachate Analytical Parameters.....4-36
Table 4.3-3 Number of Sample Results Exceeding Regulatory Standards 4-37
Table 4.3-4 Particle Size Adjustments For Selenium Chemistry (mg/L) 4-39
Table 4.3-5 Weighted Average Pore Water Chemistries for ROM Overburden (mg/L) 4-41
Table 4.3-6 Pore Water Chemistries for Chert Overburden (mg/L) 4-43

Table 4.3-7 Selenium Attenuation Summary 4-49
Table 4.3-8 Peak Concentrations at Groundwater Observation Points for Proposed Action 4-52
Table 4.3-9 Peak Concentrations at Groundwater Discharge Points for Proposed Action 4-52
Table 4.3-10 Groundwater Discharges Potentially Affected by the Proposed Action 4-60
Table 4.3-11 COPC Concentrations in Rex Chert Groundwater Under the Panel G South Overburden Fill 4-64
Table 4.3-12 Modeled Peak Selenium Concentrations in groundwater for Mining Alternatives A to c (mg/L) 4-65
Table 4.3-13 Modeled Peak Concentrations in groundwater At Observation Points For Alternative D In the DEIS 4-72
Table 4.3-14 Modeled Peak Concentrations in groundwater at Discharge Points for alternative d in the DEIS 4-72
Table 4.3-15 Modeled Peak Selenium Concentrations At Observation Points For Alternative D Store And Release Cover 4-76
Table 4.3-16 Modeled Peak Selenium Concentrations At Discharge Points For Alternative D Store And Release Cover 4-76
Table 4.3-17 Percent of Watershed Area in a Hydrologically Disturbed Condition 4-88
Table 4.3-18 Reduction in Contributing Watershed Area due to Pits and Overburden Storage Areas (%) 4-88
Table 4.3-19 Estimated Selenium Concentrations In Area Streams, For Proposed Action And Alternatives A, B, And C (MG/L) 4-90
Table 4.3-20 Percent of Watershed Area in a Hydrologically Disturbed Condition – Alternative A 4-94
Table 4.3-21 Percent of Watershed Area in a Hydrologically Disturbed Condition – Alternative D 4-96
Table 4.3-22 Estimated Selenium Concentrations (MG/L) In Area Streams For Alternative D Store And Release Cover (0.6 In/Yr) 4-96
Table 4.3-23 Estimated Selenium Concentrations (MG/L) In Sage Creek And Crow Creek For Alternative D Store And Release Cover (0.6 In/Yr), Assuming Successful reclamation at e panel and with Hoopes Springs Selenium Removal Action 4-97
Table 4.3-24 Additional Percent of Watershed in a Hydrologically Disturbed Condition-due to Transportation Alternatives 4-100
Table 4.3-25 Comparison of Road Characteristics 4-100
Table 4.3-26 Sediment Loading to Streams from Transportation Alternatives Road Erosion (Tons/Year Average) 4-101
Table 4.3-27 Area of Road Alternatives Crossing Meade Peak Shale Outcrop 4-101
Table 4.4-1 Summary of Disturbance and Reclamation Areas for the Mining Alternatives (Acres) 4-115
Table 4.4-2 Road Suitability Ratings for Soils Present along Transportation Alternative Routes 4-119

Table 4.4-3 Summary Comparison of Transportation Disturbance Areas (Acres) 4-121
Table 4.5-1 Acres of Vegetation Cover Disturbed under the Proposed Action 4-123
Table 4.5-2 Acres of Vegetation Disturbed by the Mining Alternatives 4-127
Table 4.5-3 Acres of Vegetation Disturbed under the Transportation Alternatives 4-129
Table 4.6-1 Proposed Action Disturbance to Wetlands and Waters of the U.S. 4-133
Table 4.6-2 Mining Alternatives Disturbance to Wetlands and Waters of the U.S. 4-136
Table 4.6-3 Transportation Alternatives Disturbance to Wetlands and Waters of the U.S. 4-138
Table 4.7-1 Tree Size-Class Distribution for Forested Acres within the Goshawk Evaluation Area Following Implementation of Mining Alternative D 4-149
Table 4.8-1 Feet Of Stream Channel (Intermittent And Perennial) and Acres of Aquatic Influence Zones (AIZs) Disturbed by the Proposed Action 4-164
Table 4.8-2 Feet of Stream Channel (Intermittent and Perennial) and Acres of AIZs Disturbed by the Mining Alternatives 4-169
Table 4.8-3 Feet of Stream Channel (Intermittent and Perennial) Directly Disturbed, Acres of AIZs Disturbed, and Predicted Changes in Sedimentation under the Transportation Alternatives 4-171
Table 4.9-1 Reduction in Suitable Acres due to Mining Components and Alternatives 4-178
Table 4.9-2 Direct Losses of AUMs due to mining Components and alternatives 4-179
Table 4.9-3 Indirect AUM Loss Due To The Proposed Action Mining 4-180
Table 4.9-4 Disturbed Area within Grazing Allotments by the Mining Alternatives and Proposed Action (Acres) 4-182
Table 4.9-5 Disturbed Area within Grazing Allotments by the Transportation Alternatives and the Proposed Action Haul/Access Roads (Acres) 4-184
Table 4.11-1 Acres of Disturbance by the Proposed Action within the SCRA and the MPRA 4-199
Table 4.11-2 Acres of Disturbance by the Transportation Alternatives within the SCRA and the MPRA 4-206
Table 4.13-1 Cultural Resource Site Impacts by Alternative 4-218

LIST OF FIGURES

Figure 4.3-1 Weighted Average Panel G Backfill Selenium Concentration.....4-41
Figure 4.3-2 Location of Points for Modeled COPC Concentrations.....4-53
Figure 4.3-3 0.05 mg/L Selenium Plume at 47 yrs., Proposed Action 4-54
Figure 4.3-4 0.005 mg/L Selenium Plume at 100 yrs., Proposed Action 4-57
Figure 4.3-5 0.05 mg/L Selenium Plume at 48 yrs., Alternative A 4-68
Figure 4.3-6 0.005 mg/L Selenium Plume at 100 yrs., Alternative A 4-69
Figure 4.3-7 0.05 mg/L Selenium Plume at 50 yrs., Alternative B 4-70
Figure 4.3-8 0.005 mg/L Selenium Plume at 100 yrs., Alternative B 4-73
Figure 4.3-9 0.05 mg/L Selenium Plume at 50 yrs., Alternative C 4-74
Figure 4.3-10 0.005 mg/L Selenium Plume at 100 yrs., Alternative C 4-75
Figure 4.3-11 0.005 mg/L Selenium Plume at 100 yrs., Alternative D 4-78
Figure 4.7-1 View of Mature Forest and Recently Reclaimed Area 4-143
Figure 4.12-1 Visual Simulation-Looking East Toward Panel G 4-213

Bioaccumulation potential for reclamation vegetation to become contaminated in excess of USFS guidelines from reclaimed backfills or external fills;

Acres of permanent vegetation conversion from forest to non-forest cover and predicted re-growth rate back to forest conditions;

Compliance with the applicable RFP Standards and Guidelines.

4.5.1 Direct and Indirect Impacts

4.5.1.1 Proposed Action

Over an approximately 16-year period, the Proposed Action would remove 1,340 acres of vegetation (**Table 4.5-1**). While ground clearing and mining activities are occurring at Panel F, Panel G and associated Haul/Access Roads would remain undisturbed until mining activities begin at Panel G. Reclamation in Panel F and in Panel G would begin approximately two years following initial disturbance in specific areas as described in **Section 2.3.7** and in the Mine and Reclamation Plan.

TABLE 4.5-1 ACRES OF VEGETATION COVER DISTURBED UNDER THE PROPOSED ACTION

PROPOSED ACTION	ASPEN	ASPEN/ CONIFER	DOUGLAS -FIR	MOUNTAIN MAHOGANY	MT. SNOW-BERRY/ SAGE BRUSH	RIPARIAN SHRUB/ WETLANDS	SAGE BRUSH	SUB-ALPINE FIR	FORB/ GRAM	TOTAL
Panel F*	267.8	26.3	22.6	0.0	2.2	0.5	40.8	149.4	5.5	515
Panel F Haul Rd.	47.4	0.0	0.0	0.0	0.0	0.7	6.6	12.0	0.0	67
Panel F TOTAL	315.2	26.3	22.6	0.0	2.2	1.2	47.4	161.4	5.5	582
Panel G*	160.9	121.1	0.0	0.0	7.2	0.4	30.1	189.6	3.7	513
Panel G W. Haul Rd**.	64.8	4.8	0.0	0.0	2.1	0.8	1.7	133.8	8.6	217
Panel G TOTAL	225.7	125.9	0.0	0.0	9.3	1.2	31.8	323.4	12.2	730
Powerline****	16.9	0.6	0.9	0.0	4.4	0.3	2.3	2.3	0.0	28
Proposed Action TOTAL	558	153	23	0	16	3	82	487	18	1,340

* Includes soil stockpiles for pits, settling ponds, and ditches.
**Includes soil stockpiles for haul road.
***Delineated wetland impacts are described in **Section 4.6**
****Assuming disturbance within entire ROW area; actual disturbance is expected to be approximately three acres.

All vegetation would be removed from acres disturbed by the Proposed Action. This direct impact would be predominately long-term (i.e., in forest, mixed forest/brush, and shrub communities), but in some cases short-term (i.e., for grasses and forbs), site-specific, and major (see page 4-1 for definitions). Most species used for revegetation are similar to those now existing in the area, although upon regeneration the exact composition of reclaimed vegetation communities would be different as they follow a unique succession process. Native bunch grasses and forbs (see **Table 2.4-4**) would be planted throughout reclaimed areas initially, and then other native forbs, shrubs, and trees would be seeded or planted in clusters where they are most likely to establish. Over the long term, forest and mountain brush species may also encroach naturally into reclaimed areas from undisturbed sites adjacent to the mine.

Indirect impacts to vegetation may occur via competition with noxious weeds and/or selenium accumulation, particularly for invasive plants located on top of temporarily uncovered seleniferous waste overburden sites. These impacts, if they occurred, would be short-term, site-specific, and negligible to moderate. Environmental protection measures (**Section 2.5.4**) have been designed to minimize the potential for these impacts. Covering areas of seleniferous overburden should minimize the potential selenium accumulation for reclamation vegetation. See "Selenium Issues with Vegetation" section (below) for further discussion.

Below, environmental effects have been broken out by components of the Proposed Action. Effects within each mine panel (F and G) and within each haul road footprint are discussed separately.

Panel F, Including Lease Modifications (Component of Agency Preferred Alternative)
The new disturbance resulting from mining Panel F, including the open pits, North and South Lease Modifications, external overburden fills, and topsoil stockpiles, would disturb 515 acres of vegetation (**Table 4.5-1**). Over 80 percent of the total disturbance would occur within aspen (267.8 acres) and subalpine fir (149.4 acres) cover types. A 38-acre portion of Panel F would not be backfilled or reclaimed. Two remaining hanging walls would be left exposed, one 2,200 feet long with a maximum height of 250 feet, and the other 2,600 feet long with a maximum height of 175 feet. A portion of the footwall, 400 feet high and 1,000 feet long, would also remain exposed. The hanging walls would be benched, offering areas where natural vegetation could establish.

Panel F Haul/Access Road (Component of Agency Preferred Alternative)
The Panel F Haul/Access Road would remove 67 acres of vegetation; with the majority of disturbance occurring within aspen (47.4 acres) and subalpine fir (12.0 acres; **Table 4.5-1**). The road would cross an intermittent channel of South Fork Sage Creek with a 230-foot culvert, disturbing less than one (0.7) acre of riparian shrub/wet meadow. Approximately four acres of the haul road would not be reclaimed due to the steepness of the cut slopes.

Panel G (Component of Agency Preferred Alternative)
The new disturbance resulting from mining Panel G, including the open pit, external overburden fill, and topsoil stockpiles, would disturb 513 acres of vegetation (**Table 4.5-1**). The majority of disturbance would occur within aspen (160.9 acres) and subalpine fir (189.6 acres). An 8-acre portion of Panel G would not be reclaimed. One remaining highwall, 2,600 feet long with a maximum height of 250 feet, would be left exposed. This highwall would be benched, offering areas where natural vegetation could establish.

Panel G West Haul/Access Road (Component of Agency Preferred Alternative)
The Panel G West Haul/Access Road would remove 217 acres of vegetation; with the majority of disturbance occurring within aspen (64.8 acres) and subalpine fir (133.8 acres; **Table 4.5-1**). The road would cross the perennial Deer and South Fork Deer Creeks with culverts 280 and 260 feet long, respectively, disturbing less than one (0.8) acre of riparian shrub/wet meadow. Approximately 21 acres of the haul road would not be reclaimed due to the steepness of the cut slopes.

Power Line Between Panels F and G
Installation of the powerline could disturb a maximum corridor of approximately 50 feet wide by 4.5 miles long (28 acres). Most disturbances would occur in mountain shrub habitat (snowberry/sagebrush; **Table 4.5-1**). Trees within the corridor having the potential to grow or fall into the power line would be removed or trimmed. Actual ground surface disturbance from

the installation of the power line would be much less than 27 acres because helicopters would be used for pole installation outside of lease areas. Assuming a 25-foot radius of disturbance around each pole, total ground disturbance outside of lease areas would be 3.0 acres (74 poles x 0.045 acres disturbance per pole).

Special Status Plant Species

There would be no impacts to any TEPC plant species. The Proposed Action would also have no impact on potential habitat for the Forest Sensitive species Payson's bladderpod or Cache penstemon. The CTNF has determined that the Project would have No Impact on these species. Regarding starveling milkvetch, the Panel G West Haul Road would impact unoccupied but suitable habitat (5.4 acres). This figure represents less than 0.5 percent of the mapped potential habitat for starveling milkvetch within the Study Area. Potential impacts to starveling milkvetch would be site-specific, short-term, and minor. The CTNF has determined that, with regard to starveling milkvetch, the Project May Impact Individuals or Habitat but will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species. The Proposed Action complies with RFP standard #1 for plant species diversity (USFS 2003a:3-23).

Noxious Weeds

Potential indirect impacts from the Proposed Action would include an increase in disturbed soils, including an increase in disturbed areas located adjacent to roads. These types of areas are susceptible to weed invasion. In total, the Proposed Action would result in 1,340 acres of new surface disturbance, including 10.4 miles of new roads. Vehicles offer an effective means of transport of weed seeds that are not wind-dispersed, and the risk of infestation increases with traffic volume. Other sources of weed infestation include the use of topsoil that already contains weed seed and the potential use of contaminated hay bales for erosion control and mulch material used for reclamation. Environmental protection measures have been designed to minimize the potential for the establishment of noxious weeds, such as treating any established noxious weeds upon initial discovery. Impacts from noxious weed infestation would be site-specific, short-term, and minor.

Selenium Issues with Vegetation

A potential indirect impact from the Proposed Action exists in the increased uptake of selenium by plants growing on reclaimed areas of Panels F and G. Selenium control measures would be used to reduce the potential for this impact. The Proposed Action cover over the seleniferous overburden, for example, would consist of four feet of hard chert material that would lie underneath 1-2 feet of topsoil. The Rex Chert and Wells Limestone, overburden from mining activities found in the Phosphoria formation, are lower in selenium and other trace-element contaminants than the overburden shales (Mackowiak et al. 2004, Maxim 2004b). Separation of the vegetation roots from the seleniferous overburden by this five- to six-foot thick cover would help prevent selenium uptake in vegetation. Any plants with rooting depths that extend beyond the layer of chert may be exposed to the seleniferous overburden. However, species selected for revegetation include a mix of grasses, forbs, and woody vegetation with an emphasis on native species and those with a low potential for selenium uptake (see Mackowiak et al. 2004 for discussion). In addition, the majority of the roots for these species would not extend much below the layer of topsoil or upper part of the chert cover and thus would have minimal contact with the seleniferous overburden (Nobel 1991, Stone and Kalisz 1991, Canadell et al. 1996; see **Section 3.5.6**). As a result, the potential indirect impact of selenium accumulation in future tree and shrub communities growing on the reclaimed areas would be minimal. If accumulation were to occur, the impact to vegetation itself would be local, long-term, and negligible.

4.5.1.2 Mining Alternatives

Mining Alternative A – No South and/or North Panel F Lease Modifications
Relative to the Proposed Action, impacts to vegetation would be reduced if both components (North and South Lease Modifications) of Alternative A were adopted. In total 161 acres predominantly within aspen and sagebrush would be left undisturbed (**Table 4.5-2**). In addition, the remaining hanging walls would be reduced from 4,800 feet (under the Proposed Action) to 2,400 feet long under Alternative A and relocated from Pit Four (Proposed Action) to between Pits One and Two (Alternative A).

No Panel F North Lease Modification
Under this alternative, there would be no mining outside of Lease I-027512 boundaries. If Transportation Alternative 1 were also selected, there would be 23 acres less disturbance than the Proposed Action (**Table 2.6-1**). If the North Lease Modification were not approved and the Proposed Action Panel F Haul/Access Road were approved through a SUA, there would be no change in the acreage disturbed by roads under this alternative. Under this alternative, the Panel F North Lease Modification pit would not disturb two acres of subalpine fir outside of Lease I-027512 boundaries (**Table 4.5-2**).

No Panel F South Lease Modification
If this alternative were selected, there would be no mining outside of Lease I-027512 boundaries on the south end of Panel F, resulting in an overall reduction of 138 acres of disturbance (**Table 4.5-2**). The majority of the reduction would occur in aspen (**Table 4.5-2**).

Mining Alternative B – No External Seleniferous Overburden Fills
Alternative B would have the same initial disturbance footprint as the Proposed Action (**Table 4.5-2**) as external overburden fill areas would still be needed for temporary storage of overburden. The Panel G hanging wall would be reduced from 2,600 feet long and 250 feet high under the Proposed Action to about 1,100 feet long and 150 feet high under Alternative B. The unreclaimed area of Panel G would be one acre under Alternative B, compared to eight acres under the Proposed Action.

Mining Alternative C – No External Overburden Fills at All
Alternative C would have the same initial disturbance footprint as the Proposed Action (**Table 4.5-2**) as external overburden fill areas would still be needed for temporary storage of overburden. All proposed hanging walls would be backfilled under this alternative, as more overburden would be relocated to the pits where it would be used to completely bury them. The final Panel G reclamation configuration would be different from Alternative B in that the east external overburden fill would be eliminated during reclamation, and the top and bottom of the pit backfill would receive more overburden.

Mining Alternative D – Store and Release Covers on Overburden Fills (Component of Agency Preferred Alternative)
Under Alternative D, Dinwoody material would be excavated in order to construct a low-permeability, store and release cover over all areas of seleniferous overburden fills. Alternative D would increase the direct impact to vegetation relative to the Proposed Action by disturbing areas containing Dinwoody adjacent to open pits. Dinwoody mining areas in addition to associated stockpiles would disturb an additional maximum of 137 acres under Alternative D, mostly within aspen and subalpine fir (**Table 4.5-2**).

Mining Alternative E – Power Line Connection from Panel F to Panel G Along Haul/Access Road (Component of Agency Preferred Alternative)
Alternative E would reduce the overall vegetation disturbance of the Proposed Action by approximately 28 acres (although actual ground surface disturbance would be less), predominately within the aspen cover type (**Table 4.5-2**).

Mining Alternative F – Electrical Generators at Panel G
Alternative F would reduce the overall vegetation disturbance of the Proposed Action by approximately 28 acres (although actual ground disturbance would be less), predominately within the aspen cover type (**Table 4.5-2**).

TABLE 4.5-2 ACRES OF VEGETATION DISTURBED BY THE MINING ALTERNATIVES

PROPOSED ACTION & ALTERNATIVES	ASPEN	ASPEN/ CONIFER	DOUGLAS -FIR	MOUNTAIN MAHOGANY	MT. SNOW-BERRY/ SAGE BRUSH	RIPARIAN SHRUB/ WETLANDS	SAGE BRUSH	SUB-ALPINE FIR	FORB/ GRAM	TOTAL
Proposed Action	558	153	23	0	16	3	82	487	18	1,340
Alternative A North lease	558	153	23	0	16	3	82	485.1	18	1,338
Alternative A South lease	457.4	136.4	22.6	0	16	2.5	62.1	487	18	1,202
Alternative B	558	153	23	0	16	3	82	487	18	1,340
Alternative C	558	153	23	0	16	3	82	487	18	1,340
Alternative D	651.7	161.5	35	0	16	3.4	84.4	506.4	18	1,477
Alternative E	541.1	152.4	22.1	0	11.6	2.7	79.7	484.7	18	1,312
Alternative F	541.1	152.4	22.1	0	11.6	2.7	79.7	484.7	18	1,312

Special Status Plant Species
There are no differences between the Proposed Action and mining alternatives concerning potential impacts on TEPCS species. Impacts to suitable habitat for starveling milkvetch (5.4 acres) would be identical to those described under the Proposed Action.

Noxious Weeds
Potential noxious weed impacts are described above under the Proposed Action. For Mining Alternatives that result in more (i.e., Alternative D) or less ground disturbance, the extent of potential noxious weed establishment would increase or decrease, respectively.

Selenium Issues with Vegetation
Risks of selenium uptake to vegetation resources in the Project Area depend on the effectiveness of selenium control measures. Alternative D would result in a cover of an additional 3-foot thick layer of Dinwoody between the 1 to 2 feet of topsoil and a 2-foot thick chert layer, which is overall thicker than the Proposed Action and would therefore lower the potential for root penetration into seleniferous overburden fills. Also, for Alternative D, plants are expected to primarily be rooted within the topsoil and Dinwoody layer. Differences between all other Mining Alternatives and the Proposed Action, although some modify the method of seleniferous overburden disposal, are negligible in terms of the risk to vegetation resources. Selenium control measures (covering) would be implemented under any Mining Alternative.

4.5.1.3 Transportation Alternatives

Alternative 1 – Alternate Panel F Haul/Access Road
Alternative 1 would remove approximately 46 acres of vegetation, predominantly within aspen and subalpine fir cover types (**Table 4.5-3**). This is a reduction of 21 acres when compared to the Proposed Action Panel F Haul/Access Road. Approximately five acres of the disturbed area under this Alternative would not be reclaimed, as compared to four acres under the Proposed Action Panel F Haul/Access Road.

Alternative 2 – East Haul/Access Road
Alternative 2 (**Table 2.6-2**) would disturb one less acre than the Proposed Action Panel G West Haul/Access Road. A large reduction in disturbance would occur within subalpine fir; increases in disturbance would occur within sagebrush, aspen/conifer, and aspen (**Table 4.5-3**). Approximately seven acres of the disturbed area under this Alternative would not be reclaimed, as compared to 21 acres under the Proposed Action Panel G West Haul/Access Road.

Alternative 3 – Modified East Haul/Access Road
Alternative 3 (**Table 2.6-2**) would disturb approximately 59 more acres than the Proposed Action Panel G West Haul/Access Road, the largest increase of any transportation alternative. A large decrease in disturbance would occur in subalpine fir; the largest increase would occur within sagebrush (**Table 4.5-3**). Alternative 3 would require a longer culvert across Deer Creek (390 feet, relative to 280 feet under the Proposed Action Panel G West Haul/Access Road), but would not result in greater disturbance in riparian vegetation than the Proposed Action Panel G West Haul/Access Road. Road cuts and fills in Deer Creek Canyon under this alternative would be more difficult to fully reclaim than the Proposed Action Panel G West Haul/Access Road. Approximately 21 acres of the disturbed area under this Alternative would not be reclaimed, the same as the Proposed Action Panel G West Haul/Access Road.

Alternative 4 – Middle Haul/Access Road
Alternative 4 (**Table 2.6-2**) would disturb approximately 25 fewer acres than the Proposed Action Panel G West Haul/Access Road. Most of the reduction in disturbance would occur in subalpine fir; the largest increase would occur in aspen (**Table 4.5-3**). Alternative 4 would require large road fills and longer culverts than the Proposed Action Panel G West Haul/Access Road to cross the main and south forks of Deer Creek (440 and 510 feet, respectively), but actual disturbance in the riparian/wetland vegetation would be approximately one acre less than under the Proposed Action Panel G West Haul/Access Road. Like Alternative 3, road cuts and fills under this alternative would be more difficult to fully reclaim than the Proposed Action Panel G West Haul/Access Road. Approximately 34 acres of the disturbed area under this Alternative would not be reclaimed, as compared to 21 acres under the Proposed Action Panel G West Haul/Access Road.

Alternative 5 – Alternate Panel G West Haul/Access Road
Alternative 5 (**Table 2.6-2**) would disturb approximately nine more acres of vegetation than the Proposed Action Panel G West Haul/Access Road. A large reduction would occur in subalpine fir; the largest increases would occur in aspen and mountain snowberry/sagebrush (**Table 4.5-3**). Approximately 28 acres of the disturbed area under this Alternative would not be reclaimed, as compared to 21 acres under the Proposed Action Panel G West Haul/Access Road.

Alternative 6 – Conveyor from Panel G to Mill
Alternative 6 (**Table 2.6-2**) would disturb approximately 156 fewer acres of vegetation than the Proposed Action Panel G West Haul/Access Road. A large reduction would occur in subalpine fir, and a moderate reduction would occur in aspen (**Table 4.5-3**).

Alternative 7 – Crow Creek/Wells Canyon Access Road
Alternative 7 would require upgrading 15 miles of the existing Crow Creek Road. Disturbances from Alternative 7 would total 114 acres (**Table 2.6-2**), approximately 103 fewer acres than the Proposed Action Panel G West Haul/Access Road. A large reduction in disturbance would occur in subalpine fir and a moderate reduction would occur in aspen; the largest increase would occur in sagebrush (74 acres; **Table 4.5-3**). Alternative 7 would also require 25 acres of additional disturbance in the Crow Creek and Wells Canyon riparian/wet meadow vegetation.

Alternative 8 – Middle Access Road
Alternative 8 would require building an access road from Panel G northward across South Fork Deer Creek, Deer Creek, and North Fork Deer Creek to enter Panel F on its south end. Disturbances from Alternative 8 would total 99 acres (**Table 2.6-2**), approximately 119 fewer acres than the Proposed Action Panel G West Haul/Access Road. The largest reduction in disturbance would occur in the subalpine fir; a moderate increase would occur in mountain shrub habitat (**Table 4.5-3**). Alternative 8 would avoid the impacts to riparian/wet meadow associated with Crow Creek and Wells Canyon drainage; riparian habitat disturbance would be similar to the Proposed Action Panel G West Haul/Access Road.

TABLE 4.5-3 ACRES OF VEGETATION DISTURBED UNDER THE TRANSPORTATION ALTERNATIVES

	ASPEN	ASPEN/ CONIFER	DOUGLAS-FIR	MOUNTAIN MAHOGANY	MT. SNOW-BERRY/SAGE BRUSH	RIPARIAN SHRUB/ WETLANDS	SAGE BRUSH	SUB-ALPINE FIR	FORB/ GRAM	TOTAL
Proposed Panel F Haul Rd.	47.4	0	0	0	0	0.7	6.6	12.0	0	67
Alternative 1	35.2	0	0	0	0	0.7	1.4	8.7	0	46
Proposed Panel G Haul Rd.	64.8	4.8	0	0	2.1	0.8	1.7	133.8	8.6	217
Alternative 2	95.4	20.4	3.9	2.1	11.1	1.9	55	20.1	6.5	216
Alternative 3	104.6	25.2	2.3	20.9	15.4	0.8	60.9	39.5	6.5	276
Alternative 4	115	7.5	0	0	27	0	11.8	30.8	0	192
Alternative 5	89.8	6.6	0	0	27.8	0.8	3.5	89.3	8.6	226
Alternative 6	24.3	1.1	2.7	0	2.6	1.5**	6.8	21.8	0.4	61
Alternative 7*	9.3	0	0	0	0	24	75.5	0.4	0	114
Alternative 8	57.6	8.8	0	0	17.6	0.6	5.1	9	0	99

*Includes 4.7 acres in Wyoming not shown within vegetation types.
**Assuming disturbance within entire ROW area; no disturbance in riparian habitat is expected.

Special Status Plant Species
Under the Proposed Action Panel F Haul Road and Transportation Alternative 1 there would be no disturbance to starveling milkvetch habitat. Regarding alternatives to the Proposed Action Panel G West Haul/Access Road, Transportation Alternatives 2 and 3 would involve 13.3 and 35.5 more acres of disturbance within starveling milkvetch habitat, respectively. Transportation Alternatives 4, 5, 7, and 8 would disturb the same amount of starveling milkvetch habitat as the Proposed Action Panel G West Haul/Access Road, whereas Alternative 6 would disturb five acres fewer.

Noxious Weeds
Potential noxious weed impacts are described above under the Proposed Action. For Transportation Alternatives that result in more ground disturbance (i.e., Alternatives 3 and 5) and/or are longer in length (i.e., Alternatives 2, 3, 5, and 7), the potential for noxious weed invasions to occur and the extent of subsequent weed invasions would increase.

Selenium Issues with Vegetation
Road construction itself would not noticeably increase the potential for selenium uptake by vegetation over the existing condition. In areas where road cuts would expose seleniferous material, the seleniferous material would be at depths where the vegetation in the area would already be exposed to the source. Differences between Transportation Alternatives and the Proposed Action are negligible in terms of the risk of selenium uptake by vegetation. Selenium control measures would be implemented identically under any Transportation Alternative and the Proposed Action.

4.5.1.4 No Action Alternative

Under the No Action Alternative, disturbance of currently undisturbed vegetation would not occur, thus eliminating the impacts to vegetation and TEPCS plants discussed above. In addition, overburden containing elevated concentrations of selenium would not be excavated, and further potential bioaccumulation of selenium in flora within the Study Area would not be a risk. Lastly, reclamation in Panel E would not be completed, as overburden from Pit 1 in Panel F would not be generated and thus used to backfill the Panel E-0 pit.

4.5.2 Mitigation Measures

Vegetation monitoring to determine reclamation success on reclaimed sites shall be conducted annually and reported to the CTNF by Simplot until reclamation is accepted and the reclamation bond is released (RFP standard under Prescription 8.2.2). The timing, level, and type of monitoring would be conducted in accordance with the requirements of the Record of Decision, agency conditions for release, and an agency-approved plan.

Simplot would use the most adapted and genetically appropriate plant material available for all seeding and planting activities. If feasible, collection of plant material (i.e., seed, transplants, roots) should be practiced to ensure an optimal match between plant material used and site conditions - increasing the likelihood of success.

Records would be kept of items such as seed or tree source, seeding methods, tree planting methods, species used, substrate, date of seeding or planting, etc. The boundaries of seeding or planting areas would be mapped in enough detail so they can be easily located again in the future. Accurate record keeping is necessary in order to determine if revegetation methods have been successful and cost effective, or if changes should be made.

The measurement of selenium and other COPCs in forage is required for any decisions on range management and the ultimate release of mined lands back to multiple use. Sampling would be conducted in accordance with the requirements of the Record of Decision, agency conditions for release, and an agency-approved plan.

Simplot would continue their program of monitoring and controlling noxious weed infestations. Only certified weed-free seed, mulch, straw bales, etc. would be used. Simplot would develop a plan for annual noxious weed treatment.

4.5.3 Unavoidable (Residual) Adverse Impacts

Unreclaimed areas would constitute an unavoidable adverse impact to vegetation resources. When vegetation encroaches naturally into unreclaimed areas, it is likely that some colonizing species would be noxious weeds. Unreclaimed areas would be exposed until vegetation spreads naturally to these areas, creating a longer window of opportunity and space for noxious weed seeds to invade and establish relative to sites that are reclaimed.

4.5.4 Relationship of Short-Term Uses and Long-Term Productivity

The Proposed Action and Alternatives would implement ground-disturbing activities that would produce short- and long-term effects to vegetation while providing the short-term benefits of phosphate resources and productive employment.

4.5.5 Irreversible and Irretrievable Commitments of Resources

The Proposed Action and Alternatives would result in the removal of currently undisturbed vegetation. The loss of timber would be an irreversible commitment of resources. Even with the re-planting of these disturbed areas, conifer forests in particular would not recover to their current stature and complexity for at least 200 years (see **Section 4.7.1.1** for further discussion).

Under the Proposed Action, portions of Panel F and G would not be backfilled, leaving parts of pit footwalls and hanging walls exposed. Portions of haul roads would also not be reclaimed under the Proposed Action due to steepness of cut slopes. The footprints of these walls and unreclaimed areas of haul roads (a total of 71 acres) would represent irretrievable losses of vegetation.

4.6 Wetlands

Issue:
Construction of mine facilities and other disturbances may directly affect wetlands and Waters of the U.S (WOUS) and could include increased metal and sediment loading in surface waters and/or changes in water quality/quantity in both surface waters and groundwater supporting WOUS.

Indicators:
The number of wetland acres disturbed by mining activities and related facilities;

Lengths of WOUS disturbed by mining and new transportation corridors;

Change in function and value of all wetlands disturbed by the mine and related facilities.

4.6.1 Direct and Indirect Impacts

Disturbance to wetlands and WOUS that occurs as a result of pit excavation or external overburden fill development can be considered a permanent impact. Disturbance that results from road construction would be considered a temporary impact and reclaimed at the completion of mining except for a 20-foot wide section of the Panel G West Haul/Access Road between Panel G and the summit between Deer Creek and Diamond Creek that would be left in place at the request of the USFS. The estimated conceptual timeline for this Project is

presented in **Table 2.4-1**. Estimated recovery time, following reclamation activities for temporarily impacted wetlands, should be no longer than ten years based upon generally accepted succession rates. Direct impacts to wetlands result in a total loss of function and value for the actual wetland area impacted.

Indirect impacts could include increased metal and sediment loading in surface waters and/or changes in water quality/quantity in both surface waters and groundwater supporting WOUS. These potential impacts are discussed in detail in **Section 4.3** (Water Resources) of this document. Indirect impacts to wetlands result in a partial loss of function and value, generally correlated with the proximity of the wetland to a given project activity. Indirect impacts are typically quantified and addressed in the wetland permitting phase of the project.

Aquatic Influence Zones (AIZs)
RFP Management Prescription 2.8.3, for AIZs, states that management emphasis is to restore and maintain the health of AIZs. Minerals and Geology Guidelines in the RFP state that new structures, support facilities, and roads be constructed outside of AIZs except where no alternative exists (USFS 2003a: 4-49). Where no alternatives exist, facilities should be sited such that impacts to AIZs are avoided or minimized, and that roads should be constructed such that disturbance to these sites is held to the minimum required for the approved mineral activity. Since development of ore deposits is dependant on the location of those deposits, no alternative (other than pit configuration modification) exists regarding the location of mine pits. Impacts to AIZs are discussed in more detail in **Section 4.8**, **Fisheries and Aquatics**.

4.6.1.1 Proposed Action

<u>Panel F, Including Lease Modifications (Component of Agency Preferred Alternative)</u>
Under the Proposed Action, a total of approximately 7,650 linear feet of ephemeral channels within the Panel F lease area would be removed by the development of the Panel F Pit or covered by associated external overburden fills. This total includes a short reach of the upper Manning Creek headwaters area (approximately 665 feet) and almost the entire jurisdictional length (i.e., the length/area of channel or wetland regulated by the USACE under the Clean Water Act) of an unnamed tributary (measuring 6,985 feet) to the South Fork of Sage Creek within northern Panel F (**Figures 2.4-1 and 3.6-1; Table 4.6.1**). **Section 2.5** and associated BMPs described in this document and appendices, detail plans for managing runon and runoff water that was formerly conveyed by these channels.

Wetlands located within the Panel F Lease area include two jurisdictional wetlands and a single isolated wetland. The two jurisdictional sites are developed spring sources and are identified as palustrine emergent (PEM) wetlands (**Section 3.6.4**). Each of these sites received a total functional points score of 2.6, out of a possible 7 points (Maxim 2003b and Berglund 1999). The isolated site is identified as a fen (an area of peat that is fed by groundwater). This latter site is small but is identified as a high-value wetland site, rating a total functional point score of 5 out of a possible 7 points (Maxim 2003b). A total of 0.03 acre of wetlands associated with these sites would be impacted by the development of the Panel F Pit, resulting in a Functional Unit loss of 0.078 units.

Under the Proposed Action, approximately 1,100 linear feet on the upper reaches of one ephemeral channel in the South Lease Modification Area would be removed by the development of the Panel F. Six jurisdictional wetland areas associated with this channel would be impacted by pit development (**Figures 2.4-1 and 3.6-1**). Five of these six wetlands are on an ephemeral channel (i.e., bank seeps, seasonal wetlands, ponded areas supporting

hydrophytic vegetation). One, the largest wetland that would be impacted, is a fen that is an elk wallow. This later site was rated high in wetland functions and values (rating a total functional points score of 5 out of a possible 7 points, Maxim 2003b), as defined in **Section 3.6.2, Wetland Functions and Values**. A total of 0.57 acre of wetlands would be impacted by pit development within the South Lease Modification Area, resulting in a Functional Unit loss of 2.612 units. **Section 2.5** and associated BMPs described in this document detail plans for managing water that was formerly conveyed by affected channels. Impacts to wetlands and WOUS that would result from the Proposed Action are summarized in **Table 4.6-1**. No WOUS or wetlands would be impacted in the North Lease Modification Area.

TABLE 4.6-1 PROPOSED ACTION DISTURBANCE TO WETLANDS AND WATERS OF THE U.S.

PROPOSED ACTION FEATURE	WATERS OF THE U.S. IMPACTS	WETLAND IMPACTS	FUNCTIONAL UNIT LOSS
Panel F (on lease)	7,650 linear feet	0.03 acre	0.078
Panel F South Lease Modification	1,100 linear feet	0.57 acre	2.612
Panel F North Lease Modification	0 linear feet	0 acre	0
Panel F Haul/Access Road	230 linear feet	0 acre	0
Panel G	2,850 linear feet	0.39 acre (+ 0.34 acre non-jurisdictional wetland)	1.443 (1.700)
Panel G West Haul/Access Road	540 linear feet	1.43 acres	12.23
Total Proposed Action Disturbance	12,370 linear feet	2.42 acres (+ 0.34 acre non-jurisdictional wetland)	16.363 (1.700)

Panel F Haul/Access Road (Component of Agency Preferred Alternative)

The Panel F Haul/Access Road would connect Panel F to the existing Smoky Canyon Mine facilities via a haul/access road to Panel E. Under the Proposed Action, the Panel F Haul Road would cross an intermittent reach of South Fork Sage Creek at a single location (**Figures 2.4-1** and **3.6-1**). Construction of the Panel F Haul Road over the creek would require the placement of a 230-foot long culvert in South Fork Sage Creek. The majority of the South Fork Sage Creek at this location is identified as other WOUS (i.e., jurisdictional waters that are not wetlands) with a few small "islands" of hydrophytic vegetation (Maxim 2004h). A total of 230 feet of WOUS would be affected (**Table 4.6-1**). The U.S. Army Corps of Engineers has already issued Simplot a permit for this crossing if the proposed Project is approved (USACE, October 21, 2004). Potential mitigation for impacts to wetlands and WOUS is discussed below in **Section 4.6.2**.

Panel G (Component of Agency Preferred Alternative)

Under the Proposed Action, approximately 2,775 linear feet of an intermittent, unnamed tributary to South Fork Deer Creek would be excavated during development of the Panel G Pit, and a short reach of a defined intermittent channel (approximately 75 feet), that is tributary to Deer Creek would be covered by the Panel G East Overburden Fill (**Figure 3.6-1**). The main South Fork Deer Creek channel passes through the northwestern corner of the Panel G lease area.

The uppermost reaches of the Wells Canyon drainage, above any defined channel (i.e., a non-jurisdictional reach of the drainage), would be covered by the Panel G South External Overburden Fill. The development of this overburden fill would not impact defined (jurisdictional) waters within the Wells Canyon drainage (**Table 4.6-1**).

Five jurisdictional and one isolated wetland area would be impacted by construction of the Panel G Pit. The five jurisdictional wetlands, including a total of approximately 0.4 acre of jurisdictional area, are located on the unnamed tributary to South Fork Deer Creek that would be disrupted by the mining. A total of 0.33 acre of this total area would be excavated during pit development. Another 0.06 acre would be covered by the Panel G South Overburden Fill. These wetlands are riverine wetlands on an ephemeral channel and did not receive high functions and values ratings. Each of these wetlands received a score of 3.7 out of 12 possible points (Maxim 2003b). The isolated wetland, which is 0.34 acre in size, is located near the northeastern corner of the Panel G Pit. This wetland is a fen and received a moderately high functions and values rating (5 out of 7, or 71 percent of the total possible functional points, Maxim 2003b). A total of 3.143 Functional Units would be lost due to the construction of the Panel G Pit.

<u>Panel G West Haul/Access Road (Component of Agency Preferred Alternative)</u>
A small wetland area near the headwaters of South Fork Sage Creek is located near the Proposed Action Panel G West Haul/Access Road alignment. This wetland would not be disturbed by construction of the haul/access road, but an undefined (non-jurisdictional) tributary east of this wetland would be crossed by the road (**Figure 3.6-1**).

Under the Proposed Action, the Panel G West Haul/Access Road would cross a perennial reach of Deer Creek over a 280-foot long culvert. This crossing would be located just below the confluence of Deer Creek and an unnamed tributary that enters Deer Creek from the west (**Figures 2.4-1** and **3.6-1**). Construction of this segment of the haul road would disturb a palustrine scrub-shrub (PSS) wetland on Deer Creek, as well as the upper reaches of a seep area to the south of the confluence (**Figure 3.6-1**). Wetlands associated with the upper reaches of the seep would be covered by fill during development of the haul/access road (**Figure 3.6-1**). The uppermost reaches of a finger of wetlands associated with an unnamed tributary channel north of Deer Creek would also be disturbed by the Panel G West/Haul Road (**Figure 3.6-1**). These wetlands are generally identified as riverine features on perennial stream reaches and received 7.5 out of a possible 12 functions and values points (Maxim 2003b).

The Panel G West Haul/Access Road would cross a perennial reach of South Fork Deer Creek below its confluence with an unnamed tributary from the south (**Figure 3.6-1**). A 260-foot long culvert would be installed in South Fork Deer Creek at this crossing. The unnamed tributary from the south would not be affected, but 0.01 acre of a high value (scoring 9 out of 12 possible functional points) PEM/PSS wetland bordering South Fork Deer Creek would be covered by fill during construction of this haul road.

In total, the Panel G West Haul/Access Road alignment would disturb approximately 1.43 acres of potentially jurisdictional wetlands, resulting in a loss of 12.23 Functional Units (**Table 4.6-1**). (These wetlands are identified as “potentially” jurisdictional; the Corps provided an email with their jurisdictional determination dated November 20, 2006 but has not yet provided an official letter.) The installation of two culverts would disturb approximately 540 feet of defined channel (WOUS) at two crossing locations (one on Deer Creek and one on South Fork Deer Creek).

Power Line Between Panels F and G

A 25 kV power line would be constructed between Panels F and G. Construction of this direct power line alignment would require tree removal within a 50-foot wide corridor along the proposed alignment. The alignment would cross the North Fork and Main Fork of Deer Creek, but all creeks would be spanned, avoiding impacts to these waters. While the power line would cross approximately 0.32 acre of wetland and approximately 1,215 linear feet of channel, construction of this alignment would result in no dredge or fill impacts to jurisdictional waters. A 50-foot corridor (25 feet on either side of the center of the power line) would be maintained in order to prevent trees from falling on the line. This corridor would be maintained as needed across AIZs. Only large (tall) trees within this corridor that have the potential to fall into the line would be felled, but understory vegetation would not be removed.

4.6.1.2 Mining Alternatives

Mining Alternative A – No South and/or North Panel F Lease Modifications

No Panel F South Lease Modification

Under the No Panel F South Lease Modification Alternative, the two channels and six wetland areas located on two tributary channels to North Fork Deer Creek would not be disturbed by mine development. These six wetlands include a total of 0.57 acre and 2.612 Functional Units. Impacts to 1,100 linear feet of jurisdictional channel would also not occur. **Table 4.6-2** summarizes wetlands and WOUS impacts that would result from the various mining alternatives.

No Panel F North Lease Modification

Under this alternative, impacts to WOUS and wetlands would be the same as described under the Proposed Action.

Mining Alternative B – No External Seleniferous Overburden Fills

Because the full external overburden fill disturbance area would be needed to temporarily store seleniferous overburden (which would then be relocated to a pit during the final stages of mining), this alternative would have the same footprint as the Proposed Action. Impacts to wetlands and WOUS would be the same as described under the Proposed Action.

Mining Alternative C – No External Overburden Fills at All

Because the full external overburden fill disturbance area would be needed to temporarily store overburden (which would then be relocated to a pit during the final stages of mining), this alternative would have the same footprint as the Proposed Action. Impacts to wetlands and WOUS would be the same as described under the Proposed Action.

Mining Alternative D – Store and Release Covers on Overburden Fills (Component of Agency Preferred Alternative)

In this alternative, Dinwoody material would be utilized to form a store and release cover over external seleniferous overburden fill areas. Sufficient amounts of Dinwoody material required to cover the seleniferous overburden generated during mining of the Panel F pits may be available within the non-seleniferous overburden proposed for removal from these pits. If additional Dinwoody material is required to cover seleniferous overburden fill areas generated during mining of the Panel F pits, another 86 acres of this material has been identified immediately west of the pit highwall (**Figure 2.6-6**). This additional source of Dinwoody material could be obtained by laying back the proposed high walls in this area. Excavation of Dinwoody material from the area immediately west of the Panel F pits would impact another approximately 0.1 acre

and 0.37 Functional Units of wetland and 205 linear feet of the ephemeral upper reaches of Manning Creek (**Figure 2.6-6**).

Dinwoody material that would be used for covering seleniferous overburden fill areas generated during mining of the Panel G pit would be obtained from non-seleniferous pit overburden excavated from within the pit and, if necessary, from two borrow pits that would disturb an additional 25 acres. These two borrow areas are located to the south and west of the proposed pit (**Figure 2.6-6**). Construction of the Dinwoody material borrow pit west of the Panel G pit would disturb 665 linear feet of defined channel and 0.3 acre and 1.11 Functional Units of wetland (**Table 4.6-2**).

Mining Alternative E – Power Line Connection from Panel F to Panel G Along Haul/Access Road (Component of Agency Preferred Alternative)
This alternative would involve constructing a 25kV power line route between Panels F and G within the footprint of the approved haul/access road. Selection of this alternative would result in no change in impacts to jurisdictional WOUS, relative to the Proposed Action.

Mining Alternative F – Electrical Generators at Panel G
This alternative would result in no additional impacts to WOUS, relative to the Proposed Action.

TABLE 4.6-2 MINING ALTERNATIVES DISTURBANCE TO WETLANDS AND WATERS OF THE U.S.

MINING ALTERNATIVE	WATERS OF THE U.S. IMPACTS	WETLAND IMPACTS	FUNCTIONAL UNIT LOSS
Alternative A, No Panel F South Lease Modification	11,270 linear feet	1.85 acres (+ 0.34 acre non-jurisdictional wetland)	13.751 (1.700)
Alternative A, No Panel F North Lease Modification	12,370 linear feet	2.42 acres (+ 0.34 acre non-jurisdictional wetland)	16.363 (1.700)
Alternative B, No Seleniferous External Overburden Fills	12,370 linear feet	2.42 acres (+ 0.34 acre non-jurisdictional wetland)	16.363 (1.700)
Alternative C, No External Overburden Fills at All	12,370 linear feet	2.42 acres (+ 0.34 acre non-jurisdictional wetland)	16.363 (1.700)
Alternative D, Store and Release Covers on Overburden Fills	13,240 linear feet	2.82 acres (+ 0.34 acre non-jurisdictional wetland)	17.843 (1.700)
Alternative E, Power Line Connection from Panel F to Panel G Along Haul/Access Road	12,370 linear feet	2.42 acres (+ 0.34 acre non-jurisdictional wetland)	16.363 (1.700)
Alternative F, Electrical Generators on Panel G	12,370 linear feet	2.42 acres (+ 0.34 acre non-jurisdictional wetland)	16.363 (1.700)

4.6.1.3 Transportation Alternatives

Aquatic Influence Zones
The haul/access roads for the Proposed Action (above) and all transportation alternatives would involve the construction of roads over drainage channels. These crossings would be

constructed with culverts placed in stream channels at the road crossing locations. As described above, the Minerals and Geology Guidelines in the RFP state that new structures, support facilities, and roads be constructed outside of AIZs except where no alternative exists. Where no alternatives exist, facilities should be sited such that impacts to AIZs are avoided or minimized, and roads should be constructed such that disturbance to these sites is held to the minimum required for the approved mineral activity (USFS 2003a:4-49). Simplot has redesigned initially proposed road crossings to minimize impacts to AIZs.

Because a method of conveying phosphate ore from Panels F and G to the existing Smoky Canyon Mine is a requirement of the Proposed Action, selection of either the Proposed Action Transportation Alternative or one of the other transportation alternatives is required. Impacts to AIZs at road crossings would be unavoidable. Impacts to AIZs are discussed in more detail in **Section 4.8, Fisheries and Aquatics**. Impacts to wetlands and waters of the U.S. that would result from these transportation alternatives are summarized in **Table 4.6-3**.

Alternative 1 – Alternate Panel F Haul/Access Road

The Alternate Panel F Haul/Access Road (**Figure 3.6-1**) would cross South Fork Sage Creek at the same location as the Proposed Action Panel F Haul Road. As described for the Proposed Action, a 230-foot long culvert would be required at this crossing. No changes in wetland and WOUS impacts would occur under this transportation alternative when compared to the Proposed Action Panel F Haul/Access Road.

Alternative 2 – East Haul/Access Road

The East Haul/Access Road Alternative (**Figure 3.6-1)** would cross an undefined (non-jurisdictional) tributary to Wells Creek just east of the southern portion of Panel G, then turn east and cross an undefined reach of channel in Nate Canyon. The East Haul/Access Road would then cross the lower reaches of Deer Creek above (west of) the Crow Creek Road and above Deer Creek's confluence with Crow Creek. Wetlands in the Deer Creek drainage affected by this alternative are identified as PSS/PEM wetlands, with a functions and value score of 8.6 out of a possible 12 points (Maxim 2003b). This crossing would include the placement of a 300-foot long culvert in Deer Creek and would affect 0.62 acre of wetlands on Deer Creek, resulting in a Functional Unit loss of 5.332 units.

North of Deer Creek, the East Haul/Access Road would cross six undefined (non-jurisdictional) drainages, including Quakie Hollow and the undefined Manning Creek channel (**Figure 3.6-1**). Culvert placement would also be required at these latter two crossings. The East Haul/Access Road would cross two non-perennial channels east of the northern end of Panel F. This alternative would include a crossing of the perennial reach of the South Fork Sage Creek at the same location as the Proposed Action Panel F Haul Road (**Figure 3.6-1**).

Alternative 3 – Modified East Haul/Access Road

This alternative would involve modifying the alignment of the East Haul/Access Road to avoid private land near the mouth of Deer Creek (**Figure 3.6-1**). Selection of this alternative would require the construction of switchbacks into and out of the lower Deer Creek drainage. This alignment would cross Deer Creek approximately one mile upstream of the point the Crow Creek Road crosses Deer Creek. Under this alternative, a 390-foot long culvert would be required to cross Deer Creek, and approximately 0.67 acre of wetland would be covered by road fill at this crossing (**Figure 3.6-1**). Wetlands in the Deer Creek drainage affected by this alternative are identified as an extension of the PSS/PEM wetland type found at the mouth of Deer Creek, with a functions and value score of 8.6 out of a possible 12 points (Maxim 2003b). This alternative would involve a Functional Unit loss of 5.762 units.

Alternative 4 – Middle Haul/Access Road

This alternative would connect Panels F and G with a haul/access road along the eastern slope of Snowdrift Mountain in the middle Deer Creek watershed area (**Figure 3.6-1**). This alternative would require large cuts and fills (**Figure 2.6-8b**). Road fills and culverts would be required over Deer Creek and South Fork Deer Creek. The upper reaches of the perennial North Fork of Deer Creek would also be crossed with fills.

TABLE 4.6-3 TRANSPORTATION ALTERNATIVES DISTURBANCE TO WETLANDS AND WATERS OF THE U.S.

TRANSPORTATION PROPOSED ACTION AND ALTERNATIVES– HAUL/ACCESS ROADS	WATERS OF THE U.S. IMPACTS	WETLAND IMPACTS	FUNCTIONAL UNIT LOSS
Panel F Haul/Access Road	230 linear feet	0 acre	0
Panel G West Haul/Access Road	540 linear feet	1.43 acres	12.23
Alt. 1, Alternate Panel F Haul/Access Road	230 linear feet	0 acre	0
Alt. 2, East Haul/Access Road	300 linear feet	0.62 acre	5.332
Alt. 3, Modified East Haul/Access Road	390 linear feet	0.67 acre	5.762
Alt. 4, Middle Haul/Access Road	1,200 linear feet	0.07 acre	0.602
Alt. 5, Alternate Panel G West Haul/Access Road	490 linear feet	1.43 acre	12.23
Alt. 6, Conveyor from Panel G to Mill[1]	0 linear feet	0 acre	0
Alt. 7, Crow Creek/Wells Canyon Access Road	162 linear feet	approximately 20 acres[2]	N/A[2]
Alt. 8, Middle Access Road	940 linear feet	0.62 acres	2.143

[1] All waters of the U.S. and wetlands would be spanned by the conveyor. However, selection of this alternative would require implementation of either the Wells Canyon/Crow Creek access road (Alternative 7) or the Middle Access Road (Alternative 8) in order to transport equipment to Panel G and to allow for employee, supply, and vendor access.
[2] Impacts to wetlands that would result from selection of Alternative 7 have been estimated from National Wetland Inventory (NWI) maps. Wetland functions and values were not calculated for this alternative.

The Middle Haul/Access Road would cross a defined (jurisdictional) but non-perennial reach of South Fork Deer Creek in the northwestern portion of Panel G. An unnamed tributary to South Fork Deer Creek would also be crossed by the alignment in the northwestern Panel G area. To the west-northwest, the alignment would cross a defined but non-perennial reach of Deer Creek north of Panel G. This reach of Deer Creek is above a large wetland complex. Approximately 1,200 linear feet of jurisdictional channel and 0.07 acre of wetland would be filled by construction of this haul/access road, resulting in a Functional Unit loss of 0.602 units. Between Deer Creek and North Fork Deer Creek, the haul/access road would cross five non-perennial, undefined channels tributary to Deer Creek and North Fork Deer Creek. At its northern end, the Middle Haul/Access Road would cross a defined channel in the upper reaches of the North Fork Deer Creek watershed (**Figure 3.6-1**). The alignment would also cross the upper reaches of three North Fork Deer Creek tributaries within the Panel F South Lease Modification Area. All three of the drainages would be crossed above the start of channel definition (i.e., in non-jurisdictional segments) (Maxim 2003b).

Alternative 5 – Alternate Panel G West Haul/Access Road
This haul/access road alternative would cross the upper reaches of the same three North Fork Deer Creek tributaries that would be crossed by the northern portion of the Alternative 4 alignment (**Figure 3.6-1**). All three of the drainages would be crossed above the start of channel definition (Maxim 2003b).

When combined with the remainder of the Proposed Action Panel G West Haul/Access Road, this alternative would disturb a total of 1.43 acres of wetlands and approximately 490 linear feet of WOUS.

Alternative 6 – Conveyor from Panel G to Mill
This alternative would eliminate the need for a haul road connecting Panels F and G. Ore would be transported by conveyor from a staging area in Panel G, down the west edge of the Panel G Pit then across Deer Creek via a structure that would span the creek. The conveyor route would continue north out of the Deer Creek drainage and run along the east side of Panel F. The conveyor would cross South Fork Sage Creek via a structure that would span the creek (**Figure 3.6-1**). A service road would be constructed parallel to the conveyor. The road would not cross Deer Creek or South Fork Sage Creek but would terminate on either side of these streams. The conveyor would span all waters and wetlands along its route, resulting in no impacts to these features.

Selection of this alternative would eliminate the need for a haul road between Panels F and G, but would require implementation of either the Wells Canyon/Crow Creek Access Road (Alternative 7) or the Middle Access Road (Alternative 8) in order to transport equipment to Panel G and to allow for regular employee, supply, and vendor access.

Alternative 7 – Crow Creek/Wells Canyon Access Road
Selection of the Conveyor Alternative (Alternative 6) would require either construction of this alternative or Alternative 8. The Crow Creek/Wells Canyon Access Road alternative would involve upgrading the existing Crow Creek county road from the mouth of Crow Creek Valley near Fairview, Wyoming, to the mouth of Wells Canyon, a distance of approximately 15 miles. Upgrading the Crow Creek Road would involve grading, widening, and straightening the existing road. The improved alignment would be 30 feet wide and surfaced with crushed non-seleniferous rock for all weather use. A new 30-foot wide access road would be built from the Crow Canyon Road up Wells Canyon to the Panel G staging area. This new road would be constructed on the north side of the canyon above the ephemeral stream channel in the canyon bottom (**Figure 3.6-1**).

The new Wells Canyon Road would cross a single undefined (non-jurisdictional) drainage tributary to Wells Canyon south of the Panel G Lease area. Widening and straightening the Crow Canyon Road would require improvements on seven existing channel crossings and would impact wetlands at multiple locations (**Figure 3.6-1**). From south to north, these channel crossings are: a ditch north of Wells Canyon, Deer Creek, Quakie Hollow, Sage Creek, an unnamed tributary to Crow Creek, Herdmane Hollow, and a second unnamed tributary to Crow Creek. Wetlands that would be impacted by this alternative border Crow Creek and extend westward toward the Crow Creek Road alignment (**Figure 3.6-1**). A total of approximately 20 acres of wetlands and 162 linear feet of waters of the U.S. would be disturbed if this alternative were selected. Because many of the wetland areas that may be impacted by this alternative are on private land, the extent of wetland impacts has been calculated from National Wetland Inventory mapping, rather than field surveys. Accordingly, the estimate of wetland impacts that would result from this alternative is approximate.

Alternative 8 – Middle Access Road
Selection of the conveyor (Alternative 6) would require either construction of the Middle Access Road or Alternative 7. The Middle Access Road would extend from Panel G north across South Fork Deer Creek, Deer Creek, and North Fork Deer Creek to enter Panel F near its southern end (**Figure 3.6-1**). Selection of this alternative would impact drainages in the Deer Creek watershed. Under this alternative, a total of 0.62 acre and 2.413 Functional Units of wetlands would be disturbed.

Specifically, construction of the Middle Access Road would cross two channels in the upper reaches of the unnamed tributary to South Fork Deer Creek. This road would then cross South Fork Deer Creek, and a 360-foot long culvert would be installed at this crossing. All these channels have been identified as WOUS (Maxim 2003b). Continuing to the north, the road would cross Deer Creek in an area that supports adjacent wetlands. A 580-foot culvert would be installed at this Deer Creek crossing. North of Deer Creek, the Middle Access Road would cross an undefined, non-jurisdictional channel, then would join the route of the Middle Haul/Access Road. This segment of the road would cross six drainages above the start of definition of the channels (**Figure 3.6-1**). The alignment would also cross the upper reaches of three North Fork Deer Creek tributaries within and just west of the Panel F South Lease Modification Area. All three of the drainages would be crossed above the start of channel definition (Maxim 2003b).

4.6.1.4 No Action Alternative

Under the No Action Alternative, Panels F and G would not be developed. Phosphate ore in these areas would not be mined. The impacts to wetlands and WOUS in the Project Area would not occur. Impacts to AIZ's would likewise not occur. In order to meet demand for the Don Plant, Simplot would seek other sources of phosphate in Southeastern Idaho. Development of these other sources of phosphate would have its own impacts on wetlands, WOUS, and possibly on AIZs.

4.6.2 Mitigation Measures

Project design features, BMPs, and the proposed Reclamation Plan (described in Chapter 2) are elements of the Proposed Action designed to reduce environmental impacts to wetland resources. Impacts to jurisdictional waters, including WOUS and wetlands, would be avoided or minimized to the extent possible by design. BMPs that would be used to minimize impacts to wetlands and WOUS include the construction of surface runoff management ditches, culverts, settling ponds and sediment traps. Management practices would follow Simplot's Smoky Canyon Mine Storm Water Pollution Prevention Plan (SWPPP).

Simplot would prepare a USACE permit application for required dredge or fill activities and submit this document to the USACE. This application would include a discussion of measures taken to avoid or minimize impacts to wetlands. Jurisdictional channels and wetlands affected by temporary impacts that can be reclaimed would be restored to their approximate pre-construction conditions as mining or use of affected areas is completed. Any waters and wetlands that would be permanently impacted would be mitigated on- or off-site. The USACE may also require mitigation for wetlands temporarily impacted by the development of mine facilities. The type and amount of mitigation required would be determined in consultation with the Corps. In general, however, the goal of mitigation is to replace the functions and values of wetlands or WOUS temporarily or permanently lost to project development. The USACE prefers that replacement (mitigation) wetlands be located in the same general area as wetlands

that have been lost due to project development, and that the wetlands be similar in type to the wetlands that were dredged or filled. Mitigation wetlands meeting these criteria are referred to as “onsite” and “in-kind.” If either of both of these criteria cannot be met, the USACE may accept “off-site” and/or “out-of-kind” mitigation. The USACE may, for example, accept a riparian enhancement program as mitigation for impacts to a wetland, but will generally request that the mitigation include a higher ratio of mitigation acreage relative to the affected wetland acreage.

As a part of any wetland mitigation project, the USACE requires monitoring to demonstrate that created (mitigation) wetlands have been successfully constructed. Specific success criteria (such as percent cover and species composition) are stipulated in the mitigation plan. These criteria are referred to as mitigation targets. In general, before the USACE will certify the mitigation as successful, the created wetland must meet these mitigation targets. The wetland must be shown to function as a self-sustaining wetland without artificial support, such as irrigation. Irrigation may be used to first establish the mitigation wetland, but after this initial period, the created site must be able to function as a self-maintaining wetland system. Details of wetland mitigation and monitoring would be a part of the permit that Simplot would seek from the USACE for the disturbance that would result from implementation of the Proposed Action or alternatives.

4.6.3 Unavoidable (Residual) Adverse Impacts

Unavoidable (residual) adverse impacts are those that would continue after implementation of mitigation measures and/or final reclamation. The success and location of Simplot's wetland mitigation measures and reclamation following completion of the Project would determine the extent of residual impacts in the local area.

Wetlands and WOUS physically disturbed by pit and overburden fills in Panels F and G could not reasonably be re-established through reclamation activities. Permanently impacted wetlands would require mitigation on- or off-site. The amount and type of mitigation would be determined in consultation with the USACE, and in consultation with the USFS and the BLM. Former AIZ’s adjacent to these waters and wetlands would no longer influence aquatic habitats.

Wetlands and WOUS impacted by road crossings could potentially be restored when these sites are reclaimed at the end of the useful life of the roads. Similarly, AIZs impacted by road construction would be reclaimed to the extent feasible. Wetland disturbance along a portion of the Panel G West Haul/Access Road from Panel G to the pass between Deer Creek and Diamond Creek would only be partially reclaimed as this road would be narrowed and retained as a permanent USFS road. Cuts and fills on steep slopes, in particular, may require extended periods of time to successfully reclaim. **Figure 2.6-8b** shows the locations of road cuts identified as being too steep to reclaim. Erosion from these unreclaimed cuts and fills has the potential to increase sediment delivery to wetlands, stream channels (waters of the U.S.) and to AIZs. As **Figure 2.6-8b** shows, construction of the Middle Haul Access Road (Alternative 4) or the Modified East Haul/Access Road (Alternative 3) would create the largest extents of non-reclaimable cuts.

4.6.4 Relationship of Short-Term Uses and Long-Term Productivity

Approximately 2.56 acres of wetlands and 12,370 linear feet of channel would be impacted by the Proposed Action. Since the majority of these sites would be lost to excavation of the pits or covered by overburden fills, the wetlands would be lost as wildlife habitat, sites of flood

attenuation and sediment/nutrient/toxicant retention, as well as other wetland functions and values.

During the life of the Project, BMPs, including surface runoff management ditches, culverts, settling ponds and sediment traps, would be used to convey runoff and surface water discharge, and to trap sediment, nutrients, and COCs. Overburden handing practices would be designed to minimize or prevent the release of COCs. Over the longer term, reclamation and mitigation would be used to restore or replace the functions and values of impacted wetlands and WOUS.

4.6.5 Irreversible and Irretrievable Commitments of Resources

Wetlands and WOUS physically disturbed by pit and overburden fill development would be lost and could not reasonably be reclaimed. These sites would however, be mitigated on- or off-site. The function of AIZ's adjacent to these wetlands would change, as these sites would no longer influence aquatic habitats.

4.7 Wildlife Resources

Issue:
The mining operations and related transportation facilities may physically affect terrestrial wildlife, including Threatened, Endangered, Proposed, Candidate, and Sensitive (TEPCS) and Management Indicator Species (MIS), through direct disturbance and fragmentation of their habitat.

Indicators:
Compliance with the applicable RFP Standards and Guidelines;

Acres of different wildlife habitats physically disturbed and the juxtaposition of that disturbed habitat over the life of proposed mining activities;

Acres of disturbance to and the proximity of the proposed operations to high value habitats such as: TEPCS species habitats, crucial and or high value big game ranges, wetlands, and seep and spring areas;

Increased uptake by wildlife of contaminants of concern in mining disturbed areas and areas that are reclaimed;

Increased use of existing wildlife habitat for recreational purposes;

Increase in mining and transportation-related noise levels in wildlife habitat;

Increase in vehicle traffic in the Project Area and potential for increased wildlife mortality through accidents.

4.7.1 Direct and Indirect Impacts

4.7.1.1 Proposed Action

Over an approximately 16-year period, the Proposed Action would disturb 1,340 acres in a variety of habitats (**Table 4.5-1**) that are currently utilized by TEPCS species and other wildlife. The remaining, undisturbed parts of the Study Area (20,462 total acres) would continue to

provide habitat, cover, and movement routes for wildlife during the Project. In all, Project disturbances would remove 10 percent of the forest habitat (8 percent of the aspen, 10 percent of the aspen/conifer, 5 percent of the Douglas-fir, 16 percent of the subalpine fir), 1 percent of the sagebrush habitat, and less than 0.2 percent of the riparian/wet meadow habitat within the Study Area over the course of the Proposed Action.

The disturbance of forest would occur within potential habitat for the following TEPCS and other wildlife species (described below): gray wolf, wolverine, boreal owl, flammulated owl, great gray owl and other raptors, goshawk, northern three-toed woodpecker and other woodpeckers, sharp-tailed grouse (winter foraging areas), and other upland game birds. The disturbance of shrub communities would reduce marginal habitat for the sharp-tailed grouse and greater sage-grouse. Riparian/wet meadow disturbance would reduce potential habitat for amphibians, moose, and bats (foraging areas). Depending on the slope of the disturbed area, disturbances could pose physical barriers to larger mammals. All wildlife crossing roads would be at risk from vehicle collisions and predators due to a lack of hiding cover. In general, habitat disturbances from mining would displace individuals into adjacent suitable habitat, where increased population densities may lead to adverse populations effects (decreased reproductive rates, increased mortality), depending on the species.

All vegetation (largely mid- to late- seral trees; **Figure 4.7-1a**) would be removed from acres disturbed by the Proposed Action and replaced initially by grasses and forbs as reclamation activities follow mining (see **Table 2.4-4** for species used in reclamation). Most plant species used in reclamation are similar to those now existing in the area, although the exact composition of reclaimed communities would be different as they follow a unique succession process. Reclamation in Panels F and G would begin approximately two years following initial disturbance in each area. After native bunch grasses and forbs are seeded initially, other native forbs, shrubs, and trees would be seeded or planted in clusters where they are most likely to establish. **Figure 4.7-1b** shows a recently reclaimed area with vegetation similar to what could potentially exist in a previously forested area several years after reclamation. Over the long term, forest and mountain brush species may also encroach naturally into reclaimed areas.

Figure 4.7-1 View of Mature Forest and Recently Reclaimed Area

a)

b)

Guidelines under Prescription 8.2.2 (g) regarding reclamation as it pertains to wildlife would be met. The use of shallow-rooting species with low rates of selenium uptake would be used as much as possible to minimize selenium contamination of reclamation vegetation and subsequent exposure of wildlife to selenium. In addition, vegetation species and other materials that contribute to wildlife habitat needs (i.e., heterogeneity of understory debris that would provide cover) would be considered a high priority to use in reclamation.

Habitat losses in forb/graminoid habitats would be short-term. Disturbances in most habitats (i.e., conifer and aspen forest, mixed forest/brush, and shrub communities) would constitute long-term habitat losses, as forests in particular would not be expected to begin re-establishing for at least 50-100 years. Older stands would not return to their former state (mature, mid- to late-seral trees, snags, and downed dead wood) for at least 150-200 years.

Below is a summary of impacts under all components of the Proposed Action (combined). Impacts under each component are discussed separately in **Section 4.7.1.1.2**.

4.7.1.1.1 Proposed Action (all components combined)

Threatened, Endangered, Proposed, and Candidate Wildlife Species

Gray Wolf
The Study Area contains suitable habitat for the gray wolf and its prey, but wolves are known only as transient visitors to the area. The Study Area does not contain any known den or rendezvous sites; thus the Proposed Action is in compliance with RFP Standards that restrict human disturbances within one mile of such areas (USFS 2003a:3-30). In the event that wolves should pass through the Project Area during mining-related activities, noise, including blasting, and increased human presence could cause wolves to alter their normal movement patterns, as they tend to avoid such disturbances (Thurber et al. 1994). Corridors of undisturbed habitat within the Study Area outside the immediate vicinity of mining activities would provide alternate routes and would assist wolves in circumventing Project-related noise and activity. Overall, 1,340 acres containing suitable foraging and movement areas for wolves would be lost, leaving 93 percent of suitable habitat for wolves in the Study Area undisturbed. Impacts to transient wolves would be site-specific (limited to the area of disturbance), short-term (for the duration of the Proposed Action), and minor (see page 4-1 for definitions). The USFWS has concurred on the CTNF's determination that the Project will Not Jeopardize the Continued Existence of gray wolf.

Canada Lynx
Habitat suitable for lynx in the Project Area, while not continuous enough for resident lynx, provides important linkage habitat between the Greater Yellowstone Ecosystem and the high Uinta Mountains. Moving lynx prefer undisturbed forest, thus disturbance of 10 percent of the forest habitat in the Study Area (1,221 acres, including all forest cover types) may impede east-west lynx movement across the Project Area for the long term. Standards and guidelines for this species would be met. In the event that lynx should pass through the Project Area during mining, noise and increased human presence may cause lynx to alter their normal movement patterns, although lynx appear to be relatively tolerant of humans (Ruediger et al. 2000). Standards and Guidelines designed to maintain linkage habitat are related to vegetation (**Section 4.5**) and lands (**Section 4.10**) management; these involve the maintenance of forest diversity in species composition and age class as well as the improvement of habitat connectivity for wildlife (USFS 2003a:3-29). Movement north and south through the Study Area would still be possible through undisturbed aspen and conifer forest to the west and shrub-steppe to the east of Project activities. Impacts to transient lynx would be site-specific, short-term, and minor. The USFWS has concurred on the CTNF's determination that the Project May Affect, but is Not Likely to Adversely Affect Canada lynx.

Bald Eagle
No bald eagle nests occur within 2.5 miles of the Project Area; the Proposed Action is thus in compliance with RFP Standards and Guidelines related to bald eagle nest management (USFS

2003a:3-28 to 3-29). The Project is also in compliance with the RFP Guideline regarding winter foraging and roosting habitat (USFS 2003a:3-30) because activities would not occur near the heavily used Crow Creek wintering area. The Proposed Action would result in the removal of potential roost trees located away from Crow Creek; however, large roost trees are not a limiting factor in the area, and bald eagles would still have many roost trees available to them. A maximum of 1,221 acres of forest containing potential roost trees for bald eagles would be lost under the Proposed Action, leaving 90 percent of the forest in the Study Area undisturbed. Project-related noise and activities have the potential to displace wintering bald eagles into adjacent suitable habitat. Impacts to bald eagles are expected to be site-specific, short-term, and negligible. The USFWS has concurred on the CTNF's determination that the Project May Affect, but is Not Likely to Adversely Affect bald eagle.

Sensitive Wildlife Species

Spotted Bat

The Study Area does not provide suitable habitat (i.e., canyon walls and cliffs) for spotted bats, nor was the species detected during baseline surveys. The Proposed Action would thus have no negative effects on this species. Post-reclamation, the Project would leave cliff structures (remaining hanging walls) but the suitability of such structures as potential habitat for spotted bats is unknown. The guideline under prescription 8.2.2 (g) pertaining to ledges on hanging walls would be met. Effects to this species would be negligible. The CTNF has determined that the Project would have No Impact on spotted bat.

Wolverine

No known wolverine populations or den sites occur within the Study Area. The Proposed Action would thus comply with the RFP Guideline for wolverine (USFS 2003a:3-34). Potential habitat for wolverines within the proposed disturbance area would be eliminated (487 acres of subalpine fir; 16 percent of subalpine fir in the Study Area), preventing colonization in the immediate vicinity of the Project Area for the long term. Because wolverines prefer remote habitat, the Project would also decrease the suitability of surrounding, undisturbed forest within approximately 1,640 feet of the Project Area boundary over the short term (Magoun et al. 2005). Should wolverines travel through the area during Project activities, human disturbance would have a moderate impact on these individuals. Potential impacts to wolverines would be site-specific, short- to long-term, and minor to moderate. The CTNF has determined that, with regard to wolverine, the Project May Impact Individuals or Habitat but will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species.

Townsend's Big-Eared Bat

The Proposed Action would not affect any known big-eared bat populations or maternity colonies, and the species was not detected during baseline surveys. Preferred habitat (e.g., caves) for big-eared bats was not found in the Project Area, and the possibility that caves or other potential roost or hibernacula sites exist in the area is low. Any undetected caves that might exist within the disturbance footprint would be lost or would be unsuitable for roosting during mining. Due to the limited amount of preferred habitat for Townsend's big-eared bat in the Project Area, implementation of the Proposed Action is not expected to impact this species. The CTNF has determined that the Project would have No Impact on Townsend's big-eared bat.

Boreal Owl

The Study Area does not provide preferred habitat (e.g., mature spruce-fir forest) for boreal owls, nor was the species detected during baseline surveys. Marginal unoccupied habitat for boreal owls (511 acres, including Douglas-fir and subalpine fir) within the Project disturbance

area would be reduced for the long term (at least 150-200 years), leaving 84 percent of the subalpine fir and 95 percent of the Douglas-fir in the Study Area undisturbed. The RFP Guideline regarding boreal owl habitat calls for maintaining 40 percent of the forested acres in mature or old age classes within a 3,600-acre area around nest sites (USFS 2003a:3-32). Following Project activities, 92 percent of the forested acres within the mature-forest habitat evaluation area would be mature (see **Table 4.7-1**). Surveys for active boreal owl nests would be conducted prior to mining activities, and if discovered, the CTNF would determine the feasibility of potentially rescheduling the activity until the birds have fledged. Indirect impacts to boreal owls via reduction of marginal habitat would be site-specific, long-term, and minor. The CTNF has determined that, with regard to boreal owl, the Project May Impact Individuals or Habitat but will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species.

Columbian Sharp-Tailed Grouse

No Columbian sharp-tailed grouse are known to occur within the Study Area, thus the Proposed Action would comply with RFP Standards and Guidelines for this species (USFS 2003a:3-33), including the maintenance of 80% winter forage recommended by Ulliman et al. (1998). Potential marginal habitat (82 acres of sagebrush and 16 acres of mountain shrub) for sharp-tailed grouse would be eliminated for the short term. This figure does not represent an appreciable decrease (-1 percent) in sagebrush habitat within the Study Area. Potential winter foraging habitat for this species (558 acres of aspen) would be absent for the long term. However, 92 percent of the aspen in the Study Area would remain undisturbed, thus meeting the RFP Guideline (USFS 2003a:3-33). The majority of suitable habitat for sharp-tailed grouse in the Study Area, along Deer and Crow Creek drainages, would not be disturbed.

Regarding population viability, there has been no evidence in the last two decades of a downward trend in sharp-tailed grouse numbers. Because RFP Standards and Guidelines for Columbian sharp-tailed grouse would be met and winter forage would be available to support populations outside of the Project Area, a loss of viability is not expected. Impacts related to the loss of sharp-tailed grouse habitat would be site-specific, short- to long-term, and minor. The CTNF has determined that, with regard to Columbian sharp-tailed grouse, the Project May Impact Individuals or Habitat but will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species.

Peregrine Falcon

Neither peregrine falcon individuals nor suitable habitat for this species are known to occur within the Study Area. No known peregrine falcon nests occur within 15 miles of the Project Area, thus the Proposed Action would comply with RFP Standards and Guidelines for this species (USFS 2003a:3-30). The CTNF has determined that the Project would have No Impact on peregrine falcon.

Flammulated Owl

Although no flammulated owl nests were found during 2003 baseline surveys, call responses were heard near or within dry, mature Douglas-fir patches in the northern portion of the proposed Panel F footprint. The Proposed Action would eliminate 734 acres of suitable habitat (including aspen, aspen/conifer, and Douglas-fir) for the long term. An unknown number of individuals would be displaced into suitable adjacent habitat as a result of the Proposed Action. The RFP Guideline regarding flammulated owl habitat, which recommends against timber harvest activities within a 30-acre area around known nest sites (USFS 2003a:3-32), would not be met if nests occur in the Project Area. However, 92 percent of the aspen, 90 percent of the aspen/conifer, and 95 percent of the Douglas-fir would remain undisturbed in the Study Area.

Because these acres would be available for displaced birds, a loss of viability for this species is not expected. Impacts to flammulated owls inhabiting the Project Area would be site-specific, long-term, and moderate. The CTNF has determined that, with regard to flammulated owl, the Project May Impact Individuals or Habitat but will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species.

Northern Three-Toed Woodpecker

Most three-toed woodpeckers detected during surveys were located in the vicinity of Panel F and in the northeastern region of the Study Area. An unknown number of individuals would be displaced into suitable adjacent habitat as a result of the Proposed Action, and up to 10 percent of suitable woodpecker habitat in the Study Area (1,221 acres, including all forest types) would be eliminated for the long term. Three-toed woodpeckers may not find disturbed areas suitable until mature forest stands that contain suitable snags and cavities are reestablished (at least 150-200 years). Under RFP Prescription 8.2.2(g), "snag habitat for woodpeckers shall not be a management consideration;" thus RFP Standards and Guidelines for this species would be met (USFS 2003a:4-84). Impacts to three-toed woodpeckers would be site-specific, short- to long-term, and moderate. The CTNF has determined that, with regard to northern three-toed woodpecker, the Project May Impact Individuals or Habitat but will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species.

Great Gray Owl

During baseline surveys, a great gray owl pair was observed within the Panel G footprint. A follow-up survey in 2005 heard multiple responses in the same location. The Proposed Action would eliminate 10 percent of the potential suitable habitat for great gray owls in the Study Area (1,221 acres, including all forest cover types) for the long term, and 5 percent of suitable foraging areas (5.5 acres of forb/graminoid cover) for the short term. An unknown number of individuals would be displaced into suitable adjacent habitat as a result of the Proposed Action. The RFP Guideline regarding great gray owl habitat calls for maintaining 40 percent of the forested acres in mature or old age classes within a 1,600-acre area around nest sites (USFS 2003a:3-32). Following Project activities, 92 percent of the forested acres in the mature-forest habitat evaluation area would be mature (see **Table 4.7-1**) and the RFP Guideline for this species would be met. Surveys for active great gray owl nests would be conducted prior to mining activities, and if a nest were discovered, the CTNF would determine the feasibility of potentially rescheduling the activity until the birds have fledged. Impacts to great gray owls would be site-specific, short- to long-term, and moderate. The CTNF has determined that, with regard to great gray owl, the Project May Impact Individuals or Habitat but will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species.

Greater Sage-Grouse

All greater sage-grouse individuals observed during baseline surveys were outside the Project Area, and no active or historic sage-grouse leks were identified. Some suitable habitat (82 acres of sagebrush and 18 acres of forb/graminoid habitat) for sage-grouse would be eliminated for at least the short term, which includes brood rearing habitat (high-elevation sagebrush). This reduction would result in a minor (5 percent) decrease in forb/graminoid habitat, but not an appreciable decrease (1 percent) in sagebrush habitat within the Study Area. Any sage-grouse individuals in the Project Area would be displaced, and noise or increased human presence may cause moderate impacts to birds in the vicinity for the duration of the Proposed Action.

Concerning the RFP Guideline (USFS 2003a:3-33) related to not exceeding disturbance of more than 20 percent of the sagebrush within 10 miles of a lek in an early seral stage (Connelly

et al. 2000), the Proposed Action would impact 81.5 acres of sagebrush within 10 miles of five leks. However, the Proposed Action would not have the largest impact on sagebrush; the Proposed Action with Mining Alternative D and Transportation Alternatives 6 and 7 would impact 163 acres of sagebrush. The evaluation area for sagebrush habitat was thus defined as the area within 10 miles from disturbances associated with the above-described combination of alternatives. Under this combination, the Project would impact sagebrush within 10 miles of four leks, one located in the Blackfoot River watershed. The amount of sagebrush habitat within this 388,724-acre evaluation area is not known; however, the amount of sagebrush within the Study Area is known, and, since the Study Area likely has a smaller proportion of sagebrush than the evaluation area on a whole, and since most of the sagebrush within the Study Area is not as good quality habitat (i.e., smaller blocks and higher elevation) for sage grouse as other areas (e.g., Star Valley, Slug Creek, Tygee Creek, Preuss/Dry Creek) within the evaluation area, the Study Area would serve as a conservative approximation of sagebrush habitat within the larger evaluation area. The Study Area contains 5,666 acres of sagebrush habitat, which does not include mountain brush, which has a sagebrush component. Thus, under the worst-case combination of alternatives, the Project would impact no more than 2.9 percent of the sagebrush habitat within 10 miles of a lek over an approximate 16-year period. The Proposed Action or any alternatives would thus be within RFP guidelines.

Regarding population viability, CNF trend data indicate a declining trend for sage-grouse on the four leks closest to the CNF boundary (monitored annually); however, sage-grouse populations across Idaho have been generally stable for the last decade. Because RFP Standards and Guidelines would be met, the disturbance area is not within two miles of any known leks, and the majority of sagebrush impacted by the Project is not suitable for nesting or brood rearing, a loss of viability for sage-grouse is not expected. Impacts to sage-grouse are expected to be site-specific, short- to long-term, and minor to moderate, depending on how many individuals are displaced. The CTNF has determined that, with regard to greater sage-grouse, the Project May Impact Individuals or Habitat but will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species.

Northern Goshawk

Five goshawk responses were heard within the Study Area during baseline surveys. Although no active nests were found, it is likely that at least one active goshawk nest would occur within or near the Project Area and that much of the Study Area is used for foraging. One historic nest location occurs within the Study Area, near the intersection of South Fork Deer Creek and the proposed West Haul Road. The RFP Guideline regarding northern goshawk habitat calls for maintaining ≥30 percent of the forested acres within the evaluation (foraging) area, 40 percent in the 400-acre post-fledgling area, and 100 percent of the 200-acre nest area (includes historic nest locations) in mature or old age classes (USFS 2003a:3-32). Following Project activities, 92 percent of the forested acres in the evaluation area would be mature (see **Table 4.7-1**). Surveys for active goshawk nests would be conducted prior to mining activities and if discovered, the CTNF would determine the feasibility of potentially rescheduling the activity until the birds have fledged.

Guidelines for goshawk habitat are more restrictive than those of any other raptor species discussed in this section, thus RFP Guidelines for forested acres met under goshawk would also be met for all other raptors. RFP Guidelines for goshawk were evaluated under Alternative D because this alternative involves more disturbance than the Proposed Action as well as the most disturbance of any mining or transportation alternative. RFP Guidelines met under Alternative D, therefore, would also be met under the Proposed Action or any other alternative.

Most forested stands that occur in the evaluation area for goshawk are classified as mature (greater than 50 years old; see **Table 3.7-3**). Following mining, the percent of varying forest size classes would be within RFP Guidelines, which recommend that at least 30 percent of the forested acres after mining consist of mature stands and that no other size class is present in greater proportion than 25 percent (**Table 4.7-1**). The Proposed Action would not comply with the RFP Guideline which recommends against creating forest openings greater than 40 acres. The 10 percent of disturbed forest habitat in the Study Area (1,221 acres, including all forest cover types) may not be suitable for goshawk nesting in the future until mature forest is restored (150-200 years). If a nest is found during surveys prior to mining activities, part or all of the guidelines to retain mature or old age classes of forest habitat within the goshawk territory would not be met. If activities can not be rescheduled to accommodate goshawk nesting, the guideline to not disturb or destroy existing nests, whether active or inactive, would also not be met if the nest is within the disturbance area. The disturbance area, however, represents a relative small portion of the goshawk territory and suitable nesting, post-fledging, and foraging habitat is available adjacent to the Project Area.

Regarding population viability, there has been no hard evidence of a significant decline in goshawk populations in recent decades, although declines are expected in some areas due to habitat alterations (i.e., logging). On the CNF, fluctuations of nest occupancy and breeding rates appear to be normal, and new nests continue to be found in undisturbed habitat. Because new nests continue to be found, other goshawks on the Caribou Portion of the CTNF appear to be productive, and the northern goshawk is not on either the USFWS (2002) or Idaho (IWJV 2005) species list of concern, a loss of viability for northern goshawk in Southeastern Idaho is not expected.

The Proposed Action would eliminate potential nesting habitat for goshawk for the long term (within forest habitat), while areas that could be used for foraging would be eliminated for the short term. Impacts to goshawk are expected to be site-specific, long-term, and moderate. The CTNF has determined that, with regard to northern goshawk, the Project May Impact Individuals or Habitat but will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species.

TABLE 4.7-1 TREE SIZE-CLASS DISTRIBUTION FOR FORESTED ACRES WITHIN THE GOSHAWK EVALUATION AREA FOLLOWING IMPLEMENTATION OF MINING ALTERNATIVE D

SIZE CLASS	ACRES AFTER MINING	PERCENT AFTER MINING	RFP GUIDELINE FORAGING AREAS (USFS 2003A:3-31)
Nonstocked/Seedling (<5 years old)	1,851	6	<25 percent
Sapling (5-20 years old)	300	1	<25 percent
Pole (20-50 years old)	881	3	<25 percent
Mature/Old (>50 years old)	28,187	90	>30 percent
Total	31,219	-	-

Management Indicator Species

The three MIS Species: greater sage-grouse, Columbia sharp-tailed grouse, and northern goshawk, are discussed above as Sensitive species.

Migratory Land Birds

The Proposed Action would affect migratory birds, including Neotropical landbirds, by eliminating 644 acres within Priority A habitats identified in the Coordinated Implementation Plan for Bird Conservation in Idaho (IWJV 2005). Specifically, three acres of riparian habitat, one acre of non-riverine wetland, 82 acres of sagebrush, and 558 acres of aspen woodland would be eliminated for the long term. These losses would affect warbling vireo and willow flycatcher, which are two high priority species found in the Study Area that occur in these habitats (aspen and riparian habitats, respectively). Regarding other high priority migratory birds, the loss of Douglas-fir and subalpine fir in the Project Area (511 total acres) would affect Williamson's sapsucker by reducing the amount of preferred habitat for this species. Indirect effects to Clark's nutcracker would also occur, although no preferred habitat (high elevation spruce/fir) would be eliminated, because Clark's nutcracker was observed in the Study Area and clearly utilizes the area.

Habitat impacts to other birds protected under the MBTA (and not priority species as determined by the IWJV) are discussed in a letter and documents from the CNF sent to the Eastern Idaho USFWS office in response to USFWS comments on the DEIS. The documents in the letter sent to USFWS list breeding dates for all migratory birds protected under the MBTA that were observed in the Study Area, as well as habitat preferences for high priority species; concurrence on the documents from USFWS to the CNF is contained in the project record. The purpose of the documents is to provide guidelines for scheduling timber removal and ground-clearing activities under the Proposed Action that minimize conflicts with the nesting periods of migratory birds. As stated in the Environmental Protection Measures (**Section 2.10**) and Mitigation Measures (**Section 4.7.2**), timber removal subsequent to the initial phase (which may be dictated by the ROD release date) as well as ground-clearing activities would be planned using the guidance in these documents.

Although most habitat reductions from the Proposed Action do not represent appreciable decreases in habitat within the Study Area, the objectives of the Idaho BCP include no net loss of Priority A habitats, this objective would thus not be met in the short term due to the disturbance of riparian, non-riverine wetland, sagebrush, and aspen habitat. Over the long term (greater than 50 years), most of these habitats (with the possible exception of wetlands) would reestablish within disturbed areas at approximately equal acreages. The habitat area avoided by some migratory birds may be larger than the area of disturbance if Project-related noise makes adjacent areas unattractive for nesting. An unknown number of active nests would be inadvertently and unintentionally destroyed by timber harvest and ground-clearing activities despite planning measures that would attempt to minimize these impacts through the timing of disturbance. Impacts to migratory birds, including Neotropical landbirds, would be site-specific (e.g., loss of an active nest), short-term (1 year during actual ground clearing activities), and moderate to major.

Big Game

In general, big game species (mule deer, elk, and moose) roam through most of the Study Area year round. The Proposed Action would remove 1,340 acres (7 percent of the Study Area) of vegetation currently providing space to move, thermal and hiding cover, and foraging areas for big game over the course of the Project. Project activities would displace big game individuals into the remaining, adjacent, suitable habitat. Regarding riparian areas utilized by moose, the Proposed Action would disturb three acres of riparian habitat, which does not represent an appreciable decrease (less than 0.5 percent) in riparian habitat within the Study Area. After mining, 1,340 acres of reclaimed habitat would be available for elk and mule deer (forage) consumption.

During baseline surveys in winter, elk and mule deer were commonly observed outside of the Project Area footprint, on a wide corridor along Crow Creek. However, no critical winter range habitat for mule deer, elk, or moose occurs in the Study Area. The Proposed Action would remove 225 acres (1 percent) of the vegetation within an 18,230-acre non-critical big game winter range area that intersects the Study Area (**Section 3.7.5**). Actual lost winter range may be larger if big game individuals avoid portions of undisturbed suitable habitat immediately adjacent to the Project Area. Corridors of undisturbed habitat within the Study Area would provide routes for big game individuals to circumvent Project disturbances. Diversions from preferred routes in winter during active mining operations, if longer in length than preferred routes, may stress the energy reserves of some individuals. Movements of big game individuals are most likely to be hindered during periods of high snowfall (Merrill et al. 1994), if at all. The guideline under Prescription 8.2.2 (g) pertaining to the accommodation of big game migration would be met because corridors of undisturbed habitat in the Study Area would be within a reasonable distance for big game to safely circumvent Project disturbances. Haul road fill material, although steep, is not considered a barrier to big game movement. After mining, reclaimed areas would provide enough space for big game to avoid headwalls.

Direct impacts to big game individuals may occur by collisions on Project roads and from mine-related personnel traveling to and from the mine area on roads located away from the site. Overall impacts to big game are expected to be site-specific, short- to long-term, and minor to moderate.

Other Wildlife Species

Predators

The Proposed Action would eliminate a maximum of 1,340 acres of habitat for predators over the course of the Project, leaving 93 percent of the habitat within the Study Area undisturbed. Larger predators (e.g., mountain lions, black bears, bobcats, and coyotes) in the Study Area would be displaced, potentially causing adverse population effects (e.g., decreased reproductive rates, increased mortality) in adjacent habitat, depending on the predator species, its behavior, and relative population densities. Ground-clearing activities would likely displace or kill all or most smaller (or slow-moving) predators (e.g., long-tailed weasels). Noise and increased human presence would cause minor, short-term impacts to predator individuals forced to alter their normal movement patterns. Prey availability and foraging would be reduced for the short term by the loss of habitat and loss of prey individuals during ground-clearing activities. Impacts to predators would be site-specific, short-term, and moderate.

Bats

Bats within the Project Area footprint would be displaced. The site with the highest species richness of bats, near the intersection of Wells Canyon and Crow Creek Road, would not be directly disturbed by Project activities. Bats roosting just outside the Project Area are likely to be affected by noise and increased human presence for the duration of the Project. Vibrations associated with blasts may cause short-term, moderate impacts to nearby bats. Snag roosting habitat in the Project Area and some foraging habitat for bats (i.e., less than three acres of ponds and other riparian areas) would be eliminated for the long term. Post-reclamation, the Project would leave cliff structures (remaining hanging walls) but the suitability of such structures as potential habitat for bats is unknown. The guideline under prescription 8.2.2 (g) pertaining to ledges on hanging walls would be met. Impacts to bats in the Study Area would be site-specific, short-term, and moderate.

Raptors
Most raptor species found in the Study Area rely on undisturbed, mature forest stands for nesting. Ten percent of the forest habitat in the Study Area (1,221 acres, including all forest cover types) would be eliminated for the long term; mature stands (containing snags and dead-topped trees) may not regenerate for 150-200 years. Due to noise and increased human presence, undisturbed forest adjacent to the Project Area, particularly within 0.5 miles, may also be unsuitable to nesting raptors for the short term. Habitat that supports the prey base for many raptors, such as sagebrush (82 acres; not an appreciable decrease within the Study Area) and tall forb communities (18 acres; a 5 percent decrease within the Study Area) would be eliminated for the short term. Raptor surveys would be conducted prior to nesting season and if nests were found, nests would be removed to discourage return to the area of ground-clearing activities. Scheduling of timber harvest and ground clearing would minimize activity during nesting season. Impacts to raptors within the Study Area are expected to be site-specific, short-term, and moderate.

Upland Game Birds
Greater sage-grouse (sensitive, MIS species) have previously been discussed as a sensitive species. Regarding blue grouse and ruffed grouse (forest species), 10 percent of the potential suitable habitat in the Study Area (1,221 acres of forest) would be eliminated for the long term. Eggs and pre-fledged game birds would be susceptible to direct impacts (mortality) from ground-clearing activities. Fledglings and mature birds in the Project Area would be displaced, and noise or increased human presence may cause moderate stress to birds in the vicinity of the Project Area for the short term. Any blue or ruffed grouse individuals displaced by Project activities may cause increased mortality or decreased reproductive rates in adjacent populations, depending on the behavior, relative population densities, and the size and juxtaposition of suitable habitat and established territories. Impacts to upland game birds are expected to be site-specific, short-term, and minor to moderate, depending on how many individuals are displaced, injured, or killed.

Woodpeckers
The Proposed Action would eliminate up to 10 percent of the snag habitat in the Study Area (maximum of 1,221 forested acres) for the long term. Woodpeckers may not find disturbed areas suitable until mature forest stands are established that contain mid- to late-seral trees, snags, and downed dead wood (150-200 years). Given the availability of adjacent suitable habitat, this impact would be site-specific, long-term, and moderate. Under RFP Prescription 8.2.2(g), “snag habitat for woodpeckers shall not be a management consideration.” Three-toed woodpeckers have previously been discussed as a sensitive species.

Amphibians and Reptiles
Four species of amphibians (tiger salamander, boreal chorus frog, pacific chorus frog, western toad) and one reptile (terrestrial garter snake) were detected in the Study Area during baseline surveys, primarily in riparian areas and AIZs along watercourses. Ground clearing activities would cause direct impacts (injury, mortality, or displacement) to any amphibians or reptiles in these areas.

The Proposed Action would affect amphibians by eliminating 2.8 acres of riparian/wetland habitat for the long term. Although considered a permanent impact, this reduction is not an appreciable decrease (less than 0.5 percent) in riparian habitat within the Study Area. The Proposed Action would also impact habitat for the western toad. An approximately 450-acre area within the reported potential western toad migration distance (1.5 miles or 2.4 kilometers) would be disturbed (see **Figure 3.7-2**). The Proposed Action would also disturb 475 feet of

perennial stream (less than 0.5 percent of the perennial stream in the Study Area) and 21,030 feet of intermittent channel (approximately 8 percent of the intermittent channel in the Study Area; **Table 4.8-1**). The two culverts installed in perennial streams and five of the six culverts installed across intermittent channels under the Proposed Action would be left in place. The overall lengths of these culverts would be shortened and portions of the channels restored following mining (see **Appendix 2C**). Pipes, placed adjacent to installed culverts, would also be installed for the passage of amphibians.

Although surface runoff would be managed by implementation of the SWPPP, small amounts of sedimentation into North Fork Deer Creek and South Fork Sage Creek due to road construction (see **Section 4.3**, **Section 4.4**; and **Appendix 4A**) could temporarily degrade riparian habitat in the Study Area that is used by amphibians and reptiles. Sedimentation may also occur in Sage Meadows, which contains the most suitable habitat and the highest diversity of amphibians, including western toads. Sedimentation impacts to amphibian populations, if they occurred, would be long-term, site-specific, and major.

Traffic on haul/access roads would increase the potential for direct mortalities/injuries and could fragment suitable habitats for amphibians and reptiles. Mining disturbances alone could also lead to fragmentation. Impacts of fragmentation include decreased gene flow and a resultant susceptibility of fragmented populations to stochastic events that could lead to local population extinctions. Specifically, fragmented populations may not be large enough to provide living space and opportunities for dispersal, or they may be at greater risk from biotic (e.g., pressure from predators) or abiotic (e.g., changed light and moisture conditions) edge effects (Fahrig 2003). Fragmentation impacts to amphibian and reptile populations would be short-term (for the life of the Project), site-specific, and moderate.

Selenium Issues with Wildlife

Selenium poisoning is most common in animals that consume seleniferous vegetation directly (see **Section 3.7.7**). The possibility of selenium accumulation by herbivores (e.g., big game) would thus exist if individuals routinely consume vegetation containing elevated levels of selenium. Higher-level bioaccumulation would be possible in larger predators (i.e., gray wolf) that consume these herbivores.

According to a recent assessment by NewFields (2005b), risk from selenium in vegetation in the Smoky Canyon Mine area appears to be primarily restricted to sections of overburden disposal areas that are not fully reclaimed or were reclaimed prior to more recently developed reclamation practices that involve covering seleniferous overburden with a cover of low-selenium chert and topsoil. Among vegetation samples from reclaimed areas of Smoky Canyon Mine Panels A, D, and E, mean results for forage exceeded the Removal Action Level set by IDEQ of 5 ppm only at Panel A and on the Pole Canyon Overburden Disposal Area. Selenium concentrations in the more extensively reclaimed D Panel samples were lower than or approximately equal to the Removal Action Level. Small herbivorous mammals sampled from reclaimed areas within Smoky Canyon Mine Panels A, D, and E (where selenium control measures were not implemented) were also found to have selenium levels above the Removal Action Level (NewFields 2005b; see **Section 3.7.7**).

Adverse impacts of selenium accumulation to wildlife in Panels F and G are unlikely, as the Proposed Action includes Project design features intended to reduce the potential for selenium uptake in reclamation vegetation on overburden disposal areas. Project design features (i.e., chert cover) not present during the mining and reclamation of Panels A, D, and E would be implemented for Panels F and G. As a result, selenium levels in herbivorous mammals are

expected to remain under the Removal Action Level set by IDEQ. Selenium levels in smaller mammalian predators (e.g., lynx, wolverine, fisher, or marten, if they occurred in reclaimed mine areas), owls, and other raptors that consume these animals would then also be expected to remain below the Removal Action Level. Although considered unlikely, if selenium accumulation were to occur on reclaimed areas of Panel F and G, impacts from selenium effects to small herbivorous mammals, owls, raptors, and other smaller predators would be site-specific, potentially long-term, and minor. Impacts on big game and large predators (i.e., gray wolf) would be site-specific, potentially long-term, and minor to major.

As described in **Section 4.3.2**, the potential for selenium level exceedances of the surface water standards (greater than 0.005 mg/L) in perennial streams would occur under the Proposed Action in lower South Fork Sage Creek, lower Sage Creek, and lower Deer Creek. The CERCLA process (see **Appendix 2A**) is expected to reduce impacts in Hoopes Spring, lower South Fork Sage Creek, and lower Sage Creek before the selenium additions would occur for the Proposed Action and Alternatives. (see **Section 4.3.2**). As described in **Section 4.3.2**, the mitigation measures proposed for the Agency Preferred Alternative, including the Alternative D (store and release cover) would reduce predicted selenium concentrations to below existing surface water standards. The potential for increasing selenium levels in riparian and wetland areas would be controlled by the implementation of these environmental protection measures. Riparian vegetation at the existing Mine Panels A, D, and E contained selenium concentrations below the Removal Action Level set by IDEQ (5 mg/Kg dry weight; NewFields 2005b), thus riparian areas reclaimed at a more rigorous standard within Panels F and G are unlikely to accumulate selenium above this level.

Regarding amphibians, some salamanders in the Smoky Canyon Mine area are known to have elevated levels of selenium (see **Section 3.7.7**), indicating that selenium accumulation may be occurring naturally (see **Section 3.3.2**). Impacts to amphibians from uptake of ingested or waterborne selenium are not well studied, but could include larval deformities similar to those found in affected fish. Impacts to amphibian populations resulting from further selenium increases in the Study Area, if they occurred, would be site-specific, long-term, and moderate.

4.7.1.1.2 Proposed Action (individual components)

Below, environmental effects have been broken out by components of the Proposed Action. Effects within each mine panel (F and G), within each haul road footprint, and within the power line corridor are discussed separately. The components of the Proposed Action would have similar impacts to wildlife (e.g., habitat loss, noise disturbance, potential for contaminant uptake, etc.) as the entire Proposed Action, but to a lesser degree. No habitat disturbances within individual components of the Proposed Action represent appreciable decreases (greater than 5 percent) relative to the undisturbed habitat in the Study Area. Impacts discussed below concentrate on significant differences between components and between components and the Proposed Action. Impact determinations are discussed only under the combined impacts section (above), as impacts would not be more severe under any component of the Project than under the whole. Compliance with RFP Standards and Guidelines are also discussed under the combined impacts section and not under each component.

<u>Panel F, Including Lease Modifications (Component of Agency Preferred Alternative)</u>
The mining of Panel F (including North and South Lease Modifications) would disturb 515 acres of wildlife habitat, including 466 acres of forest, 41 acres of sagebrush, and 0.5 acre of riparian/wet meadow (**Table 4.5-1**), as well as 12,187 feet of intermittent channel (**Table 4.8-1**). Within and adjacent to the Panel F footprint, one observed fall use area for elk

occurs (adjacent to the South Lease Modification Area). This area may be unsuitable for elk due to direct disturbance and noise for at least the duration of Panel F mining (6-7 years). Some non-critical winter range (219 acres) for big game would be disturbed by the mining of Panel F. Responses from goshawk, flammulated owl, and three-toed woodpecker were heard within or near the footprint of Panel F. Within this area, any raptors would be displaced, and any unknown nests could be destroyed despite surveys prior to ground-clearing activities. Although, no amphibians were detected at six surveys sites within Panel F, a breeding site for western toads was discovered in Sage Meadows. An approximately 320-acre area within the reported potential western toad migration distance of 1.5 miles (Keinath and McGee 2005) would be disturbed (see **Figure 3.7-2**) from Panel F mining activities. This disturbance would represent approximately 6 percent of the available acreage within this area.

Panel F Haul/Access Road (Component of Agency Preferred Alternative)

The construction of the Panel F Haul/Access Road would disturb 67 acres of wildlife habitat, including 59 acres of forest, 6.5 acres of sagebrush, and 0.7 acre of riparian/wet meadow (**Table 4.5-1**). In addition, 230 feet of intermittent channel would be disturbed by the installation of a culvert across South Fork Sage Creek. Culverts would be designed for the passage of fish (**Appendix 2C**). Pipes would also be installed adjacent to culverts to allow passage of amphibians. No winter range or breeding areas for big game would be disturbed by road construction, and no sensitive raptors or amphibians were detected within the road footprint during baseline surveys. Any raptors in this area would be displaced, and any unknown nests could be destroyed despite surveys prior to ground-clearing activities. Collisions with wildlife on the Panel F Haul/Access Road may occur during mining activities and may contribute to fragmentation effects, particularly in amphibian populations. No disturbance would occur within the reported western toad migration distance area from this component of the Proposed Action.

Panel G (Component of Agency Preferred Alternative)

The mining of Panel G would disturb 513 acres of wildlife habitat, including 472 acres of forest, 30 acres of sagebrush, and 0.4 acre of riparian/wet meadow (**Table 4.5-1**), as well as 5,443 feet of intermittent channel. Several year-round use areas for moose were noted during baseline surveys within or near the Panel G footprint. These areas would be unsuitable for moose due to direct disturbance and mining noise for at least the duration of mining in Panel G (8 years). No winter range or breeding areas for big game would be disturbed by mining in Panel G. One great gray owl pair was observed, and goshawk responses were heard within the Panel G footprint. Any raptors in this area would be displaced, and any unknown nests could be destroyed despite surveys prior to ground-clearing activities. No amphibians were detected at one survey site within Panel G. No disturbance would occur within the reported western toad migration distance area from this component of the Proposed Action.

Panel G West Haul/Access Road (Component of Agency Preferred Alternative)

The construction of the Panel G West Haul/Access Road would disturb 217 acres of wildlife habitat, including 203 acres of forest, 1.7 acres of sagebrush, and 0.8 acre of riparian/wet meadow (**Table 4.5-1**), as well as 450 feet of intermittent channel. In addition, 475 feet of perennial stream would be disturbed by the installation of culverts across Deer Creek (280 feet) and South Fork Deer Creek (260 feet). Culverts would be designed for the passage of fish (**Appendix 2C**). Pipes would also be installed adjacent to culverts to allow passage of amphibians. No winter range for big game would be disturbed by construction of the Panel G West Haul/Access Road. However, the risk of collisions on the Panel G West Haul/Access Road may be particularly high for big game where the South Fork Sage Creek drainage intersects the road, which is a known movement route for mule deer. Regarding calving areas, the southwest portion of a known spring calving ground for elk at Sage Meadows may be

disturbed by noise due to its proximity to the Panel G West Haul/Access Road. One controlled study of the effects of mine disturbance on elk calves in Southeastern Idaho found that cow/calf pairs remained together but abandoned their traditional calf-rearing area when exposed to human and simulated mine disturbance (Kuck et al. 1985), thus Sage Meadows may become unsuitable for elk calving for at least the duration of mining.

One goshawk response was heard within the Panel G West Haul/Access Road footprint. Any raptors in this area would be displaced, and any unknown nests within the road footprint could be destroyed. The Sage Meadows area near the road footprint also contains high-quality amphibian habitat that is known to support a breeding site for western toads. Although unlikely due to implementation of the SWPPP, sedimentation into Sage Meadows may decrease the suitability of this habitat for amphibians, including western toads. An approximately 120-acre area (including topsoil stockpiles) within the reported potential western toad migration distance (1.5 mile or 2.5 kilometer) would be disturbed (see **Figure 3.7-2**) from construction of the Panel G West Haul/Access Road. This disturbance would represent approximately 2 percent of the available acreage within this area.

Power Line Between Panels F and G

The ROW for the power line would measure 28 acres; however, actual ground surface disturbance would actually be much less because helicopters would be used for pole installation outside of lease areas. Assuming a 25-foot radius of disturbance around each pole, total ground disturbance associated with pole installation outside of lease areas would be 3.0 acres. Within the power line ROW, some additional vegetation clearing/trimming (i.e., felling of taller trees that could contact power lines) may be required in some areas. These disturbances would be small in comparison to other Project-related activities. The power line ROW falls within 6.2 acres of big game winter range; however, big game movements would not be affected by the power line. Poles would typically be placed in upland areas (out of AIZs), thus streams and riparian habitat also would not be affected. Power poles would be designed to be raptor safe, thus the power line would not pose an additional hazard to migratory birds, bald eagles, or other raptors. New poles would provide raptor perch sites; however, that may increase predation on some wildlife species (e.g., sage-grouse). An approximately 9-acre area within the reported potential western toad migration distance (1.5 mile or 2.5 kilometer) would be disturbed (see **Figure 3.7-2**) within the power line corridor. This disturbance would represent less than one percent of the available acreage within this area.

4.7.1.2 Mining Alternatives

Mining Alternatives A, D, E, and F have different disturbance footprints than the Proposed Action, and therefore affect different amounts of wildlife habitat. Alternatives A south component, A north component, E, and F would create less disturbances (138, 1.9, 27.8, and 27.8, respectively) while Alternative D would create more (137 acres). **Table 4.5-2** compares the acreages of disturbance in different habitat types among the mining alternatives and the Proposed Action. Most changes under the mining alternatives would result in increased or decreased disturbance in aspen habitat, and consequently would disproportionately affect the wildlife associated with these areas (e.g., bats, raptors, woodpeckers, sharp-tailed grouse in winter, etc.; see **Section 4.7.1.1**). In general, impacts to wildlife would be fewer under the alternatives where less habitat disturbance occurs. However, no appreciable increases or decreases (greater than 5 percent) in habitat disturbance would occur under any mining alternative. Mining alternatives situated outside the reported potential western toad migration distance area (**Figure 3.7-2**) would have no impact to this area, thus where applicable it is not discussed under each alternative below.

Mining Alternative A – No South and/or North Panel F Lease Modifications
Relative to the Proposed Action, habitat losses would be reduced if both components (North + South Lease Modifications) of Alternative A were adopted. Approximately 140 acres, predominantly in aspen and sagebrush habitats, would be left undisturbed.

No North Lease Modification
Eliminating only the North Lease modification would reduce subalpine fir habitat losses by 1.9 acres (**Table 4.5-2**). This alternative may include the implementation of Transportation Alternative 1 (Alternative Panel F Haul/Access Road) in place of the Proposed Action Panel F Haul/Access Road, which would further reduce habitat disturbance by 21 acres (**Table 2.6-1**).

No South Lease Modification
Eliminating only the South Lease modification would result in 138 fewer acres of disturbance than the Proposed Action, mainly in aspen and sagebrush (**Table 4.5-2**), and completely within non-critical big game winter range habitat (138 acres). Eliminating the South Lease modification would avoid impacting the observed fall use area for elk. It would result in the reduction of approximately 138 acres of disturbance within the potential western toad migration distance area. In addition, the remaining hanging wall under the Proposed Action would be reduced 50 percent in length under Alternative A. This modification would create less potential habitat for bats than the Proposed Action post-reclamation.

Mining Alternative B – No External Seleniferous Overburden Fills
The footprint of initial disturbance would be the same under Mining Alternative B as under the Proposed Action, so disturbance effects to wildlife habitat would be the same. The duration of mining operations would be slightly longer than the Proposed Action, creating more noise and risk of vehicle collisions. The hanging wall in Panel G would be fully backfilled in this alternative, thus not creating any additional potential habitat for spotted bats.

Mining Alternative C – No External Overburden Fills at All
The footprint of initial disturbance would be the same under Mining Alternative C as under the Proposed Action, so disturbance effects to wildlife habitat would be the same. Unlike Alternative B, no potential habitat for spotted bats would be created under Alternative C due to the burying of all hanging walls.

Mining Alternative D – Store and Release Covers on Overburden Fills (Component of Agency Preferred Alternative)
If adequate Dinwoody material was not available in the mine overburden, Mining Alternative D could result in up to 137 more disturbed acres than the Proposed Action. This additional disturbance would occur mostly within aspen (93.7 acres) and subalpine fir (19.4 acres) habitats (**Table 4.5-2**) and within 24.5 acres of non-critical big game winter range. Alternative D would also disturb six acres within AIZs. Relative to the total disturbance under the Proposed Action, Alternative D could remove an additional 10 percent of the habitat available for wildlife. An approximately 77-acre area within the reported potential western toad migration distance (1.5 mile or 2.5 kilometer) would be disturbed (see **Figure 3.7-2**) under this alternative. This disturbance would represent approximately 1 percent of the available acreage within this area.

Mining Alternative E – Power Line Connection from Panel F to Panel G Along Haul/Access Road (Component of Agency Preferred Alternative)
Mining Alternative E would result in at least 3.0 fewer disturbed acres than the Proposed Action power line alternative (direct power line between Panels F and G), depending on how much vegetation removal within the ROW (e.g., tree trimming or removal) is necessary. The power

line under Alternative E would be longer and would have more poles than the direct line under the Proposed Action. Relative to the Proposed Action power line, most (61 percent) of the habitat left undisturbed would occur in aspen (**Table 4.5-2**). Under Alternative E, the power line would be built along haul roads; this modification may increase the risk of collisions with migratory birds, bald eagles, and other raptors by the combined attraction of roadkill and power line perches along the roads. Increased perch sites along a longer power line may increase predation rates on some wildlife (i.e., sage-grouse).

Mining Alternative F – Electrical Generators at Panel G

The footprint of disturbance under Mining Alternative F would result in at least 3.0 fewer disturbed acres than the Proposed Action, depending on how much vegetation removal within the ROW (e.g., tree trimming or removal) is necessary. Relative to the Proposed Action, most (61 percent) of the habitat left undisturbed would occur in aspen (**Table 4.5-2**) and constant noise associated with the generator would be present in one location.

Special Status Wildlife Species

Given the number of acres of disturbed habitat under the Proposed Action, impacts to TEPCS species under each mining alternative would be similar to those described under the Proposed Action. The level of impact associated with Alternatives A and D may be slightly decreased, and increased, respectively, due to evident changes in disturbance acreage, but impacts associated with these Mining Alternatives would not change the overall impacts to TEPCS species made under the Proposed Action.

Selenium Issues with Wildlife

Alternative D would result in a thicker chert cover than the Proposed Action, and would therefore lower the potential (risk) for root penetration into seleniferous overburden fills, with consequently lower potential for selenium uptake by vegetation and browsing wildlife. Differences between all other Mining Alternatives and the Proposed Action, although some modify the method of seleniferous overburden disposal, are negligible in terms of the potential effects to wildlife because the area of the chert cover would be the same. Selenium control measures would be implemented identically under these Mining Alternatives as described under the Proposed Action, thus risks of selenium accumulation among alternatives (other than Alternative D) would be as described under the Proposed Action. Risks of selenium accumulation under Alternative D would be even less.

4.7.1.3 Transportation Alternatives

In general, Transportation Alternatives 1-8 would result in decreased disturbance in subalpine fir habitat and increased disturbance within aspen, sagebrush, and mountain shrub habitats. **Table 4.5-3** compares the acreages of disturbance in different habitat types among the transportation alternatives and the Proposed Action. Habitat disturbance changes under most transportation alternatives may reduce impacts to wildlife that utilize subalpine fir (e.g., wolverine, western owl, northern three-toed woodpecker, northern goshawk) while increasing impacts to aspen- or brush/shrub-dependent species (e.g., Columbian sharp-tailed grouse, greater sage-grouse, big game, migratory birds, bats). Except under Transportation Alternative 3 (mountain mahogany habitat), no changes in habitat disturbance under the transportation alternatives represent appreciable differences (greater than 5 percent) relative to the undisturbed habitat in the Study Area. Compliance with RFP Standards and Guidelines would not change under any Transportation Alternative relative to the Proposed Action, with the possible exception of Transportation Alternative 7 (bald eagle). Impacts to wildlife, including TEPCS species, under any transportation alternative would be site-specific, short-term, and

moderate (see page 4-1 for definition). Fragmentation impacts to big game and amphibian populations would differ among transportation alternatives; these are described below. Transportation alternatives situated outside the reported potential western toad migration distance area (**Figure 3.7-2**) would have no impact to this area, thus where applicable, it is not discussed under each alternative below.

Alternative 1 – Alternate Panel F Haul/Access Road
Alternative 1 would disturb 20.7 fewer acres than the Proposed Action Panel F Haul/Access Road. Most of the reduction would occur in aspen and sagebrush habitats (see **Table 4.5-3**), and one additional acre of AIZ habitat would be disturbed.

Alternative 2 – East Haul/Access Road
Alternative 2 would disturb one less acre than the Proposed Action Panel G West Haul/Access Road. The change in habitat disturbance would include a 114-acre decrease in subalpine fir and a 50-acre combined increase in aspen, aspen/conifer, and Douglas-fir (**Table 4.5-3**). This alternative would also result in a 1.1-acre increase in riparian/wet meadow disturbance relative to the Proposed Action Panel G West Haul/Access Road. Alternative 2 would require one 300-foot culvert on private land across Deer Creek, whereas the Proposed Action Panel G West Haul/Access Road would cross Deer Creek and South Fork Deer Creeks with two culverts (280 and 260 feet long, respectively). Alternative 2 occurs close to an area with a high abundance of tiger salamanders and may increase the potential for direct mortality to individuals or contribute to fragmentation if the road isolates segments of the population. Alternative 2 would avoid the Sage Meadows and North Fork Deer Creek areas but would be constructed near Crow Creek and lower Deer Creek. Avoiding Sage Meadows would decrease the potential for impacting western toads. Mule deer and elk are known to winter near these areas, and they may experience more frequent vehicle collisions or habitat fragmentation effects (i.e., if seasonal migrations are hindered) under Alternative 2. There has only been one big game fatality at Smoky Canyon Mine over the duration of operations.

Alternative 3 – Modified East Haul/Access Road
Alternative 3 follows an alignment similar to Alternative 2 and would disturb 59 more acres than the Proposed Action Panel G West Haul/Access Road. The change in habitat disturbance would include a 94-acre decrease in subalpine fir, 59-acre increase in sagebrush, and 40-acre increase in aspen (**Table 4.5-3**). Alternative 3 would also result in a 21-acre increase in mountain mahogany habitat disturbance (**Table 4.5-3**), which represents an 11 percent increase relative to the total mountain mahogany habitat in the Study Area. Riparian/wet meadow disturbance would remain the same under Alternative 3 as under the Proposed Action Panel G West Haul/Access Road. Alternative 3 would require one 390-foot culvert across Deer Creek, whereas the Proposed Action Panel G West Haul/Access Road would cross Deer Creek and South Fork Deer Creek with two culverts (280 and 260 feet long, respectively). Alternative 3 would be identical to Alternative 2 in all other potential effects to mule deer, elk, and amphibians by road mortality or habitat fragmentation.

Alternative 4 – Middle Haul/Access Road
Alternative 4 would disturb 25 fewer acres than the Proposed Action Panel G West Haul/Access Road. The change in habitat disturbance would include a 103-acre decrease in subalpine fir, a 50-acre increase in aspen, and 25-acre increase in mountain snowberry/sagebrush (**Table 4.5-3**). Alternative 4 would also result in a 0.8-acre decrease in riparian/wet meadow disturbance. Alternative 4 would require the instillation of culverts on Deer Creek (440 feet long) and South Fork Deer Creek (510 feet long) in the upper Deer Creek area, whereas the Proposed Action Panel G West Haul/Access Road would cross Deer Creek and South Fork

Deer Creek with two culverts (280 and 260 feet long, respectively). Alternative 4 would occur close to North Fork Deer Creek where a large tiger salamander population exists as well as an observed fall use area for elk. In addition, Alternative 4 would disturb approximately 116 acres of the potential western toad migration area outside of Sage Meadows (see **Figure 3.7-2**). This disturbance would represent approximately 2 percent of the available acreage within this area. Collisions with salamanders or toads may increase under Alternative 4 and possibly isolate (and thus fragment) segments of these populations.

Alternative 5 – Alternate Panel G West Haul/Access Road

Alternative 5 would disturb 9 more acres than the Proposed Action Panel G West Haul/Access Road. The change in habitat disturbance under Alternative 5 would include a 45-acre decrease in subalpine fir, 25-acre increase in aspen, and 26-acre increase in mountain snowberry/sagebrush (**Table 4.5-3**). Riparian/wet meadow disturbance would be the same as under the Proposed Action Panel G West Haul/Access Road. Culvert installations under Alternative 5 would also be identical to those under the Proposed Action. Alternative 5 would follow a similar alignment as the Proposed Action Panel G West Haul/Access Road, but would not completely avoid the Sage Meadows area. Alternative 5 would intersect the potential western toad migration area outside of Sage Meadows, impacting approximately 119 acres (see **Figure 3.7-2**). This disturbance would represent approximately 2 percent of the available acreage within this area.

Alternative 6 – Conveyor from Panel G to Mill

The Panel G Conveyor Alternative (Transportation Alternative 6) requires a one-lane service road and either Transportation Alternative 7 (East Access Road via Crow Creek and Wells Canyon) or Transportation Alternative 8 (Middle Access Road).

Alternative 6, apart from the implementation of Alternatives 7 or 8, would require 156 fewer acres of disturbance than the Proposed Action Panel G West Haul/Access Road. The change in habitat disturbance would include a 112-acre decrease in subalpine fir and a 41-acre increase in aspen. Alternative 6 would not disturb riparian shrub/wet meadow habitat. However, it would impact approximately 14 acres within the potential western toad migration area outside of Sage Meadows (see **Figure 3.7-2**). This disturbance would represent less than 1 percent of the available acreage within this area. No perennial stream culverts would be required under Alternative 6. Due to low clearance of the conveyor, most upland areas between Panels F and G would be impassable for big game. Clearance of the conveyor over drainage areas and Forest Trails (404 and 402) may be greater, and big game may successfully pass through these areas on a regular basis. Blockage along most of the conveyor route may force some big game individuals to circumvent the entire mine area (Panels F and G) when migrating to or from Crow Creek.

Alternative 7 – Crow Creek/Wells Canyon Access Road

Alternative 7 would require 103 fewer acres of disturbance than the Proposed Action Panel G West Haul/Access Road, including a 133-acre decrease in subalpine fir, 56-acre decrease in aspen, and a 73-acre increase in sagebrush. Alternative 7 would also involve more riparian disturbance than any other transportation alternative, removing an additional 23 acres of riparian shrub/wet meadow habitat relative to the Proposed Action Panel G West Haul/Access Road. Construction for Alternative 7 along the existing Crow Creek and Wells Canyon Roads may increase sedimentation into Crow Creek as well as increase big game-vehicle collisions during winter (due to proximity to the wintering area for big game along the Crow Creek corridor) or lead to fragmentation of big game populations if seasonal migration routes are hindered. Bald eagles have been observed along Crow Creek and vicinity during winter, thus the RFP

guideline requiring minimization of conflicts with bald eagle wintering habitat would not be met under Alternative 7 (USFS 2003a:3-29). In addition, ground-clearing activities under Alternative 7 may displace red foxes in the vicinity as well as disturb a red fox den that was observed along Crow Creek Road in 2003.

Alternative 8 – Middle Access Road

Alternative 8 would require 118 fewer acres of disturbance than the Proposed Action Panel G West Haul/Access Road, including a 125-acre decrease in subalpine fir. Disturbance in riparian shrub/wet meadow habitat under Alternative 8 would be similar to the Proposed Action Panel G West Haul/Access Road. Alternative 8 would avoid Crow Creek, but would require installation of culverts across Deer Creek (580 feet) and South Fork Deer Creek (360 feet). The Proposed Action Panel G West Haul/Access Road would cross these same creeks with culverts measuring 280 and 260 feet in length, respectively. Like Alternative 4, Alternative 8 would occur close to North Fork Deer Creek where a large tiger salamander population exists as well as an observed fall use area for elk. Alternative 8 would disturb approximately 72 acres of the potential western toad movement area outside of Sage Meadows (see **Figure 3.7-2**). This disturbance would represent approximately 1 percent of the available acreage within this area. Direct mortalities to salamanders or toads may increase under Alternative 8 and possibly isolate (and thus fragment) segments of these amphibian populations.

Special Status Wildlife Species

Relative to the Proposed Action Panel F Haul/Access road, Transportation Alternative 1 involves fewer disturbances in aspen habitat but would not change the overall impacts to TEPCS species described under the Proposed Action.

Relative to the Proposed Action Panel G West Haul/Access Road, any of the Transportation Alternatives (2-8) may reduce impacts to forest-dependent TEPCS species, particularly those utilizing subalpine fir (i.e., wolverine, boreal owl, northern three-toed woodpecker, northern goshawk). Most of these same alternatives also involve increased disturbances in aspen habitat (**Table 4.5-3**); however, the level of impacts to forest-dependent species in general would change only slightly (no TEPCS species utilize subalpine fir exclusively). Overall impacts to forest-dependent species described under the Proposed Action would be the same under Transportation Alternatives 2-8. Regarding sagebrush-dependent TEPCS species (i.e., greater sage-grouse, sharp-tailed grouse), Alternatives 2, 3, and 7 increase disturbance in marginal sagebrush habitat for these species (by 53 – 74 acres) but would not change the overall impacts made under the Proposed Action.

Selenium Issues with Wildlife

Road construction itself would not noticeably increase the potential for selenium uptake by wildlife over the existing condition. In areas where road cuts would expose seleniferous material, this material would be at shallow depths where the vegetation in the area would already be exposed to the source. Differences between Transportation Alternatives and the Proposed Action are negligible in terms of the risk of selenium uptake by wildlife. Selenium control measures would be implemented identically under any Transportation Alternative as under the Proposed Action.

4.7.1.4 No Action Alternative

Under the No Action Alternative, disturbance of currently undisturbed vegetation would not occur, eliminating the impacts to wildlife species discussed in **Section 4.7.1.1**. In addition, overburden containing elevated concentrations of selenium would not be excavated and the

slight potential for further bioaccumulation of selenium in fauna within the Project Area would not be a risk. Lastly, reclamation in Panel E would not be completed, as overburden from Pit 1 in Panel F would not be generated and thus used to backfill the 29-acre E-0 pit of Panel E (BLM 1997).

4.7.2 Mitigation Measures

In order to minimize the possibility of unintentional take of migratory birds, Simplot would employ a variety of measures. The removal of timber would not take place in one project-wide event. Rather, timber would be harvested incrementally as areas to be mined need to be cleared. The first event would take place on the northern portion of Panel F, followed by possibly two more harvest events or phases. The timing of initial removal, although currently scheduled for late summer, may be dictated by the ROD release date and mine planning. Subsequent timber harvest would be planned in advance and scheduled to minimize impacts by consulting a table of possible bird species present and their applicable nesting seasons, compiled by the FS, BLM, and FWS (documents contained in a letter dated 27 November 2006, available in the Project Record). Typically, minimizing impacts can be accomplished by delaying timber harvest activity as late in the nesting season as possible.

Prior to timber removal, Simplot would perform surveys for raptor nests, and other migratory birds to the maximum extent possible, (with emphasis on sensitive species: northern goshawk, flammulated owls, boreal owls, and great gray owls) before the onset of nesting seasons. If found, nests would be removed or the specific nesting tree would be felled to decrease the likelihood that raptors would return and nest in the harvest area.

The removal of brush in the ground clearing process would also be implemented in a manner to minimize impacts to migratory birds. Once timber has been removed and the area has been disturbed, it is likely that birds would prefer to nest outside the area to be cleared. Ground clearing would be completed incrementally, likely in three events. Initial ground clearing is currently scheduled for late summer, but the ultimate schedule may be dictated by other factors. As with timber harvest activity, subsequent ground clearing would be planned in advance for as late in the nesting season as possible to avoid impacts. In addition, reclamation vegetation would include, where appropriate, woody species and brush to create islands of vegetative diversity which may attract some migratory bird species back to the area after reclamation.

Simplot would perform a survey to identify western toad populations in any potential toad habitat that would be disturbed, which has not yet been surveyed. This survey would be developed cooperatively by CTNF wildlife or fisheries biologists and Simplot. If western toads were discovered during these surveys, potential mitigation measures would be developed. In addition, in the event the West or Modified West Haul/Access Road was selected, Simplot would survey the area south of the known breeding site in Sage Meadows to determine whether gradient and topography make migration of toads into this area, including montane habitat south of these roads, possible.

If Transportation Alternative 6 (the conveyor) were selected, the Forest Service may require that additional crossings be provided with sufficient clearance for wildlife passage under the conveyor.

4.7.3 Unavoidable (Residual) Adverse Impacts

Under the Proposed Action or any mining or transportation alternative, undiscovered active bird nests could be destroyed; this potential impact would be unavoidable.

4.7.4 Relationship of Short-Term Uses and Long-Term Productivity

The Proposed Action and Alternatives would implement ground-disturbing activities that would produce short- and long-term effects to wildlife and TEPCS species. Species that depend on mid- and late-seral forested vegetation would be displaced for the long term.

4.7.5 Irreversible and Irretrievable Commitments of Resources

Habitat disturbances may be irreversible if, following reclamation and time, vegetation does not return to its current state. Disturbed mature forest in particular may potentially be both irreversible and an irretrievable commitment of mature forest resources if these areas do not reestablish. The 46 acres of unreclaimed hanging walls would also be both irreversible and an irretrievable commitment of habitat within the hanging wall footprints.

4.8 Fisheries and Aquatics

Issue:
The Project may affect cutthroat trout, other native fishes, amphibians, or aquatic resources in the Project Area.

Indicators:
The length of intermittent and perennial stream channels directly affected by road fill and associated culverts, and comparison with the undisturbed lengths of these stream channels in the Project Area;

Acres of aquatic influence zone (AIZ) habitat to be affected and comparison with undisturbed acreage of this habitat in the Project Area;

Quantities of suspended sediment and contaminants of concern in fishery resources in the area, with emphasis on compliance with applicable aquatic life water quality standards;

Compliance with the applicable RFP Standards and Guidelines.

4.8.1 Direct and Indirect Impacts

4.8.1.1 Proposed Action

Over an approximately 16-year period, the Proposed Action would directly disturb 475 feet of perennial stream channel, 21,030 feet of intermittent stream channel, and 65 acres of AIZs in the Study Area (**Table 4.8-1**). In all, the Project would directly disturb less than 0.5 percent of the perennial stream channels, 8 percent of the intermittent stream channels, and 5 percent of the AIZs in the Study Area over the course of the Proposed Action.

TABLE 4.8-1 FEET OF STREAM CHANNEL (INTERMITTENT AND PERENNIAL) AND ACRES OF AQUATIC INFLUENCE ZONES (AIZS) DISTURBED BY THE PROPOSED ACTION

	INTERMITTENT (FT)	PERENNIAL (FT)	STREAM TOTAL	AIZ (ACRES)
Panel F, including lease modifications	12,187	0.0	12,187	30.3
Panel F Haul/Access Road	230	0.0	230	0.7
Panel F TOTAL	12,417	0.0	12,417	31.0
Panel G	5,443	0.0	5,443	15.0
Panel G West Haul/Access Road	450	475	926	14.9
Panel G TOTAL	5,894	475	6,369	29.9
Power line*	2,719	0.0	2,719	4.5
Proposed Action TOTAL	21,030	475	21,505	65.4

* Includes entire 50-foot ROW, actual disturbance to stream channels and AIZs would most likely be zero.

Culverts would be installed at all perennial stream crossings and intermittent drainage channels. All stream crossings at fish-bearing streams (**Section 3.8.3**) would be constructed to safely pass all age classes of fish (see **Appendix 2C**). Vegetation would be removed within intermittent channels and AIZs disturbed by the Proposed Action. Except for the portions of culverts on the sections of the Panel G West Haul/Access Road that are to be left as public roads, culverts would be removed after mining, intermittent channels would be restored, and AIZs would be reseeded (see **Table 2.4-4** for species used in reclamation). Because AIZs typically encompass riparian areas, the removal of vegetation in AIZs may indirectly lead to: 1) increases in water temperature from the loss of shade, 2) decreases in natural sediment filtration capabilities and increases in substrate sedimentation, 3) potential changes in channel morphology resulting from the stream bank destabilization (also see **Section 4.3.2**), 4) loss of potential instream wood recruitment, and 5) decreases in inputs of organic matter (leaf litter) as energy. The loss of stream habitat and AIZ function would result in direct and indirect impacts to cutthroat trout and other native fishes that would be potentially long term, local, and moderate (see page 4-1 for definitions).

Culvert construction would be designed to maintain natural flows and conditions for fish passage in perennial streams (**Appendix 2C**); thus, the Project would comply with the RFP standard requiring the maintenance of instream flows (USFS 2003a:4-49). Regarding native fishes, the displacement and erosion of sediment in the stream bank during culvert installation would create short-term pulses of turbidity that could cause temporary gill irritation to individual fish immediately downstream of the culvert. Sedimentation could also diminish the suitability of stream habitat for many aquatic organisms and native fishes, including spawning areas for cutthroat trout (**Section 3.8.3**). In general, streams with high-quality spawning habitat may not be diminished by small sediment increases (typical of those under the Proposed Action), whereas streams with low-quality spawning habitat may be rendered unsuitable by a similar disturbance. Major additional sedimentation into Project Area streams is not expected due to environmental protection measures and Project design features (**Section 2.5.7**, **Appendix 2C**). Moreover, considering estimated baseline sediment loading rates (**Appendix 4A**), predicted sedimentation increases under the Proposed Action would constitute less than 5 percent of current loading rates into any Study Area stream (**Table 4.3-20**). Indirect impacts to native fishes via sedimentation would be short term (for the duration of the Project), local, and minor to moderate depending on the level of sedimentation (**Section 3.8.4** and **Section 4.3.2**).

Environmental protection measures are also designed to prevent the introduction of selenium in surface runoff from mining disturbances (**Section 2.5.5**, **Appendix 2D**). Increased selenium levels in riparian or wetland areas, if they occurred over established water quality criteria, would violate the RFP standard requiring watersheds to maintain progress toward beneficial use attainment for pollutants (USFS 2003a: 4-50). Indirect impacts to native fishes via selenium accumulation, if they occurred, would be short to long term, local, and moderate to major depending on the level of accumulation. As described in **Section 4.3.2**, the potential for selenium level exceedances of the surface water standards (greater than 0.005 mg/L) in perennial streams would occur in lower South Fork Sage Creek and lower Deer Creek under the Proposed Action and Alternatives A through C. Impacts to YCT from the accumulation of selenium, if they occurred, are likely to be much less than evaluated here. The CERCLA process (see **Appendix 2A**) is expected to reduce impacts in Sage Creek and downstream in Crow Creek prior to mixing with peak impacts from the mine expansion (see Cumulative Effects, **Section 5.4**). **Appendix 3C** reviews the current science regarding selenium effects on fish, the behavior of selenium in terms of bioaccumulation in streams, and a review of selenium toxicity data for the Salt River watershed (including the Study Area).

Extinction risks for salmonids are influenced by complex and interacting factors that are difficult to identify and measure; however, and in general, many subpopulations of YCT are facing a variety of risks inherent in their low abundance. Resident YCT populations in the Project Area may be somewhat isolated from other populations due to migration barriers between tributaries and larger drainages such as Crow Creek, the Salt River, and the Snake River. Isolation makes YCT populations less resilient against (negative) population fluctuations caused by natural stochastic events. Although minor impacts are predicted from AIZ disturbance, culvert installations and passage, and sedimentation, impacts to YCT have the potential to be long term and moderate in the unlikely event that planned BMPs fail. A decrease in fish population density in some reaches of streams within and downstream of the Study Area would constitute a moderate impact. Overall, the Proposed Action would have short- and long-term, local, and minor to moderate impacts to the YCT. The CTNF has determined that, with regard to YCT, the Project May Impact Individuals or Habitat but will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species.

Below, environmental effects have been broken out by components (i.e., mine panels, haul roads, and power line) of the Proposed Action. The components would have similar impacts to native fishes as the entire Proposed Action (e.g., stream habitat loss, potential for contaminant uptake, etc.), but to a lesser degree.

<u>Panel F, Including Lease Modifications (Component of Agency Preferred Alternative)</u>
New direct disturbances resulting from mining Panel F, including the North and South Lease Modifications, would total 12,187 feet of intermittent drainage channel and 30 acres of AIZs in the South Fork Sage Creek drainage (**Table 4.8-1**). No perennial stream channels would be disturbed by the mining of Panel F unless runoff from mining disturbance overflows sediment ponds during rainfall events and enters a stream (**Section 4.3.2**). Simplot's SWPPP would be followed in the design and maintenance of runoff/sediment ponds, such that all runoff events up to the 100-year, 24-hour rain (plus snow melt) would be contained (Simplot AgriBusiness 2004). Impacts to YCT and other native fishes from the loss of intermittent drainage channel and AIZs from mining Panel F would be short-term (for the duration of the Project), local, and minor to moderate.

Disturbance to various unnamed drainages that feed into North Fork Deer Creek may remove a potential waterway that fish could possibly use during high water periods (e.g., flood event,

spring runoff) as YCT and other fish are known to use ephemeral drainages during high water periods (see **Section 3.8.3**). The disturbance to Manning Creek and other unnamed intermittent tributaries would not decrease spawning habitat for YCT, as it is unlikely that fish use these particular tributaries for spawning, but may reduce the transport of nutrients, organic matter, and invertebrates to Deer Creek and Crow Creek (Wipfli and Gregovich 2002, Price et al. 2003, Cummins and Wilzbach 2005).

Panel F Haul/Access Road (Component of Agency Preferred Alternative)
New direct disturbances resulting from construction of the Panel F Haul/Access Road would total 230 feet of intermittent drainage channel and 0.7 acre of AIZ in the South Fork Sage Creek drainage (**Table 4.8-1**). No perennial stream channels would be directly disturbed. Impacts to YCT and other native fishes from the loss of intermittent stream channel and AIZs would be short-term (for the duration of the Project), local, and minor to moderate.

The Panel F Haul/Access Road is estimated to discharge approximately 0.5 tons of sediment per year into South Fork Sage Creek (**Section 4.3.2, Appendix 4A**) in addition to the estimated baseline sediment loading rate of 155 tons per year (**Appendix 4A**). Introduced sediment is likely to remain in the local area until it discharges gradually downstream during snowmelt and rainfall events. South Fork Sage Creek could become less suitable for invertebrates and for YCT spawning in the perennial reaches below this crossing if sedimentation from road construction resulted in the filling of redd habitat. South Fork Sage Creek appears to be under environmental stress (**Section 3.8.2**), but currently contains relatively high quality spawning habitat in some reaches that are likely to be resilient to the estimated small sediment increases (<0.5 percent of the baseline loading rate; **Section 3.8.4**, **Appendix 4A, Section 4.3.2**). Sedimentation impacts to YCT would be short-term (for the duration of the Project), local, and negligible.

As indicated in **Section 4.3.2** and **Appendix 4A**, sediment quantities calculated using WEPP:Road are estimates that include significant uncertainties and should not be taken as definitive values. However, they can be used to compare alternatives.

Panel G (Component of Agency Preferred Alternative)
New direct disturbances resulting from mining Panel G would total approximately 5,443 feet of intermittent drainage channel and 15 acres of AIZs in the South Fork Deer Creek drainage (**Table 4.8-1**). No perennial stream channels would be disturbed by the mining of Panel G unless runoff from mining disturbance overflows sediment ponds during rainfall events and enters a stream (**Section 4.3.2**). Simplot's SWPPP would be followed in the design and maintenance of runoff/sediment ponds, such that all events up to the 100-year, 24-hour rain (plus snow melt) would be contained (Simplot AgriBusiness 2004). Impacts to YCT and other native fishes from the loss of intermittent stream channel and AIZs would be short-term (for the duration of the Project), local, and minor to moderate.

Panel G West Haul/Access Road (Component of Agency Preferred Alternative)
New direct disturbances resulting from construction of the Panel G West Haul/Access Road would total approximately 475 feet of perennial stream channel, 450 feet of intermittent drainage channel, and 15 acres of AIZs in the Deer Creek and South Fork Deer Creek drainages (**Table 4.8-1**). Impacts to YCT and other native fishes from the loss of perennial and intermittent channels and AIZs would be short-term (for the duration of the Project), local, and moderate.

The Panel G West Haul/Access Road is estimated to discharge approximately 8.3 tons of sediment per year into Deer Creek and a small amount (0.15 tons/year) into South Fork Deer

Creek (**Section 4.3.2**, **Appendix 4A**) in addition to the estimated baseline sediment loading rate into Deer Creek (including the South Fork) of 308 tons per year (**Appendix 4A**). Introduced sediment is likely to remain in the local area until it discharges gradually downstream during snowmelt and rainfall events. The sampled reach of South Fork Deer Creek closest to the haul road footprint (SFDC-100) is low-quality spawning habitat, thus further sedimentation from road construction may result in the stream segment not providing any spawning habitat for YCT and other native fishes. North Fork Deer Creek should not be impacted by potential sedimentation increases. Streams with low quality spawning habitat and low fish populations, such as South Fork Deer Creek, may be particularly susceptible to the loss of trout production, thus the limited YCT population in South Fork Deer Creek may be vulnerable to collapse due to sediment increases related to this haul road. The upper sampled reach of Deer Creek (DC-100) is relatively high quality spawning habitat that appears to be degrading and/or under environmental stress (**Sections 3.8.2** and **3.8.4**), but would likely be resilient to an additional 8.3 tons of sediment per year (1 percent of the baseline loading rate; **Section 3.8.4**, **Appendix 4A, Section 4.3.2**). Considering the condition of most streams in the Study Area, sedimentation that fills redd habitat in the relatively high-quality area of Deer Creek would result in short-term (for the duration of the Project), local, moderate indirect impacts to YCT and other native fishes.

Power Line Between Panels F and G

The ROW for the power line would measure 28 acres; however, actual ground surface disturbance would be much less than 28 acres because helicopters would be used for pole installation outside of lease areas. In addition, poles would typically be placed in upland areas (out of AIZs) such that no aquatic habitat would be affected. If the power line crosses a stream, riparian trees that must be felled would be left on site whenever possible to provide woody debris. No perennial stream channels would be directly disturbed by the power line, and no direct or indirect input to streams are expected as a result of power line construction. Direct and indirect impacts to YCT and other native fishes by construction of the power line would be negligible.

Selenium Issues with Fish

Under the Proposed Action, population level impacts to fisheries may occur in lower Deer Creek, South Fork Sage Creek, Crow Creek or downstream of these waters. Although it is likely that impacts to YCT populations would be minor, because of the uncertainty surrounding the life histories of fish in the Study Area and the impacts of selenium on YCT in general, this impact analysis is conservative and considers the possibility of a significant impact scenario. Some studies have suggested that cold-water fish such as YCT may be able to tolerate exposure to relatively high selenium concentrations (greater than 0.005 mg/L) without adverse effects. Several studies in other systems, however, suggest that selenium can have serious, adverse effects on fish. Because of this disparity, the lack of certainty associated with selenium impacts to YCT, and certain habitat impacts associated with other aspects of the Project, it is appropriate to be cautious in the following effects assessments. Although selenium control measures would be implemented (**Section 2.5.5, Appendix 2D**), waterborne selenium levels would exceed the 0.005 mg/L chronic aquatic criterion in lower Deer Creek and the mouth of South Fork Sage Creek under the Proposed Action (see **Table 4.3-19**). These exceedances do not include the effect of selenium attenuation, which is likely to occur, and if so would lower selenium levels in Study Area streams (discussion in **Section 4.3.2.1**). Under the Proposed Action selenium impact scenario, increases in selenium concentrations in Study Area streams would increase the risk for selenium accumulation in native fishes.

YCT sampled in Crow Creek, Deer Creek, and its tributaries were found to have body tissue selenium levels above the biological effect threshold (**Section 3.8.5**), possibly from naturally occurring selenium these watersheds (**Section 3.3.2**). High levels of selenium accumulation have been linked to reproductive failure and congenital deformities in other species of fish (e.g., Lemly 1999). Selenium effects on fish populations occur as a result of deformities or death of developing embryos and alevins (see **Appendix 3C**). Observing teratogenic effects is difficult for fish in the wild, however, because affected fish could succumb to predation or other sources of mortality prior to detection. The unlikelihood of observing selenium impacts in the wild increases the uncertainty surrounding the effects of selenium on YCT. Other density dependent population-level stressors can also occur in the Study Area and may interact with selenium stress, if it occurs, such as the natural limitation of habitat (carrying capacity of young) and random events (**Appendix 3C**). Cumulative impacts, that consider the interaction of multiple potentially adverse impacts to native fishes (including selenium), are discussed in **Section 5.9**. A significant impact scenario under the Proposed Action, assuming selenium level exceedences in Study Area streams would occur, could involve the possibility of reduced growth or deformities of developing embryos and reproductive failure of individual fish that may lead to local population declines within the currently healthy stronghold of YCT inhabiting Study Area streams (see **Section 3.8.3** for current condition of fisheries).

Regarding selenium introductions via culvert installations, low selenium concentrations in sediment within Study Area streams (see **Section 3.3.3**) and environmental protection measures outlined in **Appendix 2C** for culvert installation would reduce the potential impact of selenium loading downstream of culverts during installation and removal.

Indirect impacts to native fishes in the Study Area from further selenium accumulation, if they occurred, could be long-term, local, and moderate to major. No impacts to the Salt/Palisades YCT metapopulation are expected; see **Section 5.9**. If fish in the Study Area experience winter stress syndrome (WSS), impacts could be relatively more adverse (major) during winter. However, available data do not allow for a definitive conclusion regarding the likelihood of cold-water fish experiencing WSS, nor the magnitude of the response if it occurs (see **Appendix 3C**).

Regarding human health, fish taken from streams in the Study Area would not be unsafe for human consumption because the potential for bioaccumulation in fish is not likely to be high enough for human health impacts to occur. A hazard to human health would occur if the ratio of average daily dose (of contaminated fish during a specific exposure period) were greater than the reference dose developed for that period. There is currently no risk to humans from consumption of fish within Study Area streams (IDEQ 2002c). Thus, impacts to human health by ingestion of fish from Study Area streams are unlikely.

4.8.1.2 Mining Alternatives

Mining Alternatives A, D, E, and F have different disturbance footprints than the Proposed Action, and therefore affect different amounts of aquatic habitat (length of intermittent stream channels and acres of AIZs). Alternative A south component, Alternative A north component, Alternative E, and Alternative F would create fewer disturbances in aquatic habitat while Alternative D would create more disturbances (**Table 4.8-2**). All mining alternatives would disturb the same amount of perennial stream channel as the Proposed Action (475 feet).

TABLE 4.8-2 FEET OF STREAM CHANNEL (INTERMITTENT AND PERENNIAL) AND ACRES OF AIZS DISTURBED BY THE MINING ALTERNATIVES

	INTERMITTENT (FT)	PERENNIAL (FT)	AIZ (ACRES)
Proposed Action	21,030	475	65.4
Alt. A: No North Lease Modification	21,009	475	65.3
Alt. A: No South Lease Modification	17,882	475	56.0
Alternative B	21,030	475	65.4
Alternative C	21,030	475	65.4
Alternative D	22,919	475	71.2
Alternative E	18,311	475	60.9
Alternative F	18,311	475	60.9

Although various mining alternatives would result in a 0-15 percent change in intermittent channel disturbance and from 0-14 percent change in AIZ disturbance relative to disturbances under the Proposed Action, there would be no changes to effects or impact determinations for cutthroat trout and other native fishes described under the Proposed Action due to habitat impacts. All mining alternatives would modify intermittent stream channel and disturb AIZs by 1 percent or less relative to the total amount of aquatic habitat in the Study Area.

Regarding selenium impacts, Alternative D would lower the potential for selenium accumulation in native fishes, relative to the Proposed Action. Differences between all other Mining Alternatives (A-C, E, and F) and the Proposed Action are negligible in terms of selenium risks to YCT and other native fishes. Runoff selenium control measures would be implemented under any Mining Alternative as described under the Proposed Action.

Mining Alternative A – No South and/or North Panel F Lease Modifications

Relative to the Proposed Action, aquatic habitat losses would be reduced if both components (North + South Lease Modifications) of Alternative A were adopted. Approximately 3,170 feet of intermittent drainage channel and 10 acres of AIZs would be left undisturbed.

No Panel F North Lease Modification

If the Panel F North Lease Modification were not approved, there would be no mining outside of Lease I-027512 boundaries to the north of Panel F. Intermittent drainage channel disturbance would measure 21,009 feet; 21 fewer feet of intermittent channel disturbance in the South Fork Sage Creek drainage than the Proposed Action (**Table 4.8-2**). This alternative may include the implementation of Transportation Alternative 1 (Alternative Panel F Haul/Access Road) in place of the Proposed Action Panel F Haul/Access Road, which would disturb 672 feet of intermittent stream channel (442 additional feet of intermittent stream channel than the Proposed Action; **Table 4.8-3**). The combination of this component of Alternative A and Transportation Alternative 1 would result in a net increase of 421 feet of intermittent stream channel and 0.9 acres of AIZ disturbance relative to the Proposed Action. Impacts to the relatively high quality spawning habitat in South Fork Sage Creek described under the Proposed Action would not change under this component of Alternative A.

No Panel F South Lease Modification

Under the No Panel F South Lease Modification alternative, there would be no mining outside of Lease I-027512 boundaries to the south of Panel F. Intermittent drainage channel disturbance would measure 17,882 feet, and AIZ disturbance would measure 56 acres which is 3,148 fewer feet of intermittent channel disturbance and nine fewer acres of AIZ disturbance in the North Fork Deer Creek drainage than under the Proposed Action (**Table 4.8-2**). North Fork Deer

Creek contains marginal spawning habitat and is currently under environmental stress (**Sections 3.8.2** and **3.8.4**), thus fewer disturbances in this drainage are not likely to change marginal value of this habitat for cutthroat trout and other native fishes.

Mining Alternative B – No External Seleniferous Overburden Fills
Alternative B would disturb the same amount of intermittent drainage channel (21,030 feet), perennial stream channel (475 feet), and AIZs (65.4 acres) as the Proposed Action (**Table 4.8-2**); impacts to aquatic resources would thus be the same.

Mining Alternative C – No External Overburden Fills at All
Alternative C would disturb the same amount of intermittent drainage channel (21,030 feet), perennial stream channel (475 feet), and AIZs (65.4 acres) as the Proposed Action (**Table 4.8-2**); impacts to aquatic resources would thus be the same.

Mining Alternative D – Store and Release Cover on Overburden Fills (Component of Agency Preferred Alternative)
If the Dinwoody material borrow requirements necessitated full development of the borrow pits outside the mine panels, Alternative D would disturb 22,919 feet of intermittent drainage channel and 71.2 acres of AIZ (1,889 additional feet of intermittent stream channel and 5.8 additional acres of AIZ than under the Proposed Action; **Table 4.8-2**). The Panel F and Panel G Dinwoody material borrow pits (areas to be disturbed) associated with Alternative D are located alongside the Panel F and G pit footprints (see **Figure 2.6-6**). The additional disturbances near Panel F would not occur near any perennial stream channels. Additional disturbances near Panel G that would occur near the South Fork Deer Creek, which contains low-quality spawning habitat, are unlikely to affect aquatic resources in this drainage.

The implementation of a store and release cover under Alternative D would reduce the impacts to native fishes from selenium accumulation described under the Proposed Action. According to groundwater modeling (**Section 4.3.1**), Alternative D would lower selenium concentrations (relative to the Proposed Action) such that they would be below the cold water aquatic criterion for selenium (0.005 mg/L) in groundwater discharges in lower Deer Creek and at the mouth of South Fork Sage Creek (0.0028), and Crow Creek downstream of Sage Creek (0.0041 mg/L) during the summer/fall baseline period (**Section 4.3.2**). These predicted selenium concentrations can be found in **Tables 4.3-22** and **4.3-23**. Further attenuation of selenium in surface streams of the Study Area is expected to occur within this range, but has not been included in surface water analysis. Fewer increases in selenium concentrations within Study Area streams would lessen the risk of selenium accumulation in native fishes that could lead to the adverse reproductive and population effects described in **Section 4.8.1.1**. Impacts to native fishes from selenium accumulation under Alternative D would be long term, local, and minor to moderate.

Mining Alternative E – Power Line Connection from Panel F to Panel G Along Haul/Access Roads (Component of Agency Preferred Alternative)
Alternative E would disturb 18,311 feet of intermittent drainage channel and 60.9 acres of AIZ, similar to the Proposed Action direct power line, which is unlikely to disturb more than three acres of non-aquatic habitat (due to pole installation by helicopter). Since installation of the direct power line under the Proposed Action is unlikely to impact aquatic habitat (**Section 4.8.1.1**), Alternative E would not lessen effects to YCT or other native fishes.

Mining Alternative F – Electrical Generators at Panel G
Like Alternative E, Alternative F would disturb 18,311 feet of intermittent drainage channel and 60.9 acres of AIZ. Since installation of the direct power line under the Proposed Action is unlikely to impact aquatic habitat (**Section 4.8.1.1**), Alternative F would not lessen effects to cutthroat trout or other native fishes.

4.8.1.3 Transportation Alternatives

Relative to Proposed Action haul/access roads, the transportation alternatives would result in additional disturbances within intermittent stream channels, reductions in disturbances within perennial stream channels, and reductions in disturbances within AIZs in the Study Area (**Table 4.8-3**).

TABLE 4.8-3 FEET OF STREAM CHANNEL (INTERMITTENT AND PERENNIAL) DIRECTLY DISTURBED, ACRES OF AIZS DISTURBED, AND PREDICTED CHANGES IN SEDIMENTATION UNDER THE TRANSPORTATION ALTERNATIVES

	INTERMITTENT (FT)	PERENNIAL (FT)	AIZ (ACRES)	SEDIMENTATION* (TONS PER YR)
Panel F Haul/Access Road	230	0	0.7	0.5
Alternative 1	672	0	1.7	0.7
Panel G West Haul/Access	450	475	14.9	8.5
Alternative 2	2,684	290	4.7	4.5
Alternative 3	2,851	275	10.1	5.1
Alternative 4	3,613	0	9.2	7.8
Alternative 5	662	475	15.4	10.7
Alternative 6	1,682	0	6.2	0.4
Alternative 7	883	2,086	11.0	1.0
Alternative 8	2,702	0	9.7	2.1

*See **Section 4.3.2** and **Appendix 4A** for complete data and relative accuracy of the estimate

As a result, most transportation alternatives, when compared to the Proposed Action, would reduce the risk of direct and indirect impacts to YCT and other native fishes. Most transportation alternatives would also decrease the risk of sedimentation into Study Area streams relative to the Proposed Action haul roads. Relative to the total amount of aquatic habitat in the Study Area, all transportation alternatives would impact the amount of intermittent stream channels, perennial stream channels, and AIZs by 1 percent or less. Changes to effects and impact determinations among transportation alternatives relative to the Proposed Action haul roads are described below.

Regarding selenium impacts, differences between Transportation Alternatives and the Proposed Action are negligible in terms of the risk to YCT and other native fishes of accumulating selenium. Selenium control measures would be implemented identically under any Transportation Alternative (1-8) as under the Proposed Action.

Transportation Alternative 1 – Alternate Panel F Haul/Access Road
Alternative 1 would disturb 672 feet of intermittent drainage channel and 1.7 acres of AIZs (442 additional feet of intermittent stream channel disturbance and one additional acre of AIZ disturbance in the South Fork Sage Creek drainage than the Proposed Action; **Table 4.8-3**). A culvert would be installed within South Fork Sage Creek at the same location as the Proposed Action Panel F Haul/Access Road, and no direct impacts to perennial stream channels would occur. Predicted additional sedimentation into Sage Creek under Alternative 1 would be 0.2 tons per year more than under the Proposed Action (**Table 4.8-3**). Direct and indirect impacts

to YCT and other native fishes would be slightly reduced when compared to the Proposed Action Panel F Haul/Access Road. However, these effects would still be short-term (for the duration of the Project), local, and negligible to minor.

Transportation Alternative 2 – East Haul/Access Road

Alternative 2 would disturb 2,684 feet of intermittent drainage channel, 290 feet of perennial stream channel, and 4.7 acres of AIZs (2,234 additional feet of intermittent channel disturbance, 185 fewer feet of perennial stream channel disturbance, and 10.2 fewer acres of AIZ disturbance relative to the Proposed Action Panel G West Haul/Access Road; **Table 4.8-3**). One 300-foot culvert would be installed in Deer Creek on private land, near the confluence with Crow Creek. Upstream reaches of Deer Creek, South Fork Deer Creek, and North Fork Deer Creek would not be disturbed by road construction under Alternative 2. Predicted additional sedimentation into areas of Deer Creek downstream of the crossing and Crow Creek and tributaries under Alternative 2 would be approximately four tons per year less than that into Deer Creek under the Proposed Action (**Table 4.8-3**). Crow Creek appears to be under environmental stress (**Section 3.8.2**), but currently contains relatively high quality spawning habitat and is likely to be resilient to small sediment increases (less than 0.5 percent of baseline sediment loading rate; **Section 3.8.4**, **Appendix 4A**). Although Alternative 2 would impact substantially more (+496 percent) intermittent channel, it would also impact noticeably less perennial stream channel (-39 percent) and AIZs (-68 percent) and would reduce sedimentation by approximately 47 percent over the Proposed Action Panel G West Haul/Access Road. Impacts to YCT and other native fishes would be slightly reduced when compared to the Proposed Action Panel G West/Haul Access Road. These impacts would be short-term (for the duration of the Project), local, and moderate.

Transportation Alternative 3 – Modified East Haul/Access Road

Alternative 3 would disturb 2,851 feet of intermittent drainage channel, 275 feet of perennial stream channel, and 10.1 acres of AIZs (additional 2,401 feet of intermittent channel disturbance, 200 fewer feet of perennial stream channel disturbance, and 4.8 fewer acres of AIZ disturbance relative to the Proposed Action Panel G West Haul/Access Road; **Table 4.8-3**). One 390-foot culvert would be installed in Deer Creek on CNF land under Alternative 3, and upstream reaches of Deer Creek, South Fork Deer Creek, and North Fork Deer Creek would not be disturbed. Like Alternative 2, predicted additional sedimentation into Crow Creek and tributaries under Alternative 3 would be approximately four tons per year less than that into Deer Creek under the Proposed Action (**Table 4.8-3**) and is not likely to affect spawning habitat in Crow Creek. Although Alternative 3 would impact substantially more (+533 percent) intermittent channel, it would also impact noticeably less perennial stream channel (-42 percent) and AIZs (-32 percent) and would reduce sedimentation by approximately 47 percent over the Proposed Action Panel G West Haul/Access Road. Impacts to YCT and other native fishes would be slightly reduced when compared to those under the Proposed Action Panel G West/Haul Access Road. These impacts would be short-term (for the duration of the Project), local, and moderate.

Transportation Alternative 4 – Middle Haul/Access Road

Alternative 4 would disturb 3,613 feet of intermittent drainage channel and 9.2 acres of AIZs (3,163 additional feet of intermittent channel disturbance and 5.7 fewer acres of AIZ disturbance than the Proposed Action Panel G West Haul/Access Road; **Table 4.8-3**). Culverts across Deer Creek (440 feet) and South Fork Deer Creek (510 feet) would be longer than those under the Proposed Action but would occur within intermittent reaches, thus no direct impacts to perennial stream channels would occur under Alternative 4 (475 fewer feet of perennial stream channel disturbance than under the Proposed Action). Predicted additional sedimentation into Deer

Creek and South Fork Deer Creek would decrease by approximately two tons per year under Alternative 4 relative to the Proposed Action (**Table 4.8-3**). The upper reach of Deer Creek that contains high quality spawning habitat would not be affected. Although Alternative 4 would impact substantially more (+703 percent) intermittent channel, it would also impact noticeably less perennial stream channel (-100 percent) and AIZs (-38 percent) and would reduce sedimentation by approximately 24 percent over the Proposed Action Panel G West Haul/Access Road. Impacts to YCT and other native fishes would be slightly reduced when compared to the Proposed Action Panel G West/Haul Access Road. These impacts would be short-term (for the duration of the Project), local, and moderate.

Transportation Alternative 5 – Alternate Panel G West Haul/Access Road

Alternative 5 would disturb 662 feet of intermittent drainage channel and 15.4 acres of AIZs (an additional 212 feet of intermittent stream channel and 0.5 acre of AIZs disturbance relative to the Proposed Action; **Table 4.8-3**). Culverts and perennial stream channel disturbance would be the same. Predicted sedimentation into Deer Creek and South Fork Deer Creek would increase by approximately one ton per year under Alternative 5 relative to the Proposed Action (**Table 4.8-3**). Alternative 5 would impact more intermittent channel (47 percent) and slightly more acres of AIZs (3 percent), and would increase sedimentation by approximately 12 percent over the Proposed Action Panel G West Haul/Access Road. Impacts to YCT and other native fishes would be to a slightly greater degree than those under the Proposed Action Panel G West/Haul Access Road. These impacts would be short-term (for the duration of the Project), local, and moderate.

Transportation Alternative 6 – Conveyor from Panel G to Mill

Alternative 6 requires a conveyor and one-lane service road in addition to either Transportation Alternative 7 or 8. Alternative 6 alone would disturb 1,682 feet of intermittent drainage channel and 6.2 acres of AIZs (1,232 additional feet of intermittent stream channel disturbance and 8.7 fewer acres of disturbance in AIZs than the Proposed Action Panel G West Haul/Access Road; **Table 4.8-3**). No culverts would be installed across perennial streams (475 fewer feet of perennial stream channel disturbance than under the Proposed Action). Predicted additional sedimentation into Deer Creek and South Fork Deer Creek would decrease by approximately eight tons per year under Alternative 6 relative to the Proposed Action (**Table 4.8-3**). Although Alternative 6 would impact substantially more (+274 percent) intermittent channel, it would also impact noticeably less perennial stream channel (-100 percent) and AIZs (-58 percent) and would reduce sedimentation by approximately 95 percent over the Proposed Action Panel G West Haul/Access Road. Impacts to YCT and other native fishes would be less than those under the Proposed Action Panel G West/Haul Access Road. These impacts would be short-term (for the duration of the Project), local, and minor.

Transportation Alternative 7 – Crow Creek/Wells Canyon Access Roads

Alternative 7 would disturb 883 feet of intermittent drainage channel, 2,086 feet of perennial stream channel, and 11 acres of AIZs (433 additional feet of disturbance in intermittent channels, 1,611 additional feet of disturbance in perennial stream channels, and 3.9 fewer acres of disturbance in AIZs relative to the Proposed Action Panel G West Haul/Access Road; **Table 4.8-3**). Existing culverts along Crow Creek and Wells Canyon Road would be replaced, enlarged, and lengthened, as needed under Alternative 7. Predicted additional sedimentation into Crow Creek would be approximately seven fewer tons per year than predicted sedimentation into Deer Creek and South Fork Deer Creek under the Proposed Action. Crow Creek appears to be under environmental stress (**Section 3.8.2**), but currently contains relatively high quality spawning habitat and is likely to be resilient to small sediment increases (0.5 percent of baseline sediment loading rate; **Section 3.8.4**, **Appendix 4A**). Although

Alternative 7 would impact substantially more intermittent channel (+96 percent) and perennial stream channel (+339 percent), it would also impact less AIZs (-26 percent) and would reduce sedimentation by approximately 88 percent over the Proposed Action Panel G West Haul/Access Road. Impacts to YCT and other native fishes would be slightly reduced when compared to those under the Proposed Action Panel G West/Haul Access Road. These impacts would be short-term (for the duration of the Project), local, and moderate.

Transportation Alternative 8 – Middle Access Road
Alternative 8 would disturb 2,702 feet of intermittent drainage channel and 9.7 acres of AIZs (2,252 additional feet of intermittent stream channel disturbance and 5.2 fewer acres of AIZ disturbance than the Proposed Action Panel G West Haul/Access Road; **Table 4.8-3**). Culverts across Deer Creek (580 feet) and South Fork Deer Creek (360 feet) would be longer than under the Proposed Action but would occur across intermittent reaches, thus no direct impacts to perennial stream channels would occur under Alternative 8 (475 fewer feet of perennial stream channel disturbance than under the Proposed Action). Predicted additional sedimentation into Deer Creek and South Fork Deer Creek under the Proposed Action would decrease by approximately six tons per year under Alternative 8 (**Table 4.8-3**), and the upper reach of Deer Creek that contains high quality spawning habitat would not be affected. Although Alternative 8 would impact substantially more (+500 percent) intermittent channel, it would also impact noticeably less perennial stream channel (-100 percent) and AIZs (-35 percent) and would reduce sedimentation by approximately 75 percent over the Proposed Action Panel G West Haul/Access Road. Impacts to YCT and other native fishes would be slightly reduced when compared to those under the Proposed Action Panel G West/Haul Access Road. These impacts would be short-term (for the duration of the Project), local, and moderate.

4.8.1.4 No Action Alternative

Under the No Action Alternative, mining in Panels F and G would not be approved. Impacts to stream channels and AIZs would not occur, eliminating Project-related impacts to YCT, other native fishes, and aquatic resources discussed in **Section 4.8.1.1**. In addition, overburden containing elevated concentrations of selenium would not be excavated and further potential for bioaccumulation of selenium in streams within the Study Area would not occur. Lastly, reclamation in Panel E would not be completed, as overburden from Pit 1 in Panel F would not be generated and thus used to backfill the Panel E-0 pit.

4.8.2 Mitigation Measures

Simplot would implement a mitigation program as required by law to offset impacts to aquatic resources, decrease risk associated with this Project, and further ensure the long-term viability of YCT in the Project Area. This program would be established cooperatively by the CNF, BLM, IDEQ, and Simplot, and would include stream crossing improvements, reclamation of roads that occur near streams, and the installation of fences along a reach of Crow Creek to protect fish habitat. Required work for mitigation would occur either before or during mining. The six mitigation measures are described below (and in more detail in **Appendix 4B**, YCT Biological Evaluation).

Mitigation measure #1 addresses movement of YCT between Project Area streams and larger waters in addition to sedimentation concerns (due to improperly sized culverts).

- Simplot would replace any culverts identified in 2005 by the CNF as under-capacity or blocking the upstream migration of fish, including crossings at FSR 102 and FSR 111.

Mitigation measure #2 addresses the habitat quality of Smoky Canyon Creek with regard to sedimentation and riparian areas.

- Simplot would relocate an 8,000-foot section of Smoky Canyon Road over the reclaimed C-Panel and would narrow a separate 2,000-foot section of Smoky Canyon Road where the riparian area (floodplain) occurs. Simplot would restore this area.

Mitigation measure #3 addresses sedimentation concerns in South Fork Deer Creek.

- Simplot would reroute the segment of FS Road 146 (**Appendix 4B**) from approximately the Trappers Cabin to Panel G on the Panel G Haul/Access Road upon its reclamation. That segment of the rerouted road would be reclaimed to 20-foot wide surface. The portion of the FS Road that is no longer needed would be reclaimed by Simplot. Other mitigation measures can be accomplished with stewardship funding generated by the timber sale component of this Project.

Mitigation measure #4 addresses sedimentation concerns in Crow Creek downstream of Wells Canyon Creek.

- Simplot would replace the ford crossing of Wells Canyon Creek 0.1 miles upstream from the Forest boundary with a bridge or oversized culvert, if appropriate, that would accommodate truck and trailer traffic. The widened stream channel at the ford would be narrowed to the natural channel width during construction.

Mitigation measure #5 addresses sedimentation concerns in Crow Creek.

- Simplot would construct and maintain a 4-strand barbed wire fence that would exclude livestock along a one-mile reach of Crow Creek. Simplot would repair a 22-acre exclosure that occurs along this reach as well as construct and maintain a watering system consisting of five troughs fed by Crow Creek.

Mitigation measure #6 addresses sedimentation concerns in Deer Creek.

- Sedimentation will be reduced on FS Road 102 from Trappers Cabin to the Diamond Creek Divide to benefit streams in the project area. Segments of this road that are sources of sediment can be treated through resurfacing, drainage improvements, narrowing away from drainages, and/or obliteration/relocation away from streams. Funding for this project will be secured by and the work will be implemented by the Forest.

4.8.3 Unavoidable (Residual) Adverse Impacts

Any residual impacts remaining after reclamation and mitigation would be considered unavoidable impacts. Over the long term, we would consider the expected slight contribution of selenium to YCT habitat from Project implementation to be unavoidable in that they are expected (over 100 years) to decrease. Those stream channels impacted by direct excavation may result in unavoidable effects because, even if reclaimed, they may not achieve the structure and function of the original streams.

4.8.4 Relationship of Short-Term Uses and Long-Term Productivity

The Proposed Action and Alternatives would implement ground-disturbing activities that would produce short- and long-term effects to YCT and other native fishes. Specifically, long-term productivity effects related to cutthroat trout and other native fishes may be sacrificed through

the bioaccumulation of selenium in Project Area streams (and eventually, the potential loss of reproductive function in resident fish).

4.8.5 Irreversible and Irretrievable Commitments of Resources

Over the long term, selenium impacts under the Proposed Action, and to a lesser extent under the Agency Preferred Alternative, would be irretrievable in that affected water resources may be contaminated for a period of time before selenium levels eventually (over 100 years) decrease. In addition, disturbance of perennial stream channels during mining would be irretrievable because culverts would be in place during mining before they are eventually removed and the streams are restored. Impacts from culvert installation can be addressed through future management decisions to remove the access route and, with intensive management and time, re-establish the structure and function of the stream; thus, culvert impacts are not irreversible.

Intermittent stream channels disturbed by direct excavation of mining pits may result in irreversible effects because, even if they are reclaimed, they may not have the structure and function of the original streams. No matter what management action is taken, it would not be possible to reverse the loss of diversity that made that particular population unique.

4.9 Grazing Management

Issue:
The Project may impact permitted livestock grazing within and adjacent to the Project Area.

Indicators:
Acres of suitable livestock foraging areas to be disturbed and the length of time livestock would be excluded from the mining areas, and comparison with undisturbed acres of grazing allotments in the Project Area;

Effects of relocation of grazing from directly impacted allotments to alternate allotments during active mining and reclamation;

Description of grazing allotment improvements and structures that would be disturbed;

Estimated concentrations of contaminants of concern in grazing water sources;

Change in suitable grazing acreage caused by increased COPCs in reclamation vegetation.

4.9.1 Direct and Indirect Impacts

4.9.1.1 Proposed Action

Where mining and associated disturbances are proposed on land that is currently considered suitable for livestock grazing, the land would be unsuitable for grazing during the time period associated with mining and reclamation. The RFP (USFS 2003a) requires that operations replace any surface water sources that are lost due to their mining activities. Implemented selenium management strategies are expected to control selenium releases to vegetation. For these reasons, the predicted loss of suitable acres for grazing and as a result, direct Animal Unit Month (AUM) losses, would be confined to the disturbed area footprints. Indirect losses of AUMs would occur due to restricted access within lease areas (see below). Once disturbed areas associated with mining have been reclaimed and their rangeland capability restored (as

determined by the CNF via restoration criteria), they would again be suitable for livestock grazing.

Section 3.9 of this EIS describes how grazing suitability is determined by the CNF and how suitability determinations are then used in grazing management as one of several components in determining whether, when, and how a given area is grazed. Suitability in the following discussion is used as an indicator of potential impact and a means to contrast alternatives. The actual or projected level of suitability does not imply that the CNF is bound to any level, or type, of grazing on lands discussed in this EIS.

Table 4.9-1 shows the loss of suitable rangeland by allotment for components of the Proposed Action, components of the Mining Alternatives, and the Transportation Alternatives. The RFP (USFS 2003a) recognizes that the suitability of a given area can change over time and/or with management decisions based on multiple land uses that include mining, thus a reduction in suitable acres for grazing due to mining activities would not be in direct conflict with the RFP.

Over an approximately 16-year period, the Proposed Action would remove 1,340 acres of vegetation within grazing allotments (**Table 4.5-1**). Reclamation in Panel F and in Panel G, beginning with the planting of native bunch grasses and forbs (**Table 2.4-4**), would begin a few years following initial disturbance in specific areas. Reclamation would occur as described in **Section 2.3.7.** Reclaimed areas containing established native bunch grasses and forbs and meeting rangeland capability criteria (e.g., >60 percent ground cover, >200 lbs of forage per acre; Maxim 2004g) would be suitable for grazing. The exact composition of vegetation communities after reclamation would not resemble their original state as they follow a unique succession process. Grasses would be over-represented initially, and as a result, relatively more fodder may be available for livestock grazing after reclamation than before mining. Because of the cover on reclaimed overburden disposal areas and how reclamation treatments are implemented, elevated selenium levels in forage on reclaimed sites are not anticipated.

All vegetation would be removed from acreage on grazing allotments disturbed by the Proposed Action, and these areas would be temporarily unsuitable for grazing. A variety of grazing management options are available to the USFS to respond to decreased grazing areas on affected allotments caused by mining. The feasibility of relocating animals to alternate (i.e., unused or shared) allotments during mining to compensate for lost acreage would be determined on a case-by-case basis once the final decision on a preferred alternative is made. Other options include reducing stocking rates on affected allotments for the duration of the mining and reclamation or temporarily closing affected allotments. The indirect impact to grazing resources from the temporary loss of acreage within allotments would be both long-term (i.e., in forest, mixed forest/brush, and shrub communities, which take longer to regenerate) and short-term (i.e., for grasses and forbs), site-specific, and major. In addition, the trailing corridor along Rock Creek to Manning Creek (to access the Manning Creek and Deer Creek Allotments from the south) would be impassable for the duration of the Proposed Action.

Table 4.9-2 shows the loss of AUMs by direct disturbance (direct AUM loss) from the Proposed Action, components of the Mining Alternatives, and the Transportation Alternatives. An AUM represents the amount of dry forage required to maintain one animal unit (usually a 1000-lb cow or calf, in terms of cattle) for one month, based on a forage allowance of 26 pounds per day (USFS 2003b:3-106). Each permittee is allowed a certain number of AUMs within their allotment; actual use is typically less than permitted (USFS 2003b:3-117). Direct losses of AUMs represent AUMs within the actual disturbance area that would be destroyed and unavailable for grazing until after vegetation reestablished post-reclamation.

TABLE 4.9-1 REDUCTION IN SUITABLE ACRES DUE TO MINING COMPONENTS AND ALTERNATIVES

PROPOSED ACTION AND ALTERNATIVES	ALLOTMENT	DISTURBED AREA (ACRES) IN ALLOTMENT	SUITABLE ACRES	
			CATTLE	SHEEP
PA Panel F Pit + Stockpiles	148 Manning Crk S&G*	337.29	228.71	267.02
PA Panel F North Mod. Pit	148 Manning Crk S&G	1.87	0.65	1.78
PA Panel F South Mod. Pit	148 Manning Crk S&G	137.81	69.36	93.01
PA Panel F O/B Fill	148 Manning Crk S&G	38.44	7.88	17.41
PA Panel F Haul Road	148 Manning Crk S&G	41.63	7.06	21.50
	136 Sage Valley C&H	24.89	15.50	15.68
PA Panel G Pit + Stockpiles	153 Deer Crk S&G*	309.61	72.12	83.68
	165 Wells Can S&G*	66.02	47.87	49.08
PA Panel G West O/B Fill	153 Deer Crk S&G	49.73	46.83	46.83
	165 Wells Can S&G	23.82	18.98	23.92
PA Panel G East O/B Fill	153 Deer Crk S&G	28.73	24.25	25.57
	165 Wells Can S&G	35.31	33.56	33.57
PA Panel G W Haul Road + Stockpiles	153 Deer Creek S&G*	85.43	18.67	34.24
	144 Green Mtn S&G*	28.54	2.42	9.98
	146 Manning Crk S&G*	103.32	28.45	52.76
Alt. D Store and Release Cover + Stockpiles	153 Deer Creek S&G*	26.97	25.17	25.30
	144 Green Mtn S&G	0.17	0.17	0.17
	148 Manning Crk S&G*	103.74	46.37	101.02
	165 Wells Can S&G*	5.40	5.40	5.40
PA Power line between Panels F & G	153 Deer Crk S&G	10.41	5.96	8.04
	144 Green Mtn S&G	0.51	0.51	0.51
	148 Manning Crk S&G	14.68	9.27	14.68
	139 Sage Crk C&H	1.84	0.04	0.04
	136 Sage Valley C&H	0.36	0.00	0.00
Alt. 1 Mod. Panel F Haul Road	148 Manning Crk S&G	24.96	8.81	24.07
	136 Sage Valley C&H	20.88	11.83	12.01
Alt. 2 East Haul Road	153 Deer Crk S&G*	59.72	18.26	45.77
	148 Manning Crk S&G*	70.46	69.10	70.46
	136 Sage Valley C&H*	12.19	12.18	12.18
	165 Wells Can S&G	19.49	11.67	18.19
Alt. 3 Mod. East Haul Road	153 Deer Crk S&G*	93.35	30.34	60.04
	148 Manning Crk S&G*	104.13	70.05	76.89
	136 Sage Valley C&H*	12.21	12.18	12.18
	165 Wells Can S&G	23.25	15.16	21.69
Alt. 4 Middle Haul Road	153 Deer Crk S&G	121.70	21.73	54.72
	148 Manning Crk S&G	70.26	20.73	42.81
Alt. 5 Alternate West Haul Road	153 Deer Crk S&G	85.43	21.55	38.07
	144 Green Mtn S&G*	28.54	4.05	12.72
	148 Manning Crk S&G*	112.10	41.34	69.61
Alt. 6 Conveyor	153 Deer Crk S&G	16.35	3.73	5.37
	148 Manning Crk S&G	41.86	28.17	37.37
	139 Sage Crk S&G	2.02	0.16	0.18
	136 Sage Valley C&H	1.00	0.00	0.00
Alt. 7 Crow Ck. Access Road	153 Deer Crk S&G	0.85	0.85	0.85
	152 Lower Crow Crk	0.10	0.09	0.10
	136 Sage Valley C&H	12.85	10.61	12.83
Alt. 7 Wells Canyon Access Road	153 Deer Crk S&G	2.15	1.02	2.12
	165 Wells Canyon S&G	22.38	2.49	16.53
Alt. 8 Middle Access Road	153 Deer Crk S&G	53.29	19.34	39.92
	148 Manning Crk S&G	45.37	12.79	26.38

* Disturbed and suitable acreage includes soil stockpile areas.

TABLE 4.9-2 DIRECT LOSSES OF AUMS DUE TO MINING COMPONENTS AND ALTERNATIVES

PROPOSED ACTION AND ALTERNATIVES	ALLOTMENT	DIRECT AUM LOSS	
		CATTLE	SHEEP
PA Panel F Pit	148 Manning Crk S&G*	81.28	448.43
PA Panel F North Mod. Pit	148 Manning Crk S&G	0.18	2.49
PA Panel F South Mod. Pit	148 Manning Crk S&G	29.28	201.39
PA Panel F O/B Fill	148 Manning Crk S&G	3.21	32.22
PA Panel F Haul Road	148 Manning Crk S&G 136 Sage Valley C&H	3.27 6.05	58.95 69.44
PA Panel G Pit	153 Deer Creek S&G* 165 Wells Canyon S&G*	21.15 18.09	258.26 188.88
PA Panel G West O/B Fill	153 Deer Creek S&G 165 Wells Canyon S&G	13.26 7.22	105.61 54.53
PA Panel G East O/B Fill	153 Deer Creek S&G* 165 Wells Canyon S&G	9.32 14.13	238.41 241.46
PA Panel G West Haul Road	148 Deer Crk S&G* 144 Green Mtn S&G* 146 Manning Crk S&G*	8.0 8.03 12.31	103.22 39.23 105.82
Alt. D Store and Release Cover	148 Deer Crk S&G* 144 Green Mtn S&G 148 Manning Crk S&G* 165 Wells Cnayon S&G*	8.2 0.69 18.41 0.82	54.74 23.32 210.76 25.59
Powerline	153 Deer Creek S&G 144 Green Mtn S&G 148 Manning Crk S&G 139 Sage Crk C&H	2.46 0.22 3.90 0.01	19.61 2.87 34.03 1.87
Alt. 1 Mod. Panel F Haul Road	148 Manning Crk S&G 136 Sage Valley C&H	3.82 4.69	70.02 69.88
Alt. 2 East Haul Road	153 Deer Creek S&G* 148 Manning Crk S&G* 136 Sage Valley C&H* 165 Wells Canyon S&G	6.89 34.59 11.48 4.57	139.97 220.28 128.61 71.42
Alt. 3 Mod. East Haul Road	153 Deer Creek S&G* 148 Manning Crk S&G* 136 Sage Valley C&H* 165 Wells Canyon S&G	11.05 38.41 13.40 4.78	153.64 279.84 159.55 72.29
Alt. 4 Middle Haul Road	153 Deer Creek S&G 148 Manning Crk S&G	8.55 8.74	114.7 108.32
Alt. 5 Alternate West Haul Road	153 Deer Creek S&G* 144 Green Mtn S&G* 148 Manning Crk S&G*	8.01 8.03 16.14	104.40 39.23 139.18
Alt. 6 Conveyor	153 Deer Creek S&G 148 Manning Crk S&G 139 Sage Crk S&G 136 Sage Valley C&H	1.28 10.46 0.05 0.0	12.49 79.89 0.67 0.0
Alt. 7 Crow Crk. Access Road	153 Deer Creek S&G 152 Lower Crow Crk 136 Sage Valley C&H	0.0 0.0 0.0	0.0 0.0 0.0
Alt. 7 Wells Canyon Access Road	165 Wells Canyon S&G	0.0	0.0
Alt. 8 Middle Access Road	153 Deer Creek S&G 148 Manning Crk S&G	7.38 5.37	82.23 65.02

*Including stockpiles

Table 4.9-3 shows the loss of AUMs by restricted access (indirect AUM loss) from the Proposed Action. Indirect AUM losses represent AUMs blocked from possible use during mining (i.e., lease areas not actually disturbed but with restricted access), but that would be available after mining.

TABLE 4.9-3 INDIRECT AUM LOSS DUE TO THE PROPOSED ACTION MINING

ALLOTMENT	INDIRECT DISTURBANCE (SUITABLE ACRES) IN ALLOTMENT		INDIRECT AUM LOSS	
	CATTLE	SHEEP	CATTLE	SHEEP
148 Manning Creek S&G	566.88	918.57	240.09	1,747.36
153 Deer Creek S&G	1,334.91	1,676.13	573.89	3,686.37
165 Wells Canyon S&G	449.18	483.67	190.89	1,047.24

Panel F, Including Lease Modifications (Component of Agency Preferred Alternative)
Mining Panel F would result in the removal of 515 acres within the Manning Creek Allotment (**Table 4.9-1**), which represents a five percent reduction in total acreage of the allotment.

Two range improvements in the Manning Creek Allotment (Nos. 344SC9 and 344SA9) are located within the Panel F mine area and would be eliminated by mining activities. These improvements are associated with Panther Spring and Little Basin Spring, respectively, to which the USFS has stock watering rights (Nos. 4054 and 4053), and consist of headboxes and troughs. Both the physical structures of these improvements and the water sources (springs) associated with them (**Section 4.3.1**) would be eliminated. In addition, five other springs (SP-UTSFSC-200, SP-UTNFDC-400, SP-UTNFDC-600, SP-UTNFDC-530, and SP-UTNFDC-540) may be affected by the mining of Panel F either through physical disruption or by potentially reduced up-gradient recharge (**Section 4.3.1**), although no range improvements or water rights outside of “instream livestock waters” are associated with these springs.

The water quality of other springs (SP-SFSC-750 and SP-UTSC-850) may be affected by seepage through overburden with elevated selenium concentrations. Stream reaches along lower South Fork Sage Creek, lower Sage Creek, and Crow Creek are also estimated to have elevated selenium concentrations due to the Proposed Action (**Table 4.3-15**) and are associated with water rights for stock grazing as are the two springs. The estimated concentrations of these streams do not exceed the IDEQ veterinary advisory level (0.05 mg/L), which applies to livestock. If any water sources become either temporarily or permanently unavailable for stock watering, the RFP requires Simplot to supply alternate water sources in sufficient quantity, quality, and location for continued use (USFS 2003a).

Mining Panel F also includes backfilling 29 acres of the existing Pit E-0 of Panel E. This pit area is encompassed in the boundaries of the Sage Creek Allotment, but is not counted within its suitable acres because of its status as an active mining area. Once this backfill is fully reclaimed, it may again become suitable for grazing. A 38-acre portion of Panel F would not be backfilled or reclaimed and would not be suitable for grazing in the future. Specifically, two remaining hanging walls would be left exposed. A portion of the footwall would also remain exposed. Although natural vegetation could establish on benched areas of the highwalls, it is unlikely that grazing could take place in these areas.

Impacts to livestock in the Manning Creek Allotment from the mining of Panel F would be site-specific, short- to long-term, and major (see page 4-1 for definitions).

Panel F Haul/Access Road (Component of Agency Preferred Alternative)
Constructing the Proposed Action Panel F Haul/Access Road would result in the removal of 67 acres within the Manning Creek and Sage Valley Allotments (**Table 4.9-1**), which represents one and four percent reductions in total acreage in each allotment area, respectively. No range improvements or water rights would be affected by construction of the Panel F Haul/Access Road. Livestock movements within the two allotments would be hindered by the road disturbance, but the road would not be fenced and livestock would be able to cross the road in many locations. Specifically, small areas within each allotment may become contained between the road footprint and disturbance associated with Panel F. If collisions with livestock occur on the Panel F Haul/Access Road due to mine traffic, and Simplot is responsible, they would pay fair market value for any livestock lost.

Impacts to livestock in the Manning Creek and Sage Valley Allotments from the construction and use of the Panel F Haul/Access Road would be site-specific, short- to long-term, and minor to major, depending on the capability of livestock to cross the haul road.

Panel G (Component of Agency Preferred Alternative)
Mining Panel G would result in the removal of approximately 460 acres within the Green Mountain and Wells Canyon Allotments (**Table 4.9-1**), which represents five and three percent reductions in total acreage in each allotment, respectively.

One range improvement (337A9) in the Wells Canyon Allotment is immediately downstream of the proposed Panel G South Overburden fill. This improvement consists of a headbox and troughs that are associated with a water right (No. 10505) held by the USFS for stock watering on a spring designated by Maxim as SP-WC-400. The spring itself would not be lost (**Section 4.3.1**), but its water quality may be affected by selenium due to the proposed Panel G South Overburden Fill. The Wells Canyon Allotment is currently vacant.

Four other springs in the Panel G area (SP-UTDC-700, SP-UTDC-800, SP-UTSFDC-500, and SP-UTWC-300) would be affected by the mining of Panel G either through physical disruption or by potentially reduced up-gradient recharge (**Section 4.3.1**), but there are no range improvements or water rights associated with these springs.

Water quality at Books Spring may be affected by seepage with elevated selenium concentrations and has a water right for stock watering. Stream reaches along lower Deer Creek and Crow Creek are predicted by groundwater modeling to have increased selenium concentrations after mining (**Section 4.3**) and are also associated with water rights for stock watering. The predicted selenium concentrations of Books Spring and these streams are well below the IDEQ veterinary advisory level (0.05 mg/L). If any water sources become either temporarily or permanently unavailable for stock watering, the RFP requires Simplot to supply alternate water sources in sufficient quantity, quality, and location for continued use (USFS 2003a).

An eight-acre portion of Panel G would not be backfilled or reclaimed and would not be suitable for grazing in the future. One remaining highwall, 2,600 feet long with a maximum height of 250 feet, would be left exposed. Although natural vegetation could establish on benched areas of the highwall, it is unlikely that grazing could take place there.

Impacts to livestock in the Green Mountain and Wells Canyon Allotments from the mining of Panel G would be site-specific, short- to long-term, and major.

Panel G West Haul/Access Road (Component of Agency Preferred Alternative)
Constructing the Panel G West Haul/Access Road would result in the removal of 217 acres within the Manning Creek and Green Mountain Allotments (**Table 4.9-1**), which represents three and one percent reductions in total acreage for each allotment area, respectively. No range improvements or water rights would be affected by the Panel G West Haul/Access Road. Livestock movements within the Manning Creek Allotment would be hindered by the road disturbance, but the road would not be fenced and livestock would be able to cross the road in many locations. If collisions with livestock occur on the Panel G West Haul/Access Road due to mine traffic, and Simplot is responsible, they would pay fair market value for any livestock lost.

Impacts to livestock in the Manning Creek and Green Mountain Allotments from the construction of the Panel G West Haul/Access Road would be site-specific, short- to long-term, and minor to major, depending on the capability of livestock to cross the haul road.

Power Line Between Panels F & G
Constructing the power line would result in the disturbance of approximately 28 acres of vegetation within the Manning Creek, Deer Creek, Sage Creek, Sage Valley, and Green Mountain Allotments (**Table 4.9-1**). Actual ground surface disturbance from the installation of the power line would be approximately three acres. The power line would not impact any range improvements or water rights.

Impacts to livestock in the Manning Creek, Deer Creek, Sage Creek, Sage Valley, and Green Mountain Allotments from the construction of the power line between Panels F and G would be site-specific, short-term, and negligible.

4.9.1.2 Mining Alternatives

Table 4.9-4 summarizes the Proposed Action and Mining Alternatives A through F with regard to acres disturbed within grazing allotments in the Study Area.

TABLE 4.9-4 DISTURBED AREA WITHIN GRAZING ALLOTMENTS BY THE MINING ALTERNATIVES AND PROPOSED ACTION (ACRES)

	148 MANNING CREEK	136 SAGE VALLEY	144 GREEN MTN.	165 WELLS CANYON	153 DEER CREEK	139 SAGE CREEK	TOTAL ALLOTMENT DISTURBANCE
Proposed Action	675.04	25.25	29.05	125.15	483.91	1.84	1340.24
Alternative A – No North Lease	673.17	25.25	29.05	125.15	483.91	1.84	1338.37
Alternative A – No South Lease	537.23	25.25	29.05	125.15	483.91	1.84	1202.43
Alternative B	675.04	25.25	29.05	125.15	483.91	1.84	1340.24
Alternative C	675.04	25.25	29.05	125.15	483.91	1.84	1340.24
Alternative D	778.78	25.25	29.22	130.55	510.88	1.84	1476.52
Alternative E	660.36	24.89	28.54	125.15	473.50	0.00	1312.44
Alternative F	660.36	24.89	28.54	125.15	473.50	0.00	1312.44

Mining Alternative A – No South and/or North Panel F Lease Modifications
Impacts to grazing resources would be reduced if Alternative A were adopted. In addition, the remaining hanging wall would be reduced from 4,800 feet (under the Proposed Action) to 2,400 feet long under Alternative A, and relocated from Pit Four (Proposed Action) to between Pits One and Two (Alternative A). The entire bottom of the Panel F open pit would be reclaimed under this alternative leaving a nine-acre highwall instead of the 38-acre open pit of the Proposed Action. Not mining either North or South Lease Modifications would shorten the mine life of Panel F by 2.3 years.

No Panel F North Lease Modification
If the North Lease Modification were not approved, approximately two acres of suitable grazing area in the Manning Creek Allotment would not be disturbed (**Tables 4.9-1, 4.9-4**). If Transportation Alternative 1 were also selected in conjunction, there would be 21 acres less disturbance of suitable grazing area than the Proposed Action Panel F Haul/Access Road (see **Table 4.9-5**). Impacts to range improvements and stock watering issues would be the same as under the Proposed Action.

No Panel F South Lease Modification
If the South Lease Modification were not approved, 138 acres of land within the Manning Creek Allotment would not be disturbed (**Table 4.9-1, 4.9-4**). This represents approximately two percent of the suitable grazing acreage within this allotment. Impacts to range improvements and stock watering would be the same as under the Proposed Action.

Mining Alternative B – No External Seleniferous Overburden Fills
Under Alternative B, there would be the same initial impacts to suitable acres for grazing, range improvements, and stock watering as under the Proposed Action. The 8-acre highwall remaining in Panel G under the Proposed Action would be eliminated in this alternative. Relative to the Proposed Action, an additional 6.5 months of mine and reclamation activity would be necessary before grazing suitability could be established.

Mining Alternative C – No External Overburden Fills at All
Under Alternative C, there would be the same initial impacts to suitable acres for grazing, range improvements, and stock watering as under the Proposed Action. The 8-acre highwall in Panel G and the 38-acre open pit in Panel F proposed to remain under the Proposed Action would be fully reclaimed under this alternative. Relative to the Proposed Action, an additional 12.5 months of mine and reclamation activity would be necessary before grazing suitability could be established.

Mining Alternative D – Store and Release Cover on Overburden Fills (Component of Agency Preferred Alternative)
If the Dinwoody material borrow pits external to the mine panels were fully developed, Mining Alternative D would result in the additional removal of 136 acres within the Manning Creek, Green Mountain, and Wells Canyon Allotments (**Tables 4.9-1, 4.9-4**). Impacts to range improvements would be the same under Alternative D as under the Proposed Action. Selenium contamination in several water sources would be lower under this alternative, and the exceedances of surface water aquatic criterion from mining Panels F and G would be eliminated.

Mining Alternative E – Power Line Connection from Panel F to Panel G Along Haul/Access Road (Component of Agency Preferred Alternative)
Relative to the Proposed Action, Alternative E would disturb approximately 28 fewer acres of land within the Manning Creek, Green Mountain, Deer Creek, Sage Valley, and Sage Creek Allotments (**Tables 4.9-1, 4.9-4**). Impacts to range improvements would be the same under Alternative E as under the Proposed Action.

Mining Alternative F – Electrical Generators at Panel G
Relative to the Proposed Action, Alternative F would disturb approximately 28 fewer acres of land within the Manning Creek, Green Mountain, Deer Creek, Sage Valley, and Sage Creek Allotments (**Tables 4.9-1, 4.9-4**). Impacts to range improvements would be the same under Alternative F as under the Proposed Action.

4.9.1.3 Transportation Alternatives

Each of the transportation alternatives has its own set of potential effects to grazing due to physical ground disturbance, hindering of livestock movement within the allotments, and reductions or removal of existing water sources. The haul/access roads would not be fenced, and livestock would be able to cross the roads in many locations. With the exception of Alternative 6, the impacts of the Transportation Alternatives on grazing are generally short-term, site-specific, and minor to moderate.

There would be no indirect losses of AUMs due to transportation alternatives because access would not be restricted under these proposals (see **Section 4.9.2**, Mitigation Measures). **Table 4.9-5** summarizes the differences between the Proposed Action and Transportation Alternatives 1 through 8 in terms of acres disturbed within the six grazing allotments that intersect the Study Area.

TABLE 4.9-5 DISTURBED AREA WITHIN GRAZING ALLOTMENTS BY THE TRANSPORTATION ALTERNATIVES AND THE PROPOSED ACTION HAUL/ACCESS ROADS (ACRES)

	148 MANNING CREEK	136 SAGE VALLEY	144 GREEN MTN.	165 WELLS CYN	153 DEER CREEK	139 SAGE CREEK	152 CROW CREEK	TOTAL ALLOTMENT DISTURBANCE
PA Panel F Haul/Access Rd	41.63	24.89	0.0	0.0	0.0	0.0	0.0	66.52
Alternative 1	24.96	20.88	0.0	0.0	0.0	0.0	0.0	45.84
PA Panel G West Haul/Access Rd	103.32	0.0	28.54	0.0	85.43	0.0	0.0	217.29
Alternative 2	70.46	12.19	0.0	19.49	59.72	0.0	0.0	161.86
Alternative 3	104.13	12.21	0.0	23.25	93.35	0.0	0.0	232.94
Alternative 4	70.26	0.0	0.0	0.0	121.70	0.0	0.0	191.96
Alternative 5	112.10	0.0	28.54	0.0	85.43	0.0	0.0	226.07
Alternative 6	41.86	1.00	0.0	0.0	16.35	2.02	0.0	61.23
Alternative 7	0.0	12.85	0.0	22.38	3.00	0.0	0.10	38.33
Alternative 8	45.37	0.0	0.0	0.0	53.29	0.0	0.0	98.66

Alternative 1 – Alternate Panel F Haul/Access Road
Relative to the Proposed Action Panel F Haul/Access Road, Alternative 1 would disturb 21 fewer acres of land within the Manning Creek and Sage Valley Allotments (**Tables 4.9-1, 4.9-5**).

Like the Proposed Action Panel F Haul/Access Road, livestock movements within these allotments would be hindered by the road disturbance such that acreage on the north and/or west side of the road may become contained between the road footprint and disturbance associated with Panel F. The risk of collisions on haul roads would be the same as under the Proposed Action Panel F Haul/Access Road. Likewise, Alternative 1 would not impact any range improvements or stock watering sources.

Alternative 2 – East Haul/Access Road

Although the East Haul/Access Road has approximately the same area of total disturbance as the Proposed Action Panel G West Haul/Access Road, almost two miles of Alternative 2 are located on private and State lands, which do not contain federal grazing allotments. Relative to the Proposed Action Panel G West Haul/Access Road, Alternative 2 would disturb 55 fewer acres of federal grazing areas, mainly within the Manning Creek and Deer Creek Allotments (**Tables 4.9-1, 4.9-5**). Grazing would also be impacted on the private and State land disturbed by this alternative where grazing currently exists. Under Alternative 2, no disturbance would occur in the Green Mountain Allotment, and 33 fewer acres would be disturbed within the Manning Creek Allotment relative to the Proposed Action.

Two stock ponds (344RB9 and 318RF9) in the Manning Creek Allotment and one in the Deer Creek Allotment (335RA9) are in close proximity to the footprint of Alternative 2, but would not be affected by road construction. There would be no impacts to the small ephemeral tributaries that are associated with these three ponds and the associated surface water rights 7139, 10638, and 4049. Water rights 24-10657 and 24-7160, located on State land but held by the USFS, may be affected by road construction. Both rights are held on a single stock pond source that collects runoff but originally intercepted spring discharge. The USFS has requested that the State Engineer drop the right associated with the 24-7160 license number, but it will keep the decreed right under 24-10657 (USFS 2004d).

Livestock movements would be hindered within the Deer Creek Allotment and on the Manning Creek Allotment east of mine disturbance by the haul/access road. More water sources are located east of mine disturbance, thus the location of Alternative 2 is likely to have a greater impact in this regard than the Proposed Action. The risk of collisions on this haul road would be greater than on the Proposed Action Panel G West Haul/Access Road if livestock are required to cross the road relatively frequently to access water sources.

Alternative 3 – Modified East Haul/Access Road

Alternative 3 is purposely designed to avoid private land, but more than a mile of this alternative would be located on State land. This alternative is 0.6 mile longer and would disturb 59 more acres than the Proposed Action Panel G West Haul/Access Road. Relative to the Proposed Action Panel G West Haul/Access Road, Alternative 3 would disturb 16 more acres of federal grazing areas, mainly within the Manning Creek, Deer Creek, and Wells Canyon Allotments (**Tables 4.9-1, 4.9-5**). Impacts to the State land grazing resources would also occur under this alternative. Under Alternative 3, no disturbance would occur in the Green Mountain Allotment, and 23 more acres would be disturbed within the Wells Canyon Allotment relative to the Proposed Action Panel G West Haul/Access Road.

As under Alternative 2, two stock ponds (344RB9 and 318RF9) in the Manning Creek Allotment and one in the Deer Creek Allotment (335RA9) are adjacent to the footprint of Alternative 3, but would not be affected by road construction. Livestock access to these water sources may be hindered if livestock are unable to cross the haul road on a regular basis. The water rights

located on State land, which may be impacted by road construction under Alternative 2, would not be impacted under Alternative 3.

Livestock movements would be hindered within the Deer Creek Allotment and on the Manning Creek Allotment east of mine disturbance by the haul/access road. As under Alternative 2, more water sources are located east of mine disturbance, thus the location of Alternative 3 is likely to have a greater impact in this regard than the Proposed Action. The risk of collisions on this haul road would be similar to Alternative 2.

Alternative 4 – Middle Haul/Access Road

Relative to the Proposed Action Panel G West Haul/Access Road, Alternative 4 would disturb 25 fewer acres of federal grazing area, within the Manning Creek and Deer Creek Allotments (**Tables 4.9-1, 4.9-5**). Under Alternative 4, 33 fewer acres would be disturbed within the Manning Creek Allotment, and 36 more acres of disturbance would occur within the Deer Creek Allotment relative to the Proposed Action Panel G West Haul/Access Road.

There are no range improvements or stock watering rights that would be affected by this road. One spring, not associated with a stock watering right (SP-NFDC-50), occurs beneath the road footprint.

Under Alternative 4, livestock movements would be less hindered within the Manning Creek Allotment than under the Proposed Action because less area would become contained between this haul road and Panel F mine disturbance. Movements within the Deer Creek Allotment would be affected to a larger extent than the Proposed Action because the west part of this allotment would be bisected by the haul road. The haul road under Alternative 4 also crosses several water sources, and access to these areas would be hindered if livestock were not able to cross the road on a regular basis. The risk of collisions with livestock on this haul road is likely to be greater than under the Proposed Action Panel G West Haul/Access Road because of the necessity of regular access to water across the haul road.

Alternative 5 – Alternate Panel G West Haul/Access Road

Relative to the Proposed Action Panel G West Haul/Access Road, Alternative 5 would disturb approximately nine more acres of federal grazing areas (**Tables 4.9-1, 4.9-5**). There are no range improvements or stock watering rights that would be affected by this road.

Impacts to livestock in the affected allotments from the construction of this alternative would be site-specific, short- to long-term, and major.

Alternative 6 – Conveyor from Panel G to Mill

The Panel G Conveyor Alternative (Transportation Alternative 6) requires a one-lane service road and either Transportation Alternative 7 or 8 to provide employee and vendor access to Panel G.

Relative to the Proposed Action Panel G West Haul/Access Road, Alternative 6 would disturb 156 fewer acres of federal grazing area, mainly within the Manning Creek and Deer Creek Allotments (**Tables 4.9-1, 4.9-5**). Under Alternative 6, 61 fewer acres would be disturbed within the Manning Creek Allotment, and 69 fewer acres would be disturbed within the Deer Creek Allotment relative to the Proposed Action Panel G West Haul/Access Road.

No range improvements or stock watering sources would be directly affected by Alternative 6. Fewer acres would be disturbed within the Deer Creek Allotment under Alternative 6 than under the Proposed Action. Livestock movement within this and the Manning Creek Allotment would

be restricted to a few crossing points (where the conveyor crosses Deer Creek and South Fork Sage Creek) under the conveyor that contain suitable clearance. Other than these locations, and any others where sufficient clearance is available under the conveyor, livestock would be blocked from crossing under the conveyor along its entire length from Panel G to the Smoky Canyon mill. This would be a major, short-term, site-specific impact to grazing in these allotments.

Alternative 7 – Crow Creek/Wells Canyon Access Road
Relative to the Proposed Action Panel G West Haul/Access Road, this alternative would disturb 179 fewer acres of federal grazing area, mainly within the Wells Canyon and Sage Valley Allotments (**Tables 4.9-1, 4.9-5**). Under Alternative 7 no disturbance would occur in the Green Mountain or Manning Creek Allotments. The majority of grazing resources impacts would occur on private land.

No public range improvements would be affected by Alternative 7. Due to widening of Crow Creek and Wells Canyon Roads, livestock movements may be hindered slightly more than if these roads were not improved. Livestock are currently controlled from crossing much of the existing Crow Creek road because of existing right-of-way fences and cattle guards along the road. This is also expected to be the case for Alternative 7, although the fences and cattle guards would have to be relocated. Fences and cattle guards may also be installed as necessary to protect traffic on the new Wells Canyon road under this alternative.

Alternative 8 – Middle Access Road
Under Alternative 8, no disturbance would occur in the Green Mountain Allotment, and 58 fewer acres would be disturbed within the Manning Creek Allotment relative to the Proposed Action Panel G West Haul/Access Road (**Tables 4.9-1, 4.9-5**). Alternative 8 would disturb 53 acres in the Deer Creek Allotment as opposed to 85 acres under the Proposed Action Panel G West Haul/Access Road.

There are no range improvements or stockwatering rights that would be affected by this road. Two springs not associated with stock watering rights (SP-NFDS-50 and SP-DC-350) occur beneath the road footprint.

Like Alternative 4, livestock movements would be less hindered within the Manning Creek Allotment than under the Proposed Action Panel G West Haul/Access Road because less area would become contained between this haul road and Panel F mine disturbance. Likewise, movements within the Deer Creek Allotment would be affected to a larger extent than the Proposed Action because the allotment would be bisected by the haul road. The access road under Alternative 8 crosses several water sources, and access to these areas would be hindered if livestock were not able to cross the road on a regular basis. The risk of collisions with livestock on this haul road is likely to be greater than under the Proposed Action Panel G West Haul/Access Road (similar to Alternative 4) because of the necessity of regular access to water.

4.9.1.4 No Action Alternative

Under the No Action Alternative, disturbance of vegetation within grazing allotments would not occur, thus eliminating the effects to grazing resources discussed above. Reclamation in Panel E would not be completed, as overburden from Pit 1 in Panel F would not be generated and thus used to backfill the Panel E-0 pit. As a result, this area would not be available for grazing in the future.

4.9.2 Mitigation Measures

Water Sources - In the case of springs that are currently used as water sources for grazing livestock, Simplot would establish mitigation protocols satisfactory to the CNF on a case-by-case basis. These protocols may involve hauling or pumping water from outside sources until construction of new stock ponds or improvements of nearby springs can be made. Under the Transportation Alternatives, water sources would be provided and no additional restrictions on access would be made outside of direct disturbance areas. Thus, there would be no indirect losses of AUMs under the Transportation Alternatives.

Trailing - Where haul roads cross existing Forest Trails used for driving livestock, trails up and over any road fills or cuts would be constructed by Simplot to allow safe passage for livestock at these locations across the haul road. In the case of the conveyor, sufficient ground clearance would be constructed where the conveyor crosses designated Forest Trails that would allow locations for livestock passage. If Transportation Alternative 6 (the conveyor) were selected, the CNF may require that additional crossings be provided with sufficient clearance for livestock passage under the conveyor.

Livestock would be prevented from grazing on reclaimed mine disturbances until these areas are accepted for grazing management by the CNF.

4.9.3 Unavoidable (Residual) Adverse Impacts

Unreclaimed areas would constitute an unavoidable adverse impact to grazing resources. When vegetation encroaches naturally into unreclaimed areas, it is likely that some colonizing species would be noxious weeds. Soils would be exposed until vegetation spreads naturally to these areas, creating a longer window of opportunity and space for noxious weed seeds to invade and establish relative to sites that are reclaimed. Noxious weed invasions would adversely impact the quality of reclaimed sites for grazing.

4.9.4 Relationship of Short-Term Uses and Long-Term Productivity

The Proposed Action and Alternatives would implement ground-disturbing activities that would produce short- and long-term effects to grazing resources while providing the short-term benefits of phosphate resources and productive employment.

4.9.5 Irreversible and Irretrievable Commitments of Resources

The Proposed Action and Alternatives would result in the removal of currently undisturbed vegetation within grazing allotments. Portions of Panel F and G would not be backfilled, leaving parts of pit footwalls and hanging walls exposed. Portions of haul roads would also not be reclaimed under the Proposed Action due to steepness of cut slopes. The footprints of these walls and unreclaimed areas of haul roads would represent irretrievable losses of vegetation within grazing allotments, and these areas would not be available for grazing in the future. Restricted access within mine lease areas, representing indirect losses of AUMs, would be irretrievable for the time that restrictions are in place.

4.10 Recreation and Land Use

Issue:
Recreational use and public access to the Project Area may be limited or prevented by mining activities and could impact adjacent private lands.

Indicators:
Number of acres of active mine area temporarily closed to public use;

Number of recreational access points temporarily closed to public use;

Acres of recreational areas temporarily blocked from public access;

Locations or primary access roads blocked or closed by mining activities.

Issue:
Impacts may occur from unauthorized Off-Highway Vehicle (OHV) and All-Terrain Vehicle (ATV) use on reclaimed and closed roads.

Indicators:
Predicted use of recreational vehicles on reclaimed area or roads with consideration of methods used to prevent OHV and ATV use.

4.10.1 Recreation – Direct and Indirect Impacts

The acres temporarily lost to recreation access would generally be the acres developed for mining and transportation under any of the Action Alternatives. No developed campgrounds or recreation areas would be affected by the Proposed Action or Alternatives. Impacts to dispersed recreation from the Proposed Action would be localized, minor to moderate, and last for the duration of mining and reclamation activities (see page 4-1 for definitions).

Temporary restrictions of recreational uses may cause some recreationists to abandon the area in search of more remote recreation opportunities. After reclamation, the area would be expected to provide the same types of recreation use as is currently available.

4.10.1.1 Proposed Action

<u>Panel F, Including Lease Modifications (Component of Agency Preferred Alternative)</u>
The development of Panel F, including lease modifications, would disturb nearly 500 acres in the semi-primitive motorized (SPM) Recreational Opportunity Spectrum (ROS) area (**Figure 3.10-1**). Development of Panel F would increase the extension of mining lands into the block of SPM designated in this area, which comprises approximately 14,890 acres. About 3.3 percent of this block would be disturbed by Panel F. This would be a moderate, localized impact to SPM lands in the area. The large SPM block in this area would essentially be divided into two smaller blocks, which could affect the management of recreation opportunities in the area.

The SPM values that would be affected in this area include: probability of solitude that is likely to decrease; predominantly natural-appearing environment changing to predominantly altered mining lands; and few, widely dispersed vegetation alterations that are visually subordinate changing to major vegetation alterations that affect a large area and are visually evident. These impacts range from negligible to major.

The current non-public road access in the Panel F area, which connects to the Manning Creek Road (FR 740), would be eliminated as Panel F is developed.

Big game hunting would be unavailable in the disturbed portion of Hunt Area 76 until mining is complete in this area. Big game habitat would be reduced, and game movement through the area would be interrupted by development of the mine panel. Reclamation of this open area would produce a grass/shrub mix that would encourage big game foraging, especially near the edges close to forest cover, such that these 'edge' areas may be good hunting sites.

Non-motorized public access through the proposed mine panels and across haul/access roads would be allowed during mining, except in specific areas where mining operations and active mining facilities would present a potential safety hazard to the public. Motorized public access would not be allowed in the mine panels or on the haul/access roads during mining operations, except for designated grade crossings where public access across certain haul/access roads would be by design.

Approximately one half-mile of Trail 402 along Manning Creek would be disrupted during active mining in this immediate area, temporarily interrupting the continuous route between the Crow Creek side of Manning Creek and Sage Meadows. Non-motorized access through this area would be restored when it is safe to do so. The entire two-mile segment of Trail 401 connecting the South Fork Sage Creek Trail 092 and the Manning Creek Trail 402 would be disrupted by Panel F development. Trails 401 and 402 would be re-established during reclamation of the mine panel.

Development of Panel F would decrease opportunities for snowmobile use in the area for the life of mining in Panel F.

Panel F Haul/Access Road (Component of Agency Preferred Alternative)
The Panel F Haul/Access Road would disturb approximately 67 acres of SPM lands in a narrow strip and would cut off motorized public access into the CNF on FR 179 in South Fork Sage Creek Canyon. This access would be unavailable for the life of mining in Panels F and G and would be re-established during reclamation of the haul/access road. Non-motorized public access along FR 179 across the haul/access road would be allowed during mining operations. Hikers and others using FR 179 in lower South Fork Sage Creek Canyon would likely experience haul truck noise from the haul/access road. Trail 405 would also be interrupted by the haul/access road.

Panel G (Component of Agency Preferred Alternative)
The development of Panel G would disturb approximately 748 acres of an area that is part Roaded Modified (RM) (Wells Canyon Road corridor) and part SPM.

Big game habitat and hunting opportunities within Hunt Area 76 would be reduced by the area disturbed by mining.

Snowmobile use would be restricted in the active mine area.

Trail 404, connecting the Wells Canyon Road (FR 146) with the Deer Creek Trail (093), would be disrupted by Panel G.

Panel G West Haul/Access Road (Component of Agency Preferred Alternative)
This haul/access road would disturb approximately 217 acres in RM and SPM ROS areas. Visitors in the area may be delayed at the locations where FR 146 crosses the haul/access road

at the Panel G operations area and at the west mouth of South Fork Deer Creek Canyon. FR 146 is also utilized as a snowmobile route during the winter; therefore, snow plowing of the haul road would have an impact to snowmobiles using this route. Persons using the Diamond Creek Road (FR 1102) and visiting the areas adjacent to this road in the upper Deer Creek watershed would notice the road disturbances and traffic along the haul/access road in this area.

Trails 092, 093, 102, 402, and 403 would be cut by this haul/access road. Non-motorized public access across the haul/access road in these locations would be allowed.

When the portion of FR 1102 in the Deer Creek watershed is relocated onto the haul/access road during reclamation, the current Forest Route in this area would be abandoned and reclaimed. Public access to Deer Creek in this area would be more difficult from the new FR 1102 because it would be located upslope from the creek, whereas the existing road is in the drainage bottom.

Traffic on the nearby Diamond Creek Road would not be hindered by the haul/access road, so that primary north-south Forest access would remain unaffected during mining.

Power Line Between Panels F and G

The 28-acre power line corridor would occur within both SPM and RM ROS areas, although actual new surface disturbance should be limited to approximately three acres. Impacts to dispersed recreation activities during the installation of the power line would occur temporarily while the helicopter was being used for the construction activities. All trails outside of the mine disturbance areas would be spanned by the overhead power line. Impacts from this component of the Proposed Action should be short-term and negligible.

4.10.1.2 Mining Alternatives

No campgrounds or developed recreation areas would be affected under any of the Mining Alternatives. Impacts to dispersed recreation from the Mining Alternatives would be localized, minor to moderate, and last for the duration of mining and reclamation activities.

Mining Alternative A – No South and/or North Panel F Lease Modifications

No Panel F North Lease Modification

Without the North Lease Modification, there would be 477 acres of SPM ROS lands disturbed, about 23 acres less than the Proposed Action. Access to FR 179 in the South Fork Sage Creek Canyon would be cut off in the same location as under the Proposed Action because both the Proposed Action Panel F Haul/Access Road and the Alternate Panel F Haul/Access Road cross FR 179 in the same location and manner.

No South Lease Modification

There would be 362 acres of SPM ROS areas disturbed with the smaller scale development of Panel F, 138 acres less than the Proposed Action. Access to FR 179 in the South Fork Sage Creek Canyon would be cut off in the same location as under the Proposed Action. However, since overall mine life would be shorter by approximately two years, this access would be returned sooner than under the Proposed Action.

Mining Alternative B – No External Seleniferous Overburden Fills

This alternative would affect recreation the same as the Proposed Action. Reclamation activities would be delayed (by 6 to 7 months) at the end of mining.

Mining Alternative C – No External Overburden Fills at All
The alternative would affect recreation the same as the Proposed Action, and reclamation activities would be delayed (by just over 12 months) at the end of mining. Final topography would be gentler and more similar to original topography, since no highwalls would be exposed.

Mining Alternative D – Store and Release Covers on Overburden Fills (Component of Agency Preferred Alternative)
This alternative would affect recreation the same as the Proposed Action. The potential expansion of the Panel F disturbance to obtain additional Dinwoody formation and temporarily store it could disturb an additional 104 acres in the SPM ROS area. The potential expansion of the disturbed area for Panel G could disturb an additional 33 acres of an area that is part RM (Wells Canyon Road corridor) and part SPM.

Mining Alternative E – Power Line Connection from Panel F to Panel G Along Haul/Access Road (Component of Agency Preferred Alternative)
This alternative would affect recreation the same as the Proposed Action but would eliminate the 28 acres of a direct power line corridor and the temporary use of a helicopter.

Mining Alternative F – Electrical Generators at Panel G
This alternative would affect recreation the same as the Proposed Action but would eliminate the 28 acres of a direct power line corridor and the temporary use of a helicopter.

4.10.1.3 Transportation Alternatives

No campgrounds or developed recreation areas would be affected under any of the Transportation Alternatives. Except for Alternative 6, impacts to dispersed recreation from the Transportation Alternatives would be localized, minor to moderate, and last for the duration of mining and reclamation activities.

Alternative 1 – Alternate Panel F Haul/Access Road
The Alternate Panel F Haul/Access Road would disturb approximately 46 acres of SPM lands. It would affect access to the CNF along FR 179 in the same manner as the Proposed Action Panel F Haul/Access Road and also impact Trail 405.

Alternative 2 – East Haul/Access Road
This alternative route would disturb 216 acres including SPM ROS lands, a small segment of RM lands in the Crow Creek road corridor, and private and State lands. Manning Creek and Deer Creek trails (402 and 093) would both be crossed by this road. Non-motorized access across the haul/access road would continue during mine operations. This haul road would be in closer proximity to residents along Crow Creek Road than the Proposed Action Panel G West Haul/Access Road and would be closer to the dispersed recreation such as hiking, horseback riding, and snowmobile riding that takes place along the Crow Creek Road.

The more remote areas on the western side of Freeman Ridge as well as the upper areas of South Fork Sage Creek drainage would not be affected by haul roads under this alternative. Big game use and hunting opportunities would likely be affected less than under the Proposed Action Panel G West Haul/Access Road because upper elevation cover and foraging habitats would remain intact, and elk in particular may not yet be moving down into the lower areas (East Haul/Access Road location) during hunting season.

Alternative 3 – Modified East Haul/Access Road
This alternative would disturb 276 acres of SPM ROS lands. Effects would be similar to Transportation Alternative 2; however, private lands would not be disturbed, and the haul road would not be as close to Crow Creek Road. The haul/access road would cross Trail 093 about one mile further up Deer Creek Canyon than Alternative 2. Fishing or other recreation in Deer Creek drainage in this area would be more affected by noise and the presence of the haul road on both sides of this steep drainage compared to Alternative 2.

Alternative 4 – Middle Haul/Access Road
This alternative would disturb 192 acres of SPM ROS lands and would cut trails 093, 102, 402, 403, and 404. The overall recreation experience in the upper parts of Deer Creek watershed would be affected by the presence of large road cuts/fills and haul truck traffic through this currently undisturbed area.

Alternative 5 – Alternate Panel G West Haul/Access Road
This alternative would disturb 226 acres in RM and SPM ROS areas. Effects would be similar to the Proposed Action Panel G West Haul/Access Road except that the recreation experience in South Fork Sage Creek drainage would not be affected in the lower, eastern portions of the drainage.

Alternative 6 – Conveyor from Panel G to Mill
The conveyor alternative would disturb 61 acres of SPM ROS lands in a narrow strip from Panel G to the southern end of the existing mining operations. Transportation of ore on the conveyor from Panel G would be less noticeable to visitors in the CNF than on any of the haul/access roads. The conveyor structure would be six feet wide and seven feet tall. The clearance between the bottom of the conveyor structure and the ground surface would typically be about two feet, except where short topographic dips and small drainages are spanned by the conveyor and clearance would be greater. The conveyor would effectively block motorized access, big game, pedestrian, and equestrian access across the conveyor corridor except for specific places where there would be sufficient clearance. The conveyor would be present at crossings of Deer Creek (Trail 093) and South Fork Sage Creek (FR 179), but there would be sufficient clearance under the conveyor at these locations for game, pedestrian, and equestrian access under the conveyor; this would have minor impacts to the recreation experience. Trails 404 and 402 would also be crossed by the conveyor and could be blocked unless suitable crossings were built at these locations.

The conveyor would produce a major, site-specific impact on dispersed recreation off existing FS trails and along the conveyor corridor due to it blocking pedestrian and equestrian access from the east side of the CNF toward the west in this area. On a larger geographic scale, the conveyor would produce a moderate impact to recreation in the area west of the conveyor, which could still be accessed from other existing trails west of the mine panels. The duration of these effects would be for the length of operation of the conveyor.

Alternative 7 – Crow Creek/Wells Canyon Access Road
This alternative would disturb 114 acres of RM land in the Crow Creek/Wells Canyon road corridor. Dispersed recreation and hunting along the existing Wells Canyon Road would be affected by noise from the new road upslope; however, this disturbance would be access traffic rather than haul truck traffic. At the end of mining, the new access road would remain, and the existing FR 146 would be decommissioned and reclaimed. The Wells Canyon Access Road as designed under this alternative, to the north and upslope of the current FR 146, would bring road and recreation use out of the drainage bottom, but on to the steeper slope, which would be

too narrow to accommodate camping areas. At the time the existing FR 146 would be decommissioned and reclaimed, access to existing pull-out areas along the existing Wells Canyon Road would be eliminated, unless this access was re-established from the new FR 146 route.

Increased access to the area via the upgraded Crow Creek and Wells Canyon roads is likely to add to the dispersed recreation use in the area, both in winter and snow-free seasons. Winter snowmobile traffic would be affected on the section of the Crow Creek Road that would be plowed. However, this use could also depend upon development and growth in surrounding communities. The upgraded Crow Creek Road would provide safe and reliable year-round access to the homes and ranches in the area.

An additional right-of-way would be needed for the portion of the Wells Canyon Access Road east of the Forest Boundary. The CNF has an easement for this section of the existing road across private land, but it is only 25 feet wide.

Alternative 8 – Middle Access Road
This alternative would disturb 99 acres of SPM ROS lands and would cut Trails 093, 102, 402, 403, and 404. The overall recreation experience in the upper parts of Deer Creek watershed would be affected by the presence of large road cuts/fills and access road traffic.

4.10.1.4 No Action Alternative

Under the No Action Alternative, the proposed mining effects to SPM or RM ROS lands in the Project Area would not occur. The types of recreation uses on the CNF in this area would likely continue similar to present uses; however, the level of use would depend upon development and growth in surrounding communities and in the region.

4.10.2 Land Use – Direct and Indirect Impacts

4.10.2.1 Proposed Action

The Proposed Action would disturb a total of 1,340 acres of the CNF. Visitors to the forest would locally see and hear increased activity including vehicles, mining equipment, and temporary structures. Pits and overburden disposal sites may be visible from forest roads or trails during mining. Special use authorizations would be needed for 314 acres. Although private lands would not be directly affected by the Proposed Action, adjacent private land values could be indirectly affected by the changes to area resources discussed in the various resource sections. Existing special use permits in the Study Area would not be affected by the Proposed Action.

The management of CNF lands in the area would be affected by the conversion of this area to mining. The big game range and timber management practices currently in place for the areas to be mined would generally not apply for the duration of mining and reclamation. AIZ's would be impacted as described in **Sections 4.6 and 4.8**. The CNF area utilized for phosphate mining would increase.

The mining of phosphate under the Proposed Action would produce the maximum amount of economically recoverable ore, helping to maintain the economic base of the area and the reserves of phosphate fertilizer for local, regional, and national use.

4.10.2.2 Mining Alternatives

Effects to land use from the Mining Alternatives would generally be similar to the Proposed Action because the disturbed areas are similar. Effects of the change in land use for the specific areas disturbed by each Mining Alternative would be minor and site-specific for the duration of the mining activities (see page 4-1 for definitions).

Mining Alternative A – South and/or North Panel F Lease Modifications
No Panel F North Lease Modification
Without the North Lease Modification and using the Alternate Panel F Haul/Access Road, there would be 1,317 acres of Forest land converted from present land uses to mining, 23 fewer acres than the Proposed Action.

No Panel F South Lease Modification
There would be 1,202 acres of Forest land changed from current land uses to mining under this alternative, 138 fewer acres than the Proposed Action.

Mining Alternative B – No External Seleniferous Overburden Fills
This alternative would affect land use the same as the Proposed Action. Reclamation activities would be delayed (by 6 to 7 months) at the end of mining.

Mining Alternative C – No External Overburden Fills at All
The alternative would affect land use the same as the Proposed Action, and reclamation activities would be delayed (by just over 12 months) at the end of mining.

Mining Alternative D – Store and Release Covers on Overburden Fills (Component of Agency Preferred Alternative)
The potential maximum expansion of the Panel F disturbance to obtain additional Dinwoody formation and temporarily store it, would change land use for 104 more acres than the Proposed Action. The potential expansion of the disturbed area for Panel G would change land use on an additional 33 acres compared to the Proposed Action.

Mining Alternative E – Power Line Connection from Panel F to Panel G Along Haul/Access Road (Component of Agency Preferred Alternative)
This alternative would affect land use the same as the Proposed Action, minus the 28 acres for the power line corridor.

Mining Alternative F – Electrical Generators at Panel G
This alternative would affect land use the same as the Proposed Action, minus the 28 acres for the power line corridor.

4.10.2.3 Transportation Alternatives

The construction of any of the transportation haul/access road alternatives would convert the current land uses of the property disturbed by the road corridor to a restricted access mining road corridor for the duration of the mining operations. For Alternative 7 (Crow Creek/Wells Canyon Access Road) the current land uses affected by the road would be converted to a public road use. Environmental effects on recreation are described above. Effects on timber resources and grazing are described in **Sections 4.5** and **4.9**, respectively. Except for the conveyor (Alternative 6), the effects of the change in land use for the specific areas disturbed by each Transportation Alternative would be minor and site-specific.

Alternative 1 – Alternate Panel F Haul/Access Road
The Alternate Panel F Haul/Access Road would change current land use of approximately 46 acres of CNF lands to mining use as a restricted access transportation corridor.

Alternative 2 – East Haul/Access Road
This alternative route would change the current land uses of 216 acres of Forest, private, and State lands to mining use as a restricted access transportation corridor. Easements or rights-of-way for encroachment of this road on private or State lands would be required.

Alternative 3 – Modified East Haul/Access Road
This alternative would change the current land uses of 276 acres of Forest and State lands to mining use as a restricted access transportation corridor. A right-of-way for encroachment of this road on State lands would be required.

Alternative 4 – Middle Haul/Access Road
This alternative would change the current land uses of 192 acres of Forest lands to mining use as a restricted access transportation corridor.

Alternative 5 – Alternate Panel G West Haul/Access Road
This alternative would change the current land uses of 226 acres of Forest Lands to mining use as a restricted access transportation corridor.

Alternative 6 – Conveyor from Panel G to Mill
The conveyor alternative would change the current land uses of 61 acres of Forest lands to mining uses as a restricted access transportation corridor.

The conveyor would produce a major, site-specific impact on recreation and grazing land uses along the conveyor corridor due to the blocking of dispersed (off existing FS trails) pedestrian, equestrian, and livestock access from the east side of the CNF toward the west in this area. On a larger geographic scale, the conveyor would produce a moderate impact to recreation and grazing land use in the area west of the conveyor, which could still be accessed from other existing trails west of the mine panels. The duration of these effects would be for the length of operation of the conveyor.

Alternative 7 – Crow Creek/Wells Canyon Access Road
This alternative would change the current land use of 114 acres of federal (USFS and BLM), State, and private land along the road corridor to use as a public road. Easements or rights-of-way for encroachment of this road construction on private or public lands would be required.

Alternative 8 – Middle Access Road
This alternative would change the current land use of 99 acres of private and Forest lands along the road corridor to use as a restricted access road.

4.10.2.4 No Action Alternative

Under the No Action Alternative, there would be no mining impacts to SPM or RM ROS lands in the Project Area. Current land uses would continue, and changes to land uses in the future would vary according to resource demands, forest planning, and growth in the region.

4.10.3 Mitigation Measures

Where forest trails are disrupted by mining operations, Simplot would post signs along the trails at the margins of the mining areas informing hikers about the mining activities and potential hazards within the mine area. If mine activities were such that travel through the mine area on the trail is not safe, the trail would be posted with signs indicating the trail is temporarily closed.

Trails would be re-established through mine areas as soon as practicable and would be well marked by Simplot to indicate the location of the designated trails through the mine disturbance. At locations where haul/access roads cut existing forest trails, trails for non-motorized access would be built across the haul/access roads by Simplot to allow convenient and safe, non-motorized crossing of the haul/access roads. Signs would be posted at these crossings warning visitors how to cross the haul/access roads safely and to avoid lingering or moving along the length of the haul/access roads. Signs would be posted on the haul/access roads at these crossings warning drivers on the haul/access roads to exercise caution.

Where established forest trails are crossed by the conveyor in Transportation Alternative 6, hiking, equestrian, and livestock access across the conveyor corridor would be maintained by Simplot with underpasses beneath the conveyor. If Transportation Alternative 6 (the conveyor) were selected, the Forest Service may require that additional crossings be provided with sufficient clearance for passage under the conveyor.

Forest Trail 404 connecting the Wells Canyon Road (FR 146) and the Deer Creek Trail 093 would be rebuilt by Simplot during initial mine development of Panel G a safe distance away from the disturbance limits of Panel G.

4.10.4 Unavoidable (Residual) Adverse Impacts

Residual adverse impacts to recreation and land use would include the temporary loss of dispersed recreation and other current land uses on the area disturbed by the proposed mining and transportation activities. These land uses would largely be re-established on these areas following cessation of mining and reclamation activities. Additional impacts to access across active mining areas, imposed for public safety, would also occur. Established snowmobile routes would be affected. These adverse impacts would be minor with regard to non-motorized access under most of the Proposed Action and Alternatives. In the case of Alternative 6, the CNF lands west of the conveyor corridor would be blocked for recreational and grazing access from east of the conveyor, except for existing FS trails where localized access under the conveyor was possible. Blockage of existing trails would be eliminated by construction of underpasses for the trails where they are crossed by the conveyor. Access to the CNF lands west of the conveyor would still be possible by existing trails west of the mine panels.

4.10.5 Relationship of Short-Term Uses and Long-Term Productivity

The use of this area for recovery of phosphate resources provides economic support for the local economy of Southeastern Idaho. In the long term, once reclamation is established, the area would be expected to provide the same types of recreation and grazing uses as are currently available. Long-term timber productivity would be adversely affected on the disturbed areas because reclamation would not restore the forest condition that existed prior to mining.

4.10.6 Irreversible and Irretrievable Commitments of Resources

The conversion of Forest lands to mining uses would temporarily restrict recreational uses of the disturbed area and may cause some recreationists (e.g. hunters who have chosen a particular area year after year to camp or hunt) to abandon the area in search of other remote recreation opportunities. Grazing land use would be temporarily reduced on the lands disturbed by the mining but grazing productivity would eventually be restored after reclamation. Timber productivity would be irretrievably committed on the disturbed areas due to the long time required to re-establish the forest baseline conditions.

4.11 Inventoried Roadless Areas/Recommended Wilderness and Research Natural Areas

No Recommended Wilderness or Research Natural Areas would be impacted by any of the alternatives and thus will not be discussed further.

Issue:
The Project may impact Inventoried Roadless Area characteristics.

Indicators:
Description of impacts to roadless attributes and characteristics.

4.11.1 Direct and Indirect Impacts

4.11.1.1 Proposed Action

The mining activities and associated haul/access road construction from the Proposed Action would disturb approximately 1,040 acres in the Sage Creek Roadless Area (SCRA) and approximately 60 acres in the Meade Peak Roadless Area (MPRA). These disturbances would result in both short- and long-term impacts ranging in intensity from negligible to major (see page 4-1 for definitions) depending upon the roadless and/or wilderness attribute being impacted, as discussed below. The majority of proposed disturbance would be reclaimed following mining activities. However, approximately 71 acres of the Proposed Action disturbance would not be reclaimed, leaving permanent indications of past mining activities in the IRAs. Many of the roadless attributes are also resources that have been described in this EIS in separate sections regardless of whether the resource is located within an IRA. These include: air (**Section 4.2**), water (**Section 4.3**), soils (**Section 4.4**), diversity of plant and animal communities, including wildlife and fish and threatened, endangered, sensitive, and rare species occurrence/habitat (**Sections 4.5, 4.6, 4.7,** and **4.8**), recreation (**Section 4.10**), visual and aesthetics (**Section 4.12**), and traditional cultural properties and sacred sites (**Sections 4.13** and **4.14**). Impacts to each IRA are quantified in **Table 4.11-1**.

The Forest Service Roadless Area Conservation Rule (RCRA) (36 CFR Part 294) currently applies to Forest Service actions in Inventoried Roadless Areas (IRA). The RACR prohibits a Forest Service responsible official from approving road construction and reconstruction and the cutting, sale, or removal of timber in IRAs except when the responsible official determines certain circumstances apply. (Refer to Section 1.3.2 where circumstances are listed.)

TABLE 4.11-1 ACRES OF DISTURBANCE BY THE PROPOSED ACTION WITHIN THE SCRA AND THE MPRA

PROPOSED ACTION	ACRES OF DISTURBANCE WITHIN THE SCRA		PERCENT OF SCRA (12,710 ACRES)	ACRES OF DISTURBANCE WITHIN THE MPRA		PERCENT OF MPRA (44,585 ACRES)
	ON-LEASE	OFF-LEASE*		ON-LEASE	OFF-LEASE	
Panel F, with lease mods.	355	160		0	0	
Panel F Haul/ Access Rd.	5	19		0	0	
Panel G	380	34		25	0	
Panel G - W. Haul/Access Rd.	2	64		2	32	
Power line	8	13		1	0	
Proposed Action TOTAL	750	290	8	28	32	0.1

*Includes proposed lease modifications.

Roadless Attributes

Soil: As shown in **Table 4-11.1**, approximately 1,040 acres of soils would be disturbed within the SCRA, and approximately 60 acres of soils would be disturbed within the MPRA under the Proposed Action. These impacts to soils, which have been previously described in **Section 4.4**, would represent 8 percent and less than 1 percent of the soils within the SCRA and MPRA, respectively. Approximately 778 acres or 70 percent of this disturbance would occur on current existing leases.

Air: As previously described in **Section 4.2**, impacts to air resources resulting from the Project would consist of emissions from mobile sources and the disturbance of soil. Thus, impacts to air quality within the SCRA and the MPRA would be temporary, occurring during the life of the mining activities. These impacts are not expected to permanently change the overall air quality within the IRAs.

Water/Sources of Public Drinking Water: Although there are no official Sources of Public Drinking Water within the Project Area, potential impacts to surface water and groundwater within the Project Area and areas extending outside the Project Area have been thoroughly described in **Section 4.3**. The potential impacts could be long-term and range from negligible to major depending upon the surface water and/or groundwater source being evaluated. No impacts to public water supplies are anticipated from the Project as described in **Section 4.3**. These impacts would occur within portions of both the SCRA and the MPRA.

Diversity of Plant and Animal Communities: As shown in **Table 4-11.1**, approximately 1,040 acres of vegetation/habitat (including trees, shrubs, and ground cover) within the SCRA and approximately 60 acres of vegetation/habitat within the MPRA would be removed during the life of the Project. These impacts to vegetation and habitats, described in **Section 4.5**, are not expected to dramatically alter the Diversity of Plant and Animal Communities within these IRAs, since these impacts represent 8 percent and less than 1 percent, respectively of available vegetation/habitats within the SCRA and the MPRA, and no known unique habitats exist where disturbances would occur (see Chapter 3). The majority of the disturbed areas would be reclaimed following mining activities.

Wildlife and Fish: Potential impacts to wildlife and fishery resources have been described in **Sections 4.7** and **4.8**. As previously mentioned, the SCRA ranked low and the MPRA ranked moderate for wildlife biological strongholds during the RFP Roadless Area Re-Evaluation analysis. In addition, the departure from PFC was moderate for both IRAs (USFS 2003a). The overall effects to wildlife and fish populations and habitats within the SCRA and MPRA would range from negligible to major depending upon the species and the habitat type being impacted.

Threatened, Endangered, Sensitive, and Rare Species Occurrence/Habitat: As previously discussed in **Sections 4.5** and **4.7**, the impacts from the Proposed Action to threatened, endangered, sensitive, and rare species occurrence/habitat within the actual Project Area are expected to be site-specific, short to long-term, and negligible to major.

Rare plants, rare plant communities, or plant community references have not been documented in the SCRA, but the Uinta Basin cryptantha and starveling milkvetch have been documented in the MPRA (USFS 2003a), although none of these species have been documented in the Project Area (see **Sections 3.5** and **4.5**). Since no populations of any rare plants or habitat have been documented in the Study Area, there would be no effect from the Proposed Action.

Reference Landscapes: For the SCRA, the Deer Creek watershed has not been impacted by mining and could be used as a unique aquatic reference (i.e., control comparison watershed at landscape level) (USFS 2003a). The Proposed Action would result in impacts to the aquatic areas within the Deer Creek watershed as described and addressed in **Sections 4.3** and **4.8,** thus impacts to a potential "Reference Landscape" within the SCRA would occur. These impacts would add to the impacts from roads, timber harvest, and grazing, and would potentially eliminate the desire to use the Deer Creek watershed as a unique aquatic reference site if the Proposed Action were implemented.

With regard to the MPRA, no impacts to the Meade Peak RNA and/or the Snowdrift prescribed fire treatment area would occur under the Proposed Action.

Scenic Integrity: As described previously, the SCRA has a low scenic integrity rating due to the level of developments such as timber harvest units, roads, electronic sites, etc. (USFS 2003a). The scenic integrity rating for the SCRA would remain low following mining activities. Visual impacts are addressed in **Section 4.12**.

With regard to the MPRA, mining activities should not be visible within identified high scenic integrity areas (i.e., adjacent to Highway 30, the City of Georgetown, and Crow Creek Road), thus this roadless attribute for this IRA should not be affected by the Proposed Action.

Recreation (Primitive, Semi-Primitive Non-Motorized, & Semi-Primitive Motorized): Recreation use and impacts throughout the Study Area are thoroughly addressed in **Sections 3.10** and **4.10**. In general, temporary impacts to trails and Forest routes would occur for the life of the mine, and increases in noise levels would detract from the recreational experience in the immediate mining area by users of adjacent trails. In addition, impacts to hunters would occur, as active mining areas would become closed to hunting, and adjacent areas may be less desirable for hunting during Project activities. These impacts could range from negligible to major.

Traditional Cultural Properties and Sacred Sites: As described in **Sections 3.13** and **4.13**, a determination of no effect to significant cultural resources has been made and clearance is recommended. The Idaho SHPO has been consulted and has concurred with the no effect

determination. The survey reports, including the letters documenting SHPO concurrence, are located in the Project Record. Potential impacts to Traditional Cultural Properties and Scared Sites within the Project Area and the IRAs are addressed in **Section 4.14**.

Special Use Permits (Authorizations), Utility Corridors: Descriptions and locations of existing SUAs in the Project Area have been identified in **Section 3.10**. If approval of this Project is granted, it would result in the issuance of SUAs within the SCRA and the MPRA. No impacts to existing SUAs are expected to occur from the Proposed Action.

Wilderness Attributes

With regard to the wilderness attributes previously described for the SCRA and the MPRA in **Section 3.10**, mining activities associated with the Proposed Action could change the current wilderness attribute ratings. An evaluation of the level of impacts to each attribute is made below.

Natural Integrity and Apparent Naturalness: The SCRA and the MPRA have been rated as low and moderate, respectively, for these attributes. The SCRA was rated low because the area has been affected by the following physical or man-caused impacts: range improvements, timber harvests, prescribed fire, mineral exploration and development, and unimproved roads (USFS 2003a). These physical or man-made impacts are evident within the SCRA and have altered the natural processes away from what one would expect without these activities. The MPRA was rated as moderate because of the evidence of human activities such as unimproved roads and timber harvests. These physical or man-made impacts are not as evident nor as numerous in the MPRA, thus having less of an overall impact on natural processes and the appearance of naturalness of the area.

The rating for the SCRA would remain low following any mining activities as the Proposed Action would contribute to the physical and/or man-caused impacts evident within the SCRA and thus reduce the long-term ecological processes of the area. In addition, the Proposed Action would be clearly evident to the casual observer and thus the appearance of naturalness of the area would be reduced. The rating for the MPRA would remain moderate because the Project would affect less than 1 percent of the area and physical or man-caused impacts would be confined to the northern portion of the IRA and thus long-term ecological processes of the MPRA should remain largely unimpacted and the appearance of the naturalness for the majority of the area to the causal observer should remain the same.

Solitude/Remoteness: The current opportunities for solitude within the SCRA are not anticipated to change as a result of the Proposed Action. The current low rating for the SCRA would remain unchanged as additional mining activities would effectively eliminate the minimal opportunities for solitude that exist currently.

The MPRA's current moderate rating would also remain unchanged as proposed mining activities would occur at the extreme northern portion of the MPRA and impact less than 1 percent of the IRA leaving the majority of the MPRA unaffected by the mining activities.

Primitive Recreation: The opportunity for primitive recreation in the SCRA is rated as moderate because of the small area size, road corridors projecting into the area, moderate topographic and vegetative screening, and because limited facilities are present (USFS 2003a). The current rating for this attribute within the SCRA could remain unchanged or be reduced to low as additional mining activities would impact approximately 8 percent of the IRA. The MPRA is rated as moderate; however, the approximately 60 acres that would be disturbed occur at the

extreme northern portion of the MPRA. Thus, the proposed disturbance acreage and the specific location of the proposed disturbance are not expected to change the current rating for this attribute within the MPRA.

Challenging Experience: Terrain within both IRAs is very typical of the other mountain ranges in Southeastern Idaho, thus according to the theme of a challenging experience in comparison to other IRAs that would require a higher level of woodsman and outdoor skills, there are few opportunities for this wilderness attribute within either IRA. The Proposed Action is not expected to change the current rating for this attribute within the IRAs.

Special Features/Special Places/Special Values: Unique or special features are not represented within the SCRA (USFS 2003a) and the MPRA contains Meade Peak (the highest point on the CNF) and the Meade Peak RNA. No impacts to any Special Features/Special Places/Special Values from the Project within the SCRA and the MPRA are anticipated.

Wilderness Manageability/Boundaries: No issues or impacts related to the Wilderness Manageability/Boundaries from implementation of the Proposed Action are anticipated in the long-term after reclamation activities are completed. The manageability of the SCRA could potentially remain fair or could be given a poor rating because the location and layout of the proposed mining activities would continue in a southwesterly direction from the existing Smoky Canyon Mine and into the southern portion of the SCRA and reclamation activities would not be fully completed until 3 to 5 years following mining activities. This would temporarily change the shape of the SCRA based upon proposed disturbances and thus potentially eliminating the required core area needed for Wilderness Manageability. The MPRA would likely remain poor due to the existing road intrusions. A core area in this IRA could still be achieved under the Proposed Action as only the extreme northern portion of the IRA would be impacted by the Project.

<u>Panel F, Including Lease Modifications (Component of Agency Preferred Alternative)</u>
As displayed in **Table 4.11-1**, approximately 515 acres of proposed disturbance would occur within the SCRA. Approximately 46 acres of areas to be left unreclaimed would occur on the existing Panel F lease within the SCRA. Approximately 160 acres of this disturbance would occur outside of existing leases; this represents approximately 4 percent of the total SCRA. Impacts to the roadless and wilderness attributes as described above for the entire Proposed Action would remain the same under the Panel F component, but at a reduced level for all of the roadless attributes and some of the wilderness attributes because of the reduction of proposed activities when only considering this component of the Proposed Action. Specifically, fewer impacts to resources and thus many of the impacts to roadless attributes would be reduced because approximately 500 fewer acres would be impacted. This would also assist in either keeping the current wilderness ratings unchanged or reducing potential impacts to the current wilderness attribute ratings as the extreme southern portion of the SCRA would not be impacted by activities in Panel G. Specifically, wilderness manageability may not be reduced under this component of the Proposed Action as a core area in the southern portion of the SCRA would remain intact.

No impacts to the MPRA would occur as a result of implementation of this component of the Proposed Action.

<u>Panel F Haul/Access Road (Component of Agency Preferred Alternative)</u>
As displayed in **Table 4.11-1**, the construction of the Panel F Haul/Access Road would disturb approximately 24 acres within the SCRA. Approximately two acres of this disturbance would be

left unreclaimed within the SCRA. The road would be obliterated and would no longer function as a road, but because portions are located on slopes greater than 33 percent (3h:1v) about two acres would remain as not fully recontoured. Approximately 1.14 acres would be situated within the North Lease Modification area and approximately 0.91 acre would be situated within the existing Panel F lease area. Approximately 19 acres would occur outside of existing leases; this is less than 0.2 percent of the total SCRA. Impacts to the roadless and wilderness attributes would likely remain unchanged from the current/baseline conditions and ratings as described in **Section 3.10** because of the small amount of impacts associated with this component. In addition, the Panel F Haul/Access Road is located along the extreme eastern portion of the SCRA and is situated mainly outside of the IRA. The MPRA would not be impacted by this component.

Panel G (Component of Agency Preferred Alternative)

As displayed in **Table 4.11-1**, approximately 414 acres of proposed disturbance would occur within the SCRA for this component. All eight acres of unreclaimed pit highwall would occur within the SCRA on the existing Panel G lease. Approximately 25 acres of disturbance (all on-lease) would occur within the MPRA. These totals from Panel G represent approximately 3 percent of the total SCRA and less than 1 percent of the total MPRA, respectively. Approximately 34 acres of this disturbance would occur in the SCRA outside of existing leases; this is less than 0.3 percent of the total SCRA. Impacts to the roadless and wilderness attributes as described above for the entire Proposed Action would be reduced when considering only this component because of the fewer acres being disturbed and impacted. Under the Panel G component, all of the current ratings for the wilderness attributes would likely remain the same because either the ratings are already low or the proposed impacts would not be great enough to change the existing rating. Consideration of only Panel G would allow for a large core area in the middle portion of the SCRA to remain intact, thus providing for appropriate wilderness manageability of this IRA. No changes to the current/existing roadless and wilderness attributes for the MPRA are anticipated as less than 1 percent of the total IRA would be impacted.

Panel G West Haul/Access Road (Component of Agency Preferred Alternative)

As displayed in **Table 4.11-1**, the construction of the Panel G West Haul/Access Road would disturb approximately 66 acres within the SCRA and 34 acres in the MPRA. Of this disturbance, the off lease portions would disturb 64 acres (0.5 percent of the area) in the SCRA and 32 acres in the MPRA.

Following use of the road for mining operations, it would be obliterated and the associated disturbance would be fully reclaimed except for 21 acres of disturbance caused by leaving a 2.9-mile long, 20-foot wide USFS road on a portion of the former haul/access road grade and certain cut and fill areas that cannot be safely regraded to slopes of 3h:1v or less. These areas would be obliterated to no longer function as a road, but would not be brought back to full contour. Of the 21 acres, 19.1 acres would occur within the SCRA and MPRA. Off lease, approximately 4.7 acres of road disturbance to be left obliterated but not fully recontoured in the SCRA. All on lease portions of the road would be fully reclaimed in the SCRA.

Approximately 14.4 acres of the road would be obliterated but not fully recontoured within the MPRA (approximately 14.1 acres would be off lease). The not fully recontoured disturbance would be situated immediately adjacent to the new alignment for FR 146 as described in **Section 2.4**. Impacts to the roadless and wilderness attributes would remain unchanged from the current and existing ratings for the roadless and wilderness attributes due to this

component's smaller acreage and footprint of disturbance within both IRAs, its location mainly along the edges of the IRAs, and its occurrence near existing and active roads on the Forest.

Power Line Between Panels F and G

As displayed in **Table 4.11-1**, the construction of the Power Line between Panels F and G would disturb approximately 21 acres within the SCRA, approximately 13 acres would occur outside of existing leases, and approximately 1 acre of disturbance (all on existing leases) would occur within the MPRA. Impacts to the majority of the roadless and wilderness attributes would likely remain unchanged from the current and existing attribute ratings because of this components small overall disturbance. However, impacts to several of the wilderness attributes, specifically Apparent Naturalness and Solitude/Remoteness would be impacted by the power line bisecting through essentially the middle of the SCRA. This would have a temporary impact on these attributes as the power line would be a physical and man-made impact that would be evident for the life of the Project.

4.11.1.2 Mining Alternatives

Mining Alternative A – No South and/or North Panel F Lease Modifications

Implementing Alternative A would reduce the amount of disturbance, off existing leases, within the SCRA by a total of approximately 154 acres, assuming that the alternate Panel F Haul/Access were also selected. This would represent an overall reduction of proposed disturbance of approximately 1 percent in the SCRA. This reduced acreage of disturbance within the SCRA is not anticipated to result in any change to the current and existing ratings to the roadless and wilderness attributes with the exception of those described below.

No Panel F South Lease Modification

Approximately 69 acres of new disturbance would not occur within the SCRA, 138 fewer acres than in the Proposed Action, thus reducing resource and evident physical and man-made impacts within the SCRA. Approximately 17 acres of disturbance would be left unreclaimed and would occur on the existing Panel F lease within the SCRA under this component of Mining Alternative A. A larger core area would be available for Wilderness Manageability considerations under this alternative.

No Panel F North Lease Modification

Assuming that the Alternate Panel F Haul/Access road is also selected under this alternative, approximately 191 acres of new disturbance would occur within the SCRA, which is 16 fewer acres than the Proposed Action. Approximately 46 acres of disturbance would be left unreclaimed and would occur on the existing Panel F lease within the SCRA under this component of Mining Alternative A. No changes to the current and existing roadless and wilderness attributes are anticipated under this alternative.

Mining Alternative B – No External Seleniferous Overburden Fills

No change in the impacts to the SCRA or the MPRA and the current and existing roadless and wilderness attributes, other than those previously described for the Proposed Action, would occur under this alternative. Approximately 46 acres of disturbance would be left unreclaimed and would occur on the existing Panel F lease within the SCRA under this Mining Alternative.

Mining Alternative C – No External Overburden Fills at All

No change in the impacts to the SCRA or the MPRA and the current and existing roadless and wilderness attributes, other than those previously described for the Proposed Action, would

occur under this alternative. No disturbance areas would be left unreclaimed under this alternative.

Mining Alternative D – Store and Release Covers on Overburden Fills (Component of Agency Preferred Alternative)
If the full extent of the Dinwoody borrow pits outside of the mine panels were to be developed under this alternative, a total of 838 acres of disturbance would occur in the SCRA and 32 acres in the MPRA; constituting an additional 95 acres of disturbance in the SCRA; all of it on existing leases. In addition, 6 acres of disturbance would occur within the MPRA, all on existing leases. This additional amount of disturbed acreage is not anticipated to change the overall impacts and ratings to the roadless and wilderness attributes for either IRA, already described under the Proposed Action. Approximately 46 acres of disturbance would be left unreclaimed and would occur on the existing Panel F lease within the SCRA under this Mining Alternative.

Mining Alternative E – Power Line Connection from Panel F to Panel G Along Haul/Access Road (Component of Agency Preferred Alternative)
A total of 722 acres of on-lease disturbance would occur in the SCRA and 25 acres in the MPRA. This represents a reduction of surface disturbance of up to 21 acres in the SCRA and 1 acre in the MPRA. Total actual ground disturbance would most likely only be reduced by less than three acres based upon planned disturbance impacts. Along with a reduction of actual disturbance acreage, impacts to several wilderness attributes (i.e., Apparent Naturalness and Solitude/Remoteness) would be lessened in the specific areas of the Deer Creek drainage that would not be bisected by the power line. Other impacts from this alternative to roadless and wilderness attributes would essentially be identical to the haul/access road alternatives as the power line would be constructed within the footprint of the haul/access roads. Approximately 46 acres of disturbance would be left unreclaimed and would occur on the existing Panel F lease within the SCRA under this Mining Alternative.

Mining Alternative F – Electrical Generators at Panel G
Impacts would be the same as described for Alternative E.

4.11.1.3 Transportation Alternatives

Although the overall impacts to the current and existing ratings for the roadless and wilderness attributes from each transportation alternative are unlikely to change from what has been previously described for the Proposed Action, the amount of proposed disturbance to IRAs does differ by transportation alternative and is displayed in **Table 4.11-2**. An increase or decrease in the acres of actual new surface disturbance within the IRAs would occur under each alternative. This change in disturbance acreage has been addressed for each transportation alternative throughout this EIS in the various resource sections, and many of the resultant impacts would be applicable as they relate to the roadless and wilderness attributes previously addressed under the Proposed Action. The transportation alternatives could also produce different effects on the some of the wilderness attributes, specifically the wilderness manageability of the SCRA could be impacted by the haul/access roads bisecting the southern portion of this IRA.

Alternative 1 – Alternate Panel F Haul/Access Road
As displayed in **Table 4.11-2**, Transportation Alternative 1 would impact 10 acres within the SCRA. This would reduce the overall disturbance of the SCRA by approximately 14 acres as compared to the Proposed Action Panel F Haul/Access Road, all of which would be situated on the existing Panel F lease. Approximately 4.2 acres of disturbance within the SCRA associated with this alternative would not be reclaimed within the existing Panel F lease. Impacts to the

roadless and wilderness attributes as described above for the Proposed Action Panel F Haul/Access Road would remain the same under this alternative and the current roadless and wilderness attributes would not be expected to change.

Alternative 2 – East Haul/Access Road

As displayed in **Table 4.11-2**, Transportation Alternative 2 would impact 74 acres within the SCRA and zero acres within the MPRA. This would increase the overall disturbance of the SCRA by approximately 8 acres and reduce the overall impacts to the MPRA by 34 acres as compared to the Proposed Action Panel G Haul/Access Road. This is mainly because a portion of this alternative would be located on private land where IRAs are not applicable. A total reduction of 37 acres of off-lease disturbance of IRAs would also result under this alternative. Approximately 6.7 acres of disturbance within the SCRA, situated mainly off of existing leases (6.55 acres), would not be reclaimed as part this alternative. As the majority of this road would be located outside the east boundary of the SCRA, it would have negligible to minor effects on roadless and wilderness attributes of this IRA and would not change the current ratings for those attributes.

TABLE 4.11-2 ACRES OF DISTURBANCE BY THE TRANSPORTATION ALTERNATIVES WITHIN THE SCRA AND THE MPRA

TRANSPORTATION ALTERNATIVE	ACRES OF DISTURBANCE WITHIN THE SCRA (12,710 ACRES)		ACRES OF DISTURBANCE WITHIN THE MPRA (44,585 ACRES)	
	ON-LEASE	OFF-LEASE*	ON-LEASE	OFF-LEASE
Proposed Action - Panel F Haul/Access Rd.	5	19	0	0
Proposed Action - Panel G West Haul/Access Rd.	2	64	2	32
Alt. 1 Alternate Panel F Haul/Access Rd.	10	0	0	0
Alt. 2 Panel G East Haul/Access Road**	15	59	0	0
Alt. 3 Panel G Modified East Haul/ Access Road**	15	125	0	0
Alt. 4 Panel G Middle Haul/Access Road	34	155	0	0
Alt. 5 Panel G Alternate West Haul/Access Road**	39	58	2	32
Alt. 6 Conveyor to Panel G to Mill	31	22	0	0
Alt. 7 Crow Creek and Wells Canyon Access Road	5	0	0	0
Alt. 8 Middle Access Road	22	75	0	0

* Includes proposed lease modifications.
** Includes topsoil stockpiles.

Alternative 3 – Modified East Haul/Access Road

As displayed in **Table 4.11-2**, Transportation Alternative 3 would impact 140 acres within the SCRA and zero acres within the MPRA. This would increase the overall disturbance to the SCRA by approximately 74 acres and reduce the overall impacts to the MPRA by 34 acres, resulting in a net increase of approximately 40 acres to IRAs as compared to the Proposed Action Panel G Haul/Access Road. A net increase of approximately 29 acres would occur off existing leases. Approximately 16.8 acres of disturbance within the SCRA, situated mainly off of existing leases (16.7 acres), would not be reclaimed as part of the disturbance associated with this alternative. As the majority of this road would be located outside the east boundary of the SCRA, it would have negligible to minor effects on roadless and wilderness attributes of this IRA, although more than Alternative 2 because of the increased disturbance and activity within lower Deer Creek Canyon. Impacts to Natural Integrity, Apparent Naturalness, and Solitude within the lower Deer Creek portion of the SCRA would occur. However, it is unlikely that the

overall current ratings to these attributes would change because of the location of impacts being confined to the lower Deer Creek drainage area.

Alternative 4 – Middle Haul/Access Road

As displayed in **Table 4.11-2**, Transportation Alternative 4 would impact 189 acres within the SCRA and zero acres within the MPRA. This would increase the overall disturbance of the SCRA by approximately 123 acres and reduce the overall impact to the MPRA by 34 acres, resulting in a net increase of approximately 89 acres to IRAs as compared to the Proposed Action Panel G Haul/Access Road. A net increase of approximately 59 acres would occur off existing leases. Approximately 28.9 acres of disturbance within the SCRA, situated mainly off of existing leases (26.9 acres), would not be reclaimed as part of the disturbance associated with this alternative. This road would be located in the southern core area of the SCRA, and would produce moderate effects on some of the roadless and wilderness attributes of this IRA because of the disturbance and activity within the center of the Deer Creek Canyon drainage. Specifically, changes to the current ratings for Natural Integrity, Apparent Naturalness, Solitude, and Wilderness Manageability might be warranted on a temporary basis during the life of the Project and until reclamation activities were conducted and deemed complete. It could affect boundaries of this IRA during future roadless inventories because it cuts through the core area of the southern portion of the IRA.

Alternative 5 – Alternate Panel G West Haul/Access Road

As displayed in **Table 4.11-2**, Transportation Alternative 5 would impact 97 acres within the SCRA and 34 acres within the MPRA. This would increase the overall disturbance of the SCRA by approximately 31 acres as compared to the Proposed Action Panel G Haul/Access Road. Approximately 15.5 acres of disturbance to be left unreclaimed in the SCRA would occur off of existing leases (2.6 acres would be situated within the North Lease Modification). A net reduction of 6 acres of off-lease disturbance to IRAs would occur under this alternative. Approximately 14 acres would be left unreclaimed within the MPRA. As previously described for the Proposed Action Panel G West Haul/Access Road, this unreclaimed disturbance would be situated immediately adjacent to the new alignment for FR 146 as described in **Section 2.4**. The current ratings for the roadless and wilderness attributes for the IRAs are not expected to change under this road alternative and would be the same as the Proposed Action West Haul/Access Road from Panel G to the Sage Meadows area. However, this alternative could impact the Wilderness Manageability of the SCRA because it would separate the south portion of the SCRA from the northern portion.

Alternative 6 – Conveyor from Panel G to Mill

As displayed in **Table 4.11-2**, Transportation Alternative 6 would impact 53 acres within the SCRA and zero acres within the MPRA. This would decrease the overall disturbance of the SCRA by approximately 13 acres and reduce the overall disturbance of the MPRA by 34 acres as compared to the Proposed Action Panel G Haul/Access Road. A net reduction of 72 acres of off-lease disturbance to IRAs would occur under this alternative. No disturbance areas would be left unreclaimed under this alternative. This alternative would need to be combined with either Transportation 7 or 8 to evaluate the true impacts. The effects on roadless and wilderness attributes for this alternative would be minor and in between those of Alternatives 2 and 4. It would cut through the core area of the southern SCRA but would disturb much less ground than either of these other alternatives. Its reclaimed appearance would be less intrusive than any of the haul/access roads and could have lesser effects on boundaries of this IRA during future roadless inventories. Similar to the Proposed Action power line component, impacts to several of the wilderness attributes, specifically Apparent Naturalness and Solitude/Remoteness would be impacted by the conveyor bisecting through essentially the

middle portion of the southern SCRA. This would have a temporary impact on these attributes as the conveyor would be a physical and man-made impact that would be evident for the life of the Project.

Alternative 7 – Crow Creek/Wells Canyon Access Road
As displayed in **Table 4.11-2**, Transportation Alternative 7 would impact five acres of the SCRA and zero acres within the MPRA. This would decrease the overall disturbance of the SCRA by approximately 61 acres and reduce the overall disturbance of the MPRA by 34 acres as compared to the Proposed Action Panel G Haul/Access Road. All disturbance to IRAs under this alternative would occur on existing leases. Approximately one acre of disturbance within the SCRA would be left unreclaimed under this alternative as part of the relocated Wells Canyon Road described in **Section 2.6.2**. However, impacts from this alternative would need to be combined with Alternative 6, if selected. This alternative would have negligible effects on roadless and wilderness attributes because of its small disturbance in the IRAs and its location at the south boundary of the SCRA. The current ratings for the roadless and wilderness attributes should not be affected by this alternative other than those described for Alternative 6 above, if combined with this alternative.

Alternative 8 – Middle Access Road
As displayed in **Table 4.11-2**, Transportation Alternative 8 would impact 97 acres within the SCRA and zero acres within the MPRA. This would increase the overall disturbance of the SCRA by approximately 31 acres and reduce the overall disturbance of the MPRA by 34 acres as compared to the Proposed Action Panel G Haul/Access Road. A net reduction of 21 acres of off-lease disturbance to IRAs would occur under this alternative. No disturbance areas would be left unreclaimed under this alternative. However, impacts from this alternative would need to be combined with Alternative 6, if selected. This alternative would have similar impacts to roadless and wilderness attributes as described above for Alternative 4 because of its nearly identical footprint of proposed impacts. In addition, if this alternative was selected and combined with Alternative 6, those impacts described above for roadless and wilderness attributes would also be applicable.

4.11.1.4 No Action Alternative

Under the No Action Alternative, Simplot would not be allowed to proceed with mining of ore in Panels F and G until mining and reclamation plans acceptable to the BLM and USFS were developed and approved. Under the No Action Alternative, there would be no direct or indirect impacts to IRAs within the Project Area, because no mining activities would occur and thus the current ratings for the roadless and wilderness attributes for both IRAs as described in **Section 3.10** would not be impacted.

4.11.2 Mitigation Measures

Project design features, BMPs, and the proposed Reclamation Plan are elements of the Proposed Action designed to reduce environmental impacts to many of the resources that impact the roadless and wilderness attributes for each impacted IRA. In addition, mitigation measures have been proposed for many of the specific resources and would be implemented in order to offset impacts to affected IRAs. Thus, additional mitigation measures specific to IRAs are not deemed necessary.

4.11.3 Unavoidable (Residual) Adverse Impacts

The result of unreclaimed mining activities (i.e., pit highwalls, relocated USFS road, and road cuts and fills) would present localized and permanent modifications within the IRAs that would have unavoidable impacts to several of the roadless (i.e., Scenic Integrity) and wilderness (i.e., Apparent Naturalness and potentially Wilderness Manageability) attributes.

4.11.4 Relationship of Short-Term Uses and Long-Term Productivity

The use of the IRAs for recovery of phosphate resources provides economic support for the local economy of Southeastern Idaho. In the long term, once reclamation is established, the area would be expected to provide the similar types of IRA characteristics as it currently does with the exception of the areas that would not be reclaimed, which would reduce the long-term productivity in terms of the Scenic Integrity, Apparent Naturalness, and potentially Wilderness Manageability attributes.

4.11.5 Irreversible and Irretrievable Commitments of Resources

Irreversible commitment of resources would occur to specific resources (i.e., soils, water, diversity of plant and animal communities, and scenic integrity) addressed in the EIS that are also identified as roadless attributes. An irretrievable commitment of resources to IRAs would occur as a result of the permanent impacts to several of the wilderness attributes (i.e., Apparent Naturalness and potentially Wilderness Manageability) that would occur from the Proposed Action as some mining areas would not be reclaimed.

4.12 Visual and Aesthetic Resources

Issue:
The Project may adversely affect visual resources in the area.

Indicators:
Estimated compliance with the Visual Quality Objectives (VQOs) in the USFS Visual Management System;

Change in scenery, from baseline to projected, from various public and occupied points within the Study Area.

4.12.1 Direct and Indirect Impacts

The landscape in the Project Area would be permanently altered by the development of lands for mining and transportation under any of the Action Alternatives. The initial mining-related developments would cause major and dramatic changes to the local landscape; however, this landscape is generally not within view of the casual observer or of property owners along Crow Creek Road.

According to the Seen/Unseen representations provided in **Section 3.12**, certain portions of the Proposed Action and Alternatives have been determined to be visible from view points to the east of the Project. These include views of the top of Panel G and portions of the Wells Canyon Access road and the East Haul/Access Road from south of Stewart Ranch (**Figure 3.12-2**). None of the elements of the Proposed Action or Alternatives would be visible from the Stewart Ranch buildings (**Figure 3.12-3**). Portions of the East Haul/Access Road in Nate Canyon would be visible from the Crow Creek Road between Stewart Ranch and the Mouth of Deer Creek

(**Figure 3.12-4**). A small portion of the East Haul/Access Road may be visible from the Osprey Ranch (**Figure 3.12-5**). The East Haul/Access Road and Modified East Haul/Access Road would be visible from the Crow Creek Road at the mouth of Deer Creek Canyon **Figure 3.12.-6**). The East Haul/Access Road in lower Nate Canyon would be visible from the Riede Cabin (**Figure 3.12-7**). Views of almost all components of the Proposed Action and Alternatives would be possible from a remote, high elevation point east of Crow Creek Valley (**Figure 3.12-8**).

VQO's of Modification and Partial Modification would not be met in the Project Area. Scenic integrity would be low in those areas developed for mining, as deviations begin to dominate the landscape view. The mine operation and reclamation plan would mitigate visual changes to the degree that reclamation methods and economics allow. Although VQO's would not be met, the efforts made to mitigate landscape impacts and reclaim mined areas provides compliance with the CNF RFP (USFS 2003b:).

4.12.1.1 Proposed Action

The proposed operations would result in disturbance of natural slopes in the areas occupied by mining operations, as well as visual changes resulting from the backfill of a currently open pit (Pit E-0). Impacts to visual/aesthetic resources would result from the overall presence of mining activity and equipment, vegetation removal, exposure of soil and rock, topographic changes, road cuts, placement of external overburden, and reclamation. The severity of these impacts is tempered by the reduced level of viewer sensitivity in the area, which contains secondary travel routes, and receives limited dispersed use in all but the hunting season months (August to November). As seeded vegetation becomes established on reclaimed surfaces, visual impacts from mining and backfilling would become less obvious in the landscape; however, reclaimed areas would not be expected to comply with the VQO's described in the CNF RFP (USFS 2003a). Approximately 46 acres of highwalls and pit bottoms would remain after reclamation.

The heaviest recreational uses of the CNF in this area are during the hunting season, when backcountry users and hunters would encounter landscape and aesthetic impacts due to mining and increased activity. These visual impacts to hunters and the hunting experience would range from minor to major, depending upon the sensitivity of the viewer, and would occur seasonally for the life of the Project and reclamation period.

Areas cleared of timber, and other mining activity such as overburden removal and hauling, may be visible to hunters and recreationists at upper elevations in the surrounding area. The upper elevation Seen/Unseen point taken from a horse trail on the southwestern portion of the Stewart Ranch property (**Figure 3.12-2**) shows that some disturbances in Panels F and G, as well as portions of the east side transportation alternatives, would be visible in the distance from this trail.

<u>Panel F, Including Lease Modifications (Component of Agency Preferred Alternative)</u>
The development of Panel F, including lease modifications, would disturb approximately 515 acres in an area designated with a VQO of Modification (**Figure 3.12-1**). Visual impacts would result initially from the stripping of vegetation, including timber, from the proposed mining panel. The clear-cuts would affect obvious change to the color and texture pattern of the existing landscape. This would be a major (see page 4-1 for definitions) impact to scenic resources for hikers in the immediate area and in remote high elevation areas to the west of the mine panel with views of the Project Area. The development of Panel F would not be visible from Crow Creek Road; remaining highwalls and reclaimed surfaces would be hidden by intervening hills from viewers on Crow Creek Road.

The unreclaimed 38-acre portion of Panel F (including benched highwalls) would be obvious from trails with access/views into the center portion of Panel F. Early revegetation of the recontoured slopes would contrast in color from any remaining dark green conifer cover on adjacent slopes. The expected time frame is three to five years for the bright green grass/forb revegetation community to become established and apparent. The eventual establishment of 'islands of diversity' (clusters of planted trees & shrubs) would restore a setting more similar to the original landscape in approximately 10 to 50 years.

The proposed pit backfill in Pit E-0 would reduce the currently approved visual impact (unbackfilled and reclaimed) for that pit. The backfilling and reclamation of the 29-acre area of Pit E-0 would visually blend that area with the surrounding reclaimed land in Panel E.

Panel F Haul/Access Road (Component of Agency Preferred Alternative)
The Panel F haul/access road would disturb approximately 67 acres of VQO Modification lands in a narrow strip. This disturbance would be visible to hikers in South Fork Sage Creek Canyon, but there would be no motorized public access into the CNF on FR 179 in South Fork Sage Creek Canyon during mining in Panels F and G, limiting public use of this area. This haul/access road would not be visible from Crow Creek Road.

Panel G (Component of Agency Preferred Alternative)
The development of Panel G would disturb approximately 513 acres of an area that is classified predominantly as Partial Retention. The Project Area landscape in Partial Retention Areas has moderate scenic integrity (See Photo in Chapter 3 – View of Panel G). The development of Panel G would be a major impact to the scenery in this area; this mining disturbance would be visible from points along the existing Wells Canyon Road (FR 146) at the east mouth to South Fork Deer Creek Canyon and from points on foot in higher elevation areas to the west. During mining, the footwall of the Panel G pit would be readily apparent from these viewpoints. After reclamation, the west-facing reclaimed slope would be covered with grass and forb vegetation that would contrast with adjacent/visible forested slopes (**Figure 4.12-1)**.

Panel G West Haul/Access Road (Component of Agency Preferred Alternative)
This haul/access road would disturb approximately 217 acres in VQO Partial Retention areas. Users of the Diamond Creek Road (FR 1102) and those visiting the areas adjacent to this road in the upper Deer Creek watershed would notice the haul road cut/fill disturbances upslope to the east and traffic along the haul/access road in this area. The Panel G West Haul/Access road itself would be restricted to mine personnel only during mining. This road would be partially reclaimed at the end of mining and turned over to the CNF to replace the current FS road along South Fork Deer Creek Canyon and along Deer Creek to the divide with Timber Creek. Some portions of this road corridor would not be reclaimed due to steep slopes; these unreclaimed strips would likely remain evident in the long term. This would remain as a minor to moderate impact to scenic resources once reclamation occurs on the lower slopes.

When the FS traffic is routed onto the new road, the visual impact of the road disturbance would be lessened on drivers compared to the view they would have of the road disturbance from the existing FR 1102 because they would actually be on the road and not viewing it from a distance. Views to road users familiar with the route would change from the narrow, tree-lined corridor (See photo in Chapter 3, View south along Diamond Creek Road) along the creek, to a wider disturbed/partially reclaimed corridor upslope from the creek.

Power Line Between Panels F and G

The power line for Panels F and G would extend for 4.6 miles from the south end of Panel E to Panel G through VQO Modification and Partial Modification lands. The trees would be cut in the 50-foot wide right-of-way for this power line, as needed. Overall, this disturbance would be a minor to moderate impact on the visual resources of the area. None of the power line would be visible from the Crow Creek Road. The portion of the power line and swath of cleared ROW between Panel F and G would likely be visible from the Wells Canyon Road (FR 146) east of the mouth of South Fork Deer Creek Canyon.

4.12.1.2 Mining Alternatives

Mining Alternative A – No South and/or North Panel F Lease Modifications

No Panel F North Lease Modification

If the Proposed Action Panel F Haul/Access Road were utilized, there would be 1,054 acres of VQO Modification lands disturbed, a reduction in disturbance from the Proposed Action of two acres. Without the North Lease Modification, there would be 23 fewer acres of VQO Modification lands disturbed, assuming the Alternate Panel F Haul/Access Road were also selected. Motorized (viewer) access along FR 179 in the South Fork Sage Creek Canyon would be cut off in the same location as under the Proposed Action because both the Proposed Action Panel F Haul/Access Road and the Alternate Panel F Haul/Access Road both cross FR 179 in the same location and manner. Impacts to scenic resources would be generally the same as under the Proposed Action.

No Panel F South Lease Modification

There would be 918 acres of VQO Modification lands disturbed with the smaller scale development of Panel F, 138 fewer acres than the Proposed Action. There would be less of an impact to scenic resources for viewers from distant, upper elevation areas, but little difference to the overall proposed visual resources impacts under the full development of Panel F.

Access to FR 179 in the South Fork Sage Creek Canyon would be cut off in the same location as under the Proposed Action. However, since overall mine life would be shorter by approximately two years, this access would be returned sooner than under the Proposed Action.

Mining Alternative B – No External Seleniferous Overburden Fills

This alternative would essentially affect visual resources the same as the Proposed Action. The 8-acre highwall remaining in Panel G as part of the Proposed Action would be completely reclaimed under this alternative. However, this change would likely only be noticeable to hikers on Trail 404, which would be located near the highwall. The external overburden fill for Panel F and the East External Overburden Fill for Panel G would have lower profiles that may be less noticeable when reclaimed under this alternative than under the Proposed Action or Alternative A. Reclamation activities would be delayed (by 6 to 7 months) at the end of mining.

Mining Alternative C – No External Overburden Fills at All

Visual impacts would initially be the same as those for the Proposed Action; however, the final topography would be gentler and more similar to original topography, since no highwalls would be exposed, and the open pit remaining in Panel F under the Proposed Action would be fully reclaimed under Alternative C. All the external overburden areas would be restored to approximate original contours and reclaimed so their long-term visual effects would be less than the Proposed Action and Alternatives A and B. The duration of the mine activities would be extended by 12 months under this alternative.

Figure 4.12-1 Visual Simulation-Looking East Toward Panel G

Mining Alternative D – Store and Release Covers on Overburden Fills (Component of Agency Preferred Alternative)
This alternative would affect visual resources generally the same as the Proposed Action; however, the areas of potential surface disturbance would increase from 1,056 acres to 1,193 acres. The potential expansion of the Panel F disturbance to obtain additional Dinwoody formation outside of the mine panels and temporarily store it would disturb 619 acres of VQO Modification areas, an increase over the Proposed Action of 104 acres. The potential expansion of the disturbed area for Panel G would disturb 546 acres, an increase of 32 acres in VQO Partial Modification areas, and would be visible from Wells Canyon Road.

Mining Alternative E – Power Line Connection from Panel F to Panel G Along Haul/Access Road (Component of Agency Preferred Alternative)
This alternative would have minor effects to visual resources because it is typical to see power lines along roads. It would minimize the power line impact since it would be along the haul/access road, a disturbed area, rather than across undisturbed area.

Mining Alternative F – Electrical Generators at Panel G
This alternative would affect visual resources about the same as the Proposed Action. Impacts would be slightly less since there would be no power line in association with this alternative.

4.12.1.3 Transportation Alternatives

Alternative 1 – Alternate F Panel Haul/Access Road
The Alternate Panel F Haul/Access Road would disturb approximately 46 acres in VQO Modification areas and would affect scenic resources about the same as the Proposed Panel F Haul/Access Road.

Alternative 2 – East Haul/Access Road
This alternative route would disturb 216 acres across VQO Modification and Partial Modification lands; non-motorized access across the haul/access road would continue during mine operations. Portions of this haul road would be visible to residents and travelers along Crow Creek Road. The main visual impacts of this road would occur from its presence in lower Nate Canyon and the mouth of Deer Creek Canyon. In these areas, large road cuts and fills would be visible from along the Crow Creek Road. The haul/access road in lower Nate Canyon would be clearly visible from along the Crow Creek road for about two miles south of Nate Canyon. The haul/access road disturbance in Lower Nate Canyon would be quite obvious from the Peter Riede property (**Figure 3.10-2**). The road fill across lower Deer Creek and the approaches to this fill would be visible from the Crow Creek Road at the mouth of Deer Creek Canyon. Less than 0.25 mile of the haul/access road, where it crosses the hillside north of the upper Quakie Hollow drainage would be visible from the Osprey Ranch. The rest of the haul/access road would not be visible from the Dickson Whitney and Osprey Partners property (**Figure 3.10-2**). The presence of this road would have local, moderate, and short-term impacts to scenic and aesthetic resources in this portion of the Crow Creek Valley.

Alternative 3 – Modified East Haul/Access Road
This alternative would disturb 276 acres across VQO Modification and Partial Modification lands. The Deer Creek crossing of this road would be about one mile upstream from the Alternative 2 alignment and would not be visible from the Crow Creek Road. However, the large road cuts and fills on either side of the canyon would be readily apparent from the Crow Creek Road at the mouth of Deer Creek Canyon. Fishing or other recreation in lower Deer Creek drainage would include views of these haul/access road cuts on both sides of this steep

drainage for a mile. This road would cause moderate, local impacts to scenic and aesthetic resources for Deer Creek drainage and portions of Crow Creek valley.

Alternative 4 – Middle Haul/Access Road
This alternative would disturb 192 acres of VQO Modification and Partial Modification lands. This haul/access route would cross several hiking trails (093, 102, 403, and 404) in the upper parts of Deer Creek watershed. Less than 0.1 mile of this haul/access road would be visible from the Crow Creek Road at the mouth of Deer Creek Canyon. More of the haul/access road would be visible from the Wells Canyon Road (FR 146) at viewpoints near the east mouth to South Fork Deer Creek Canyon. Scenic/aesthetic impacts would include large road cuts/fills and haul truck traffic through this currently undisturbed area. This would be a moderate, local temporary impact to motorists and hikers passing through this area.

Alternative 5 – Alternate Panel G West Haul/Access Road
This alternative would disturb 226 acres in VQO Modification and Partial Modification lands. Effects would be similar to the Proposed Action West Haul/Access Road except in South Fork Sage Creek drainage where Alternative 5 would veer to the south out of the drainage at Sage Meadows, averting any visual impact of the road on recreationists along South Fork Sage Creek drainage.

Alternative 6 – Conveyor from Panel G to Mill
The conveyor alternative would disturb 61 acres in a narrow strip from Panel G to the southern end of the existing Panel E mining operations, across mainly VQO Modification lands. Transportation of ore on the conveyor from Panel G would be less visible and noticeable to visitors in the CNF than on any of the haul/access roads. The conveyor structure would be 6 feet wide and 7 feet tall and located on a 50-foot wide right-of-way. It would be visible from certain hiking trails that cross it (404, 093, 402, and 092) and at creek crossings. The conveyor would not be visible from the Crow Creek Road. The southern portion of the conveyor would be visible from the Wells Canyon Road (FR 146) near the east mouth of South Fork Deer Creek Canyon.

The conveyor would produce a minor, local scenic impact to distant viewers for the life of mine operation. With removal of the conveyor and subsequent reclamation, this transportation alternative would have the least transportation-related impacts to scenic resources in the Project Area.

Alternative 7 – Crow Creek/Wells Canyon Access Road
This alternative would disturb 114 acres in VQO Partial Retention lands in the Crow Creek/Wells Canyon road corridor. Visual impacts from the development of the new Wells Canyon Road upslope from and north of the existing FR 146 would be confined mainly to the narrow Wells Canyon corridor. This new access road would remain at the end of mining, and the existing FS 146 road would be decommissioned and reclaimed.

Re-aligned and improved sections of the Crow Creek Road would include some visible road cuts and fills. Increased traffic would be evident to residents along Crow Creek Road. This alternative would have local, moderate impacts to scenic/aesthetic resources of the Crow Creek Road corridor.

Alternative 8 – Middle Access Road
This alternative would disturb 99 acres of VQO Partial Retention and Modification lands. Its visual impacts would be similar, but of a lesser scale, to the Middle Haul/Access Road because

its alignment would be very similar. Scenic/aesthetic impacts would include large road cuts/fills and haul truck traffic through this currently undisturbed area. This would be a local, moderate, temporary impact to hikers and motorists passing through the area.

4.12.1.4 No Action Alternative

Under the No Action Alternative, there would be no mining impacts to the scenic and aesthetic resources in the Project Area.

4.12.2 Mitigation Measures

Over time, the proposed reclamation, included as part of the Proposed Action, would provide adequate mitigation to the landscape changes and visual impacts imposed by mining. An additional planned measure is tree planting in specific areas to provide vegetation screening of public views of road construction disturbance. The tree planting measure would be planned based upon final road design, and incorporated upon completion of road construction, using site-adapted tree species or stock, such that trees are well established by the end of mining and reclamation. See also the mitigation measures proposed in **Section 4.5.2**, Vegetation.

4.12.3 Unavoidable (Residual) Adverse Impacts

Upon completion of reclamation, the visual qualities of the Project Area would contrast in color, texture, and form from patches of undisturbed landscape. Reclamation would not entirely restore the exact forest condition that existed prior to the mining on the disturbed areas. Residual adverse impacts to scenic and aesthetic resources would include the remaining unreclaimed areas of highwall and pit floor that are visible to hikers or other recreationists in the area. Unreclaimed portions of road corridors would remain evident in the long term, until natural processes restore some vegetation cover on these steeper slopes.

4.12.4 Relationship of Short-Term Uses and Long-Term Productivity

Once reclamation is established, the overall area would be expected to provide similar scenic views to motorists as are currently available.

4.12.5 Irreversible and Irretrievable Commitments of Resources

The irreversible commitment of resources includes the conversion of forest lands to mining uses, loss of vegetation, and topographic changes which result from large scale excavations. These original characteristic landscapes cannot be re-created. Forest lands with Partial Modification and Modification VQO's would be converted to mining lands with VQO of Maximum Modification.

4.13 Cultural Resources

Issue:
Cultural resource sites may be impacted in the Project Area.

Indicators:
Number of cultural sites eligible for the National Register of Historic Places (NRHP) impacted by the Project.

Issue:
The heritage values (resources) of the Project Area may be compromised by the Project.

Indicators:
Acres to be removed from historic land uses with local heritage value, and duration of the mining activities.

4.13.1 Direct and Indirect Impacts

Potential impacts to NRHP-eligible or unevaluated cultural resource sites by each mining and transportation alternative are summarized in **Table 4.13-1**.

4.13.1.1 Proposed Action

Panel F, Including Lease Modifications (Component of Agency Preferred Alternative)
No eligible or unevaluated cultural resource sites are located in Panel F or the associated soil stockpile areas; there would be no impacts to eligible cultural resources.

Panel F would disrupt approximately ½ mile of Trail 402 along Manning Creek, utilized for livestock trailing, during active mining in this immediate area, temporarily interrupting the continuous route between the Crow Creek side of Manning Creek, and Sage Meadows. Non-motorized access through this area would be restored when it is safe to do so. This would be a minor to major (see page 4-1 for definitions) impact on the heritage resource of traditional livestock trailing by permittees.

Panel F Haul/Access Road (Component of Agency Preferred Alternative)
No eligible or unevaluated cultural resource sites are located in the Panel F Haul/Access Road corridor. There would be no impacts to eligible cultural resources.

Panel G (Component of Agency Preferred Alternative)
A large arborglyph site (Forest # CB-342) is located in this lease area. Insufficient data regarding the NRHP unevaluated arborglyph site (as it pertains to local and regional history) precludes a determination of eligibility for the NRHP. Further documentation, following alternative selection, would be necessary should this alternative be chosen. Impacts to this site due to mining would be moderate to major, as components of the site (i.e., trees with carvings) would be removed during mining activities resulting in loss of integrity and a loss of data. The impacts to this site would be site-specific, with local, long-term losses of the resource.

Panel G West Haul/Access Road (Component of Agency Preferred Alternative)
Two sites (Forest # CB-317 and CB-342) are located within this corridor. Insufficient data regarding the two arborglyph sites (as they pertain to local and regional history) precludes a determination of eligibility for the NRHP. Further documentation, following alternative selection, would be necessary should this alternative be chosen. Impacts to these unevaluated sites would be moderate to major, as components of the site (i.e., trees with carvings) would be removed during road construction activities, resulting in loss of integrity and a loss of data. In addition, there is a NRHP-eligible historic cabin (10CU213 or Forest # CB-222) near the proposed road corridor. This portion of the Panel G West Haul/Access Road would not be fully reclaimed after mining; rather, it would become a public access road, replacing the current segment of FR 146 (Diamond Creek Road). An improved public access road could encourage additional casual visitation to the general area, increasing the potential for secondary impacts (such as vandalism) to the cabin site that would be visible from the road.

Power Line Between Panels F & G

No cultural resource sites are present within the power line corridor.

TABLE 4.13-1 CULTURAL RESOURCE SITE IMPACTS BY ALTERNATIVE

ALTERNATIVE	SITE NUMBER (STATE OR FS)	SITE TYPE	ELIGIBILITY	IMPACT?
PROPOSED ACTION*				
Panel F	No eligible sites			
Panel F South Modification	No sites			
Panel F North Modification	No sites			
Panel G	CB-342	Arborglyphs	Unevaluated	Loss of features (i.e., trees), resulting in loss of integrity, due to mining activities/construction
Panel G West Haul/Access Road	10CU213 (CB-222)	Trapper's Cabin	Eligible	Outside APE; possible secondary impacts when road becomes public access
	CB-342	Arborglyphs	Unevaluated	Loss of features (i.e., trees), resulting in loss of integrity, due to construction of road and topsoil stockpile
	CB-317	Arborglyphs	Unevaluated	Loss of features (i.e., trees), resulting in loss of integrity, due to construction of road
Panel F Haul/ Access Road	No eligible sites			
Power Line Corridor	No eligible sites			
ALTERNATIVE D				
On lease Dinwoody Borrow Pits/Stockpiles	CB-342	Arborglyphs	Unevaluated	Loss of features (i.e., trees), resulting in loss of integrity, due to borrow pit
TRANSPORTATION ALTERNATIVES				
Alternative 1 Alternate Panel F Haul/Access Road	No sites			
Alternative 2 East Haul/ Access Road	CB-342	Arborglyphs	Unevaluated	Loss of features (i.e., trees), resulting in loss of integrity, due to construction of road
Alternative 3 Modified East Haul/Access Road	CB-342	Arborglyphs	Unevaluated	Loss of features (i.e., trees), resulting in loss of integrity, due to construction of road
Alternative 4 Middle Haul/ Access Road	No eligible sites			
Alternative 5 Alternate Panel G West Haul/Access Road	CB-317	Arborglyphs	Unevaluated	Loss of features (i.e., trees), resulting in loss of integrity, due to construction of road
Alternative 6 Conveyor from Panel G to Mill	No eligible sites			
Alternative 7 Crow Creek/Wells Canyon Access Road	CB-342	Arborglyphs	Unevaluated	Loss of features (i.e., trees), resulting in loss of integrity, due to construction of road
Alternative 8 Middle Access Road	No sites			

* Mining Alternatives B and C have the same footprint as the Proposed Action; therefore impacts to cultural resources would be the same for each of these. Mining Alternative A is within the footprint of the Proposed Action. Mining Alternative E would utilize whatever Transportation Alternative corridor was selected with no additional disturbance.

In summary, under the Proposed Action two unevaluated sites would be adversely impacted. Impacts to these sites would be moderate to major and site-specific with minor regional losses. These sites contribute to the heritage values of livestock ranching in the Project Area. The Proposed Action would disturb 1,340 acres within grazing allotments (see **Section 4.9**) and restrict livestock trailing corridors during mining and reclamation of the Project. In addition it would remove ½ mile of Trail 402 (**Section 4.10**) utilized for trailing livestock onto the Deer and Manning Creek Allotments. Impacts to heritage resources would be minor to major and site-specific with minor regional losses.

The two unevaluated ("insufficient information to evaluate") cultural resource sites would require additional study/testing prior to implementation of the Proposed Project if the chosen alternatives would impact them. In order to evaluate the sites, the proposed research measures would include:

- An overlay of historic and current grazing allotments with known arborglyphs sites and livestock trails,
- Interviews of current permittees of the seven allotments and possibly local ranchers about current and past corridors and trails (as well as campsites, water sources, etc.),
- Development of a thematic context statement. Research of names in arborglyphs and development of histories on local ranching families, ethnicities, settlement, etc.,
- Core sampling of select trees to support age/dating issues, and
- GPS coordinates for arborglyph group locations.

4.13.1.2 Mining Alternatives

Mining Alternative A – No South and/or North Panel F Lease Modifications

No Panel F South Lease Modification

There are no known cultural resource sites located in the Panel F South Lease Modification, thus there would be no additional impacts or no reduction of impacts as a result of this option.

No Panel F North Lease Modification

There are no known cultural resource sites located in the Panel F North Lease Modification, thus there would be no additional impacts and no reduction of impacts as a result of this option.

Impacts to heritage resources would be similar to the Proposed Action.

Mining Alternative B – No External Seleniferous Overburden Fills

This Mining Alternative would have the same mining footprint as the Proposed Action; therefore the impacts would be the same as the Proposed Action.

Impacts to heritage resources would be similar to the Proposed Action.

Mining Alternative C – No External Overburden Fills at All

This Mining Alternative would have the same mining footprint as the Proposed Action; therefore the impacts would be the same as the Proposed Action.

Impacts to heritage resources would be similar to the Proposed Action.

Mining Alternative D – Store and Release Covers on Overburden Fills (Component of Agency Preferred Alternative)
If maximum development of the Dinwoody borrow pits outside of the mine panels were required, this Mining Alternative would include an additional 137 acres of disturbance (on lease Dinwoody Borrow Pits) in addition to that of the Proposed Action. The cultural resource inventory found that a small portion of CB-342 is located in one of the proposed Dinwoody borrow pits in the Panel G lease, a site that would also be impacted by the Proposed Action. Therefore, the impacts to cultural resources would be similar to the Proposed Action.

Impacts to heritage resources would be similar to the Proposed Action.

Mining Alternative E – Power Line Connection from Panel F to Panel G Along Haul/Access Road (Component of Agency Preferred Alternative)
This Mining Alternative would have the same mining footprint as the Proposed Action, minus the direct power line corridor, and would utilize whatever Transportation Alternative were selected; therefore, the impacts would be the same as the Proposed Action.

Impacts to heritage resources would be similar to the Proposed Action.

Mining Alternative F – Electrical Generators at Panel G
This Mining Alternative would have the same mining footprint as the Proposed Action, minus the direct power line corridor; therefore, the impacts would be the same as the Proposed Action.

Impacts to heritage resources would be similar to the Proposed Action.

4.13.1.3 Transportation Alternatives

Alternative 1 – Alternate Panel F Haul/Access Road
No eligible cultural resource sites are present in this corridor; therefore, there would be no additional impacts if this transportation alternative were selected.

There would be negligible impacts to heritage resources from Transportation Alternative 1.

Alternative 2 – East Haul/Access Road
One NRHP unevaluated cultural resource site (CB-342) is located on the southwest end of this transportation alternative. Insufficient data regarding the unevaluated arborglyph site (as it pertains to local and regional history) precludes a determination of eligibility for the National Register of Historic Places. Further documentation of the site, following alternative selection, would be necessary should this alternative be chosen. Impacts to this site due to road development activities would be major, as components of the site (i.e., trees with carvings) would be removed, resulting in loss of integrity and a loss of data. The impacts to this site would be site-specific, with local long-term losses of the resource.

In addition to the heritage resource impact of disturbance to the grazing allotments from the Proposed Action and Alternatives, Transportation Alternative 2 would cross Forest Trail 402 in an additional area, a trail used for driving sheep to the Deer and Manning Creek Allotments. Non-motorized access across the haul/access road would continue during mine operations. Impacts to heritage resources would be similar to the Proposed Action.

Alternative 3 – Modified East Haul/Access Road
One NRHP unevaluated cultural resource site (CB-342) is located on the southwest end of this transportation alternative. Insufficient data regarding the unevaluated arborglyph site (as it pertains to local and regional history) precludes a determination of eligibility for the National Register of Historic Places. Further documentation of the site, following alternative selection, would be necessary should this alternative be chosen. Impacts to this site due to road construction activities would be major, as components of the site (i.e., trees with carvings) would be removed, resulting in loss of integrity and a loss of data. The impacts to this site would be site-specific, with local long-term losses of the resource.

In addition to the heritage resource impact of disturbance to the grazing allotments from the Proposed Action and Alternatives, Transportation Alternative 3 would cross Forest Trail 402 in an additional area, a trail used for driving sheep to the Deer and Manning Creek Allotments. Non-motorized access across the haul/access road would continue during mine operations. Impacts to heritage resources would be similar to the Proposed Action.

Alternative 4 – Middle Haul/Access Road
No eligible cultural resource sites are located in the Middle Haul/Access Road corridor; therefore, there would be no additional impacts if this transportation alternative were selected.

Impacts to heritage resources would be similar to the Proposed Action.

Alternative 5 – Alternate Panel G West Haul/Access Road
One NRHP unevaluated cultural resource site (CB-317 – arborglyph site) is located within the Alternate West Haul/Access Road. Insufficient data regarding the unevaluated arborglyph site (as it pertains to local and regional history) precludes a determination of eligibility for the National Register of Historic Places. Further documentation of the site, following alternative selection, would be necessary should this alternative be chosen. Impacts to this site due to road development would be moderate to major, as components of the site (i.e., trees with carvings) would be removed during construction, resulting in loss of integrity and a loss of data. The impacts to this site would be site-specific, with local long-term losses of the resource.

Impacts to heritage resources would be similar to the Proposed Action.

Alternative 6 – Conveyor from Panel G to Mill
No eligible cultural resource sites are located within the conveyor alternative corridor; therefore, there would be no additional impacts if this transportation alternative were selected.

Impacts to heritage resources would be similar to the Proposed Action.

Alternative 7 – Crow Creek/Wells Canyon Access Road
One NRHP unevaluated cultural resource site (CB-342 – arborglyph site) is located within the East Access Road via Crow Creek and Wells Canyon. Insufficient data regarding the unevaluated arborglyph site (as it pertains to local and regional history) precludes a determination of eligibility for the National Register of Historic Places. Further documentation, following alternative selection, would be necessary should this alternative be chosen. Impacts to this site due to road development would be moderate to major, as components of the site (i.e., trees with carvings) would be removed during construction, resulting in loss of integrity and a loss of data. The impacts to this site would be site-specific, with local long-term losses of the resource. The segments of CB-318 and CB-319 in this area are considered ineligible due to

previous impacts; therefore, there would be no impacts to either site within the Alternative 7 corridor.

Impacts to heritage resources would be similar to the Proposed Action.

Alternative 8 – Middle Access Road
No eligible cultural resource sites are located within this transportation alternative corridor; therefore, there would be no additional impacts if this transportation alternative were selected.

Impacts to heritage resources would be similar to the Proposed Action.

4.13.1.4 No Action Alternative

There would be no impacts to eligible cultural resources or heritage resources from the Project under the No Action Alternative.

4.13.2 Mitigation Measures

The known eligible sites near existing and proposed mining activities would continue to be avoided by current mining activities and would be monitored annually by a professionally-trained archaeologist under the supervision of the CTNF Forest Archaeologist for possible impacts.

Monitoring of CB-222 (Trapper's cabin), under the supervision of the CTNF Forest Archaeologist, is recommended in order to assess the potential for indirect effects of improving a public access road near the site (Panel G West Haul/Access Road).

The research measures to assess site significance for the two unevaluated cultural resource sites, described previously in **Section 4.13.1.1**, would not only provide the needed data to evaluate the sites for the NRHP, but would also mitigate the adverse impacts if the sites were deemed eligible.

If unanticipated cultural materials or historic sites are encountered during mining, the CTNF Forest Archaeologist would be notified, and operations would be halted in the vicinity of the discovery until evaluated by the Forest Archaeologist or a professionally trained archaeologist in consultation with the CTNF Forest Archaeologist and a mitigation plan developed, if necessary.

4.13.3 Unavoidable (Residual) Adverse Impacts

Unavoidable or residual adverse impacts to cultural resource sites would include compromised site integrity and loss of data due to physical damage to the sites (i.e., removal of trees with carvings). Also, the presence of upgraded public access roads could lead to increased casual visitation to nearby site locations resulting in greater vulnerability of site disturbance and vandalism.

4.13.4 Relationship of Short-Term Uses and Long-Term Productivity

The short-term use of natural resources during mining activities could result in adverse effects to cultural resource sites located within the Project Area. If sites are damaged or destroyed during development, mining, or associated activities, significant information could be lost. Information and data retrieved through mitigation measures would represent short-term use of cultural resources at the expense of future research opportunities. Therefore, long-term productivity would be lost.

4.13.5 Irreversible and Irretrievable Commitments of Resources

Any loss of context or destruction of NRHP eligible or unevaluated cultural resource sites would constitute an irreversible commitment of that resource. This loss would be site-specific, as well as a loss of cumulative data on the local and regional level.

4.14 Native American Concerns and Treaty Rights Resources

Issue:
The Project activities may impact the ability of Shoshone-Bannock tribal members to exercise their Treaty Rights in the Project Area and may impact resources of cultural significance to tribal members.

Indicators:
Changes in water quality and quantity of both surface and groundwater.

Acres and types of vegetation disturbed versus acres and types of vegetation replanted.

Acres of wetlands disturbed.

Increased uptake by wildlife and vegetation of contaminants of concern in mining-disturbed areas and areas that are reclaimed.

Changes in types of aquatic resources and comparison with undisturbed habitats in the Project Area.

Acres of access and recreation areas that would be available or unavailable for the duration of mining activities.

Visibility of disturbances to adjoining areas.

Known prehistoric cultural resource sites impacted by the Project.

Issue:
The Project would diminish the locations available to exercise Treaty Rights.

Indicators:
Change in land status and accessibility.

4.14.1 Direct and Indirect Impacts

The trust responsibility of the federal government includes an obligation to protect and preserve Treaty Rights resources. Consultation with the Tribes has yielded important issues regarding treaty resources that would potentially be affected by the Project. As stated in Article 4 of the Fort Bridger Treaty of 1868, the Shoshone-Bannock Tribes "…shall have the right to hunt on the unoccupied land of the United States…" This proposal is to disturb about 1,340 acres of the unoccupied federal land available in Southeastern Idaho. The following analysis describes Project effects to Native American concerns and Treaty Rights.

Alternatives that change the land status, restrict, or alter the ability of the Shoshone-Bannock Tribes to exercise their Treaty Rights, or affect the physical integrity of a sacred site, traditional cultural property, and/or location of traditional importance, are considered impacts.

Land Status
There would be no change in land ownership status. The affected land would remain under federal ownership while the rights to mine phosphate are granted to Simplot. The use of lands for mining operations and associated facilities would be temporary; lands would be reclaimed and structures removed after mining was completed.

Phosphate mining, directed under the Mineral Leasing Act of 1920, would be considered a temporary surface use and would not change the occupancy of the federal land under lease. This is different from other types of mining conducted under the 1872 Mining Law (such as gold mining). There would be a short-term, temporary loss of access to land for exercising Treaty Rights under the Proposed Action and Action Alternatives. The Project disturbs approximately 0.13% of the CTNF, thus 99.87% of the forest remains as available unoccupied federal lands in southeastern Idaho. There are no known resources located exclusively within the Project Area that are not available on the remaining portions of the CTNF.

Land Access/Transportation
There would be negligible to minor effects to existing transportation routes under the proposed mining and transportation alternatives (**Section 4.15**). Existing public access roads, including Wells Canyon Road that would be crossed by the Proposed Action Panel G Haul/Access Road, would remain open under the Proposed Action and Alternatives. Public motorized access to active mine areas, including haul/access roads, would be restricted during the life of the mine. Public non-motorized access (i.e., walking, hiking, horse) would be unrestricted during mining, except to protect personal safety in specific areas where active mining operations are occurring. The impact to land access for exercising Treaty Rights under the Proposed Action and Action Alternatives would be local, temporary, and negligible.

Socioeconomics and Environmental Justice
See **Section 4.16** for impacts to socioeconomics. According to Simplot, few mine employees are Tribal members; therefore, socioeconomic impacts to the Tribes due to continued operations or early closure of the mine and/or the Don Plant would be negligible.

Environmental Justice is discussed in **Section 4.17**. This Project would not cause disproportionately high and adverse effects on any minority or low-income populations as per EO 12898 regarding Environmental Justice. Therefore, there would be no impacts to the Tribes (EO 12898 Section 4-4) under Environmental Justice.

4.14.1.1 Impacts Common to All Action Alternatives

Alternatives would impact various resources which tribal Treaty Rights rely upon as described below. There would be temporary impacts to the access of those resources. None of the Action Alternatives would change the status of federal lands on the CTNF.

Tribal Historical/Archaeological Sites
There would be no impacts to tribal historic/archaeological sites as no Tribal historical or prehistoric archaeological sites have been identified within the Project Area. See **Sections 3.13** and **4.13** (Cultural Resources).

Rock Art
No occurrences of rock art have been identified in the Project Area.

Sacred Sites (EO 13007)/Traditional Cultural Properties (NHPA)
No sacred sites have been identified in the Project Area.

Traditional Use Sites
The Tribes have stated that there are traditional use sites in the Project Area. Those that may occur within the area of proposed disturbance would be affected. The landscape in the Project Area would be permanently altered by the development of lands for mining and transportation under any of the Action Alternatives. The initial mining-related developments would cause major changes to the local landscape. Changes to the landscape would have minor to major impacts on nearby ceremonial or traditional use sites.

Water Resources
Impacts to water resources are discussed in detail in **Section 4.3**. Runoff from mining disturbances would be contained, which would minimize contribution of sediment to local streams and would also decrease the amount of annual runoff to these drainages by a minor amount. Sedimentation of streams due to haul/access roads would be controlled with BMPs although some minor sediment contributions to streams would still occur.

Pumping the proposed water supply well at Panel G is not anticipated to noticeably affect flows of streams or springs in the area.

Development of the mine panels and some transportation features would eliminate some existing small springs and seeps and potentially decrease flows to other such features. The CNF management plan requires replacement of these water sources.

Groundwater impact modeling indicates that infiltration of precipitation through seleniferous overburden in pit backfills and external overburden fills would cause increases in selenium concentrations in lower Deer Creek, lower South Fork Sage Creek, and some reaches of Crow Creek immediately below the confluences with these tributaries. The resulting selenium concentrations for the Proposed Action and Alternatives A through C are estimated to exceed the cold water criterion for selenium that is intended to protect aquatic life. The resulting concentrations would be well below the drinking water levels set for protection of human health or grazing animals.

Wetlands
Approximately 1.96 acres of wetlands and 12,370 linear feet of Waters of the U.S. would be impacted by the Proposed Action. Since the majority of these sites would be lost to excavation of the pits or covered by overburden fills, the wetlands would be lost as wildlife habitat, sites of flood attenuation, and sediment/nutrient/toxicant retention, as well as other wetland functions and values. These sites would, however, be mitigated on- or off-site. See **Section 4.6** for a detailed discussion.

Fisheries
Impacts to Fisheries and Aquatics resources are addressed in **Section 4.8** of this EIS. Among the components of the Proposed Action, only the Panel G West Haul/Access Road would directly impact perennial streams (with two culverted crossings), and some transportation alternatives also involve perennial stream disturbance. Direct impacts to cutthroat trout may

occur via sedimentation as culverts are installed or removed from Project streams. Impacts to fish from culvert installation are expected to be local, short-term, and minor.

Despite the implementation of environmental protection measures, some sediment contribution to streams from roads is expected. Sedimentation into streams would diminish the suitability of those streams as habitat for native fishes.

Selenium accumulation in the aquatic habitats of the Project Area would be an adverse indirect impact of the Proposed Action. Environmental protection measures in **Section 2.5**, **Appendix 2D,** and the SWPPP describe how Simplot plans to minimize the risk of selenium accumulation in Study Area streams. If sediment controls at the mining operations are implemented as described, seleniferous sediment should be contained on-site and impacts from seleniferous sediment accumulation in local streams would be negligible. For the mining alternatives that do not include a store-and-release cover over seleniferous overburden, the groundwater model estimates that selenium concentrations in lower Deer Creek, lower South Fork Sage Creek, and parts of Crow Creek immediately below these tributaries would be elevated and could exceed State cold water criterion for protection of aquatic life at certain locations.

Vegetation

As discussed in **Section 4.5**, vegetation would be cleared from approximately 1,340 acres under the Proposed Action. The mine area would not be cleared all at once; rather, it would occur incrementally or in stages. Clearing would include any plants of traditional importance to the Tribes as discussed in **Section 3.14**.

Concurrent with mining, reclamation would include revegetation with short-lived grass species intended to help stabilize the reclaimed surfaces from erosion as well as long-lived native bunch grasses and forbs. Reclamation would include the species listed in **Section 2.4**. The goal of the selected revegetation mix is to establish healthy native bunch grass communities that are structurally diverse and would allow succession of native species over time. Other native forbs, shrubs, and trees would be seeded or planted in clusters were they are most likely to establish. These species have not been selected yet and could include some of the traditionally important plants indicated in **Section 3.14**. This would constitute a temporary and minor impact to Tribal access to vegetation in the Project Area.

About 71 acres would remain unreclaimed after mining of Panels F and G. These are steep highwall and road cut areas and part of an open pit in Panel F. Native vegetation adapted to rocky areas with no topsoil would gradually colonize these areas. This would constitute a local, long-term, and minor impact to Tribal access of vegetation in this part of the Project Area.
There would be the potential indirect impact of increased uptake of selenium by volunteer plants growing on unreclaimed, disturbed mining areas of Panel F and G. Environmental protection measures for selenium control, including covering all seleniferous overburden fill with at least 4 feet of low-selenium chert and then covering this with salvaged topsoil, would be used to reduce the potential for selenium accumulation in vegetation growing on reclaimed mine disturbances.

Analysis of the pit backfill design predicts that reclamation vegetation would not exceed standards for COPC concentrations in the Area Wide Risk Assessment.

<u>Noxious Weeds and Invasive Species</u>

The Project would have negligible potential to affect the spread or locations of noxious weeds since management/mitigation measures would be in effect for control. The CTNF Integrated Pest Management program provides BMPs for weed control and species specific techniques.

The Smoky Canyon Mine is inspected on a monthly basis. Additional information can be found in **Section 4.5**. Impacts due to the spread of noxious weeds or invasive species would be negligible under the Proposed Action and Action Alternatives.

Wildlife

A detailed discussion of impacts to wildlife is found in **Section 4.7**. The Proposed Action and Alternatives are expected to displace wildlife through habitat impacts and avoidance zones and therefore would impact access to wildlife treaty resources.

Big Game

Direct impacts to big game individuals may occur by vehicle collision on Project roads due to increased traffic. Road collisions would be the most common source of direct mortality; all other impacts would involve displacement and alterations of normal movement routes.

Regarding elk, one observed fall use area near Panel F and the Panel G West Haul/Access Road would be affected due to direct disturbance and noise for the duration of the Proposed Action; displacement from this area may lead to increased competition among elk in adjacent habitat. In addition, a known spring calving ground at Sage Meadows for elk lies within one to two miles of Panel F and may be disturbed by noise, specifically the southwest portion of the area by its proximity to the West Haul/Access Road. One controlled study of the effects of mine disturbance on elk calves in Southeastern Idaho found that cow/calf pairs remained together but abandoned their traditional calf-rearing area when exposed to human and simulated mine disturbance (Kuck et al. 1985).

The possibility of selenium accumulation by big game would exist if individuals routinely consume vegetation or drink water containing elevated levels of selenium. If this were to occur, those animals with a larger range would bioaccumulate less. Higher-level bioaccumulation would then be possible in larger predators (e.g., gray wolf) that consume these herbivores. Adverse impacts of selenium accumulation in reclaimed mining disturbances of Panels F and G are unlikely, however, as the Proposed Action includes design features intended to minimize the potential for selenium uptake in reclamation vegetation on overburden disposal areas. According to a recent assessment by NewFields (2005b), risk from selenium in vegetation in the Smoky Canyon Mine area appears to be primarily restricted to sections of overburden disposal areas that are not fully reclaimed or were reclaimed prior to more recently developed reclamation practices that involve placing low selenium chert overburden as a cover over seleniferous overburden fills. Among vegetation samples from reclaimed areas of Smoky Canyon Mine Panels A, D, and E, forage exceeded removal action levels only at Panel A. Selenium concentrations in the more extensively reclaimed D Panel samples were lower than or approximately equal to the removal action level (NewFields 2005b).

Wolves

Wolves may alter their normal movement patterns to avoid the mining disturbance, but no direct impacts (i.e., mortality) are expected.

Bald Eagles

Some potential bald eagle roost trees would be removed, and noise would have the potential to displace wintering bald eagles into adjacent suitable habitat. There is the potential for the indirect impact of selenium bioaccumulation in wintering bald eagles that may feed on waterfowl and fish living in specific reaches of Deer Creek, South Fork Sage Creek, and Crow Creek that would be affected by increased selenium concentrations under the Proposed Action and Mining

Alternatives A, B, and C, although this would be unlikely. Mining Alternative D would mitigate this concern.

Small Mammals and Birds

Any greater sage grouse individuals in the Project Area would be displaced, and noise or increased human presence may cause moderate effects to birds in the vicinity for the duration of the Proposed Action. No direct mortality is expected.

Regarding rabbits, rockchucks, and squirrels, individuals in the mining panels or road footprints would be displaced or killed. Displaced individuals may cause increased competition in adjacent populations that may lead to increased mortality or decreased reproductive rates.

Small herbivorous mammals sampled from reclaimed areas within Smoky Canyon Mine Panels A, D, and E were found to have elevated levels of selenium (**Section 3.7**), but accumulation of selenium would be minimized in small mammals by reclamation measures (cover) implemented to reduce uptake of selenium by vegetation in Panels F and G. These measures were not implemented in the areas where the contaminated animals were found.

The impact to wildlife for exercising Treaty Rights in the Project Area under the Proposed Action and Action Alternatives would be minor to major and short-term to long-term depending on the species.

Treaty Rights Access

The Caribou National Forest and Grasslands include over 1,000,000 acres of largely undeveloped land, and most of these acres are available to exercise treaty rights. Access, or the continued availability of the traditional natural resources, would be affected by the Project. There would be a temporary loss of approximately 1,340 acres of land (or 0.13 percent of the land potentially available for Tribal use) to mining disturbance. Mining would disturb land surface incrementally, and reclamation would incrementally return land to a condition where hunting, gathering, and other treaty rights could be exercised. Thus, at any one time only a portion of the 1,340 acres would be inaccessible or unavailable to tribal members to exercise treaty rights. The physical effects of the mining disturbance itself, hence the physical surface resources affected by the disturbance, would be limited to the disturbance footprint. As mining progresses and reclamation occurs concurrent with mining, areas of limited access would be less than 1,340 acres. After reclamation, hunting and gathering areas would be restored as vegetation would be replanted on most of the disturbed area, wildlife would return, and water would be usable. Tribal members would retain access to the remaining unoccupied lands off-site within Southeast Idaho. There are no known treaty resources on the site that are not available on the remaining forest lands off-site. The EIS assigns a quantification (context, duration, and intensity), as required by CEQ, to the impacts to resources such as wildlife or water quality; it is difficult to quantify or otherwise determine the impact of a temporary loss of a right. In consultation, the Shoshone-Bannock Tribes have noted that any loss of Treaty Rights is significant to them and could potentially affect all tribal members.

Recreation

There are no developed or improved recreation sites within the Project Area. **Section 4.10** addresses impacts to recreation. There would be impacts to solitude, and the temporary loss of dispersed recreation opportunity in the area disturbed by proposed mining and transportation alternatives. The opportunity for recreation uses would be re-established on these areas following mining and reclamation activities. Recreation impacts to the Tribes would be local, short-term, and minor.

Air Quality
Specific information regarding effects to air resources is located in **Section 4.2** and **Section 6.3.1** of this EIS. The Proposed Action and Alternatives would meet NAAQS and IDEQ air quality standards. There would be no air quality impacts to Treaty Rights.

4.14.1.2 Proposed Action

Panel F, Including Lease Modifications (Component of Agency Preferred Alternative)
This 515-acre area would not be available during mining to support Treaty Resources or for exercising Treaty Rights that depend on the existing surface resources within the footprint of the proposed disturbance area.

Panel F Haul/Access Road (Component of Agency Preferred Alternative)
This proposed 67-acre road corridor would not be available during mining to support Treaty Resources or for exercising Treaty Rights that depend on the existing surface resources within the footprint of the proposed disturbance area.

Panel G (Component of Agency Preferred Alternative)
This 513-acre area would not be available during mining to support Treaty Resources or for exercising Treaty Rights that depend on the existing surface resources within the footprint of the proposed disturbance area.

Panel G West Haul/Access Road (Component of Agency Preferred Alternative)
This proposed 217-acre road corridor would not be available during mining to support Treaty Resources or for exercising Treaty Rights that depend on the existing surface resources within the footprint of the proposed disturbance area. A portion of this road disturbance would be permanent when it is turned over to the CNF to replace parts of the Wells Canyon and Diamond Fork roads.

Power Line Between Panels F and G
An additional 28 acres would be disturbed by the power line corridor.

In total, under the Proposed Action there would be a temporary loss of about 1,340 acres of currently unoccupied federal lands, available to the Tribes under the 1868 Fort Bridger Treaty. Approximately 71 acres would remain unreclaimed. Due to concurrent mining and reclamation, there would be less than 1,340 acres of disturbance at any given time. After reclamation, vegetation would be replanted, wildlife would return, and water would be usable. Therefore, the Proposed Action would likely have a minor impact on access and ability of the Tribes to exercise Treaty Rights. The impact would be a site-specific loss of Treaty Resources and area available for the Tribes' use in which to exercise Treaty Rights.

4.14.1.3 Mining Alternatives

Mining Alternative A – No South and/or North Panel F Lease Modifications
No Panel F South Lease Modification
The effects to Treaty Resources would be similar to those described in the Proposed Action but the total disturbance would be 918 acres. The 138 acres of proposed disturbance in the Panel F South Lease Modification area would remain undisturbed and available for the exercise of Treaty Rights and to support Treaty Resources.

No Panel F North Lease Modification

The effects to Treaty Resources would be similar to those described under the Proposed Action but the total disturbance would be 1,054 acres. The two acres in the Panel F North Lease Modification area would remain undisturbed and available for the exercise of Treaty Rights and to support Treaty Resources. If the Alternate Panel F Haul/Access Road were also selected, another 21 acres would remain undisturbed.

Mining Alternative A would have a minor impact on Tribal Treaty Resources, similar to the Proposed Action. There would be a temporary loss of 1,200 acres (rather than 1,340 acres) of currently unoccupied federal lands. The impact would be a site-specific, temporary loss of access to Treaty Resources and land in which to exercise Treaty Rights.

Mining Alternative B – No External Seleniferous Overburden Fills

The initial effects to Treaty Resources would be the same under this alternative as those under the Proposed Action. The long-term area of unreclaimed disturbance under this alternative would be reduced by eight acres because the remaining highwall in Panel G would be reclaimed.

Mining Alternative C – No External Overburden Fills at All

The initial effects to Treaty Resources would be the same under this alternative as described under the Proposed Action. Under this alternative, all of the mine panel disturbances would be reclaimed.

Mining Alternative D – Store and Release Covers on Overburden Fills (Component of Agency Preferred Alternative)

If the Dinwoody borrow pits external to the mine panels were used to the maximum extent, the total area of disturbance would be 1,193 acres, an increase of 137 acres over the Proposed Action. The initial effects to Treaty Resources would be similar to the Proposed Action. The long-term effects to water resources would decrease under this alternative due to incorporation of the store and release cover over seleniferous overburden areas. This would reduce selenium concentrations in streams affected by the proposed mining operation to levels that comply with all applicable aquatic life protection criterion.

Mining Alternative E – Power Line Connection from Panel F to Panel G Along Haul/ Access Road (Component of Agency Preferred Alternative)

The effects to Treaty Resources would be similar to those described in the Proposed Action.

Mining Alternative F – Electrical Generators at Panel G

The effects to Treaty Resources would be the same under this alternative as under the Proposed Action.

4.14.1.4 Transportation Alternatives

Alternative 1 – Alternate Panel F Haul/Access Road

Under this transportation alternative, 46 acres would be disturbed. The effects to Treaty Resources would be similar to those described in the Proposed Action. The impact would be a temporary, site-specific loss of Treaty Resources and land in which to exercise Treaty Rights.

Alternative 2 – East Haul/Access Road

Under this transportation alternative, 216 acres would be disturbed. The effects to Treaty Resources would be similar to those described in the Proposed Action. The impact would be a temporary, site-specific loss of Treaty Resources and land in which to exercise Treaty Rights.

Alternative 3 – Modified East Haul/Access Road
Under this transportation alternative, 276 acres would be disturbed. The impacts to Treaty Resources would be similar to those described in the Proposed Action. The impact would be a temporary, site-specific loss of Treaty Resources and land in which to exercise Treaty Rights.

Alternative 4 – Middle Haul/Access Road
Under this transportation alternative, 192 acres would be disturbed. The effects to Treaty Resources would be similar to those described in the Proposed Action. The impact would be a temporary, site-specific loss of Treaty Resources and land in which to exercise Treaty Rights.

Alternative 5 – Alternate Panel G West Haul/Access Road
Under this transportation alternative, 226 acres would be disturbed. The effects to Treaty Resources would be similar to those described in the Proposed Action. The impact would be a temporary, site-specific loss of Treaty Resources and land in which to exercise Treaty Rights.

Alternative 6 – Conveyor from Panel G to Mill
Under this transportation alternative, 61 acres would be disturbed. The effects to Treaty Resources would be similar to those described in the Proposed Action. The impact would be a temporary, site-specific loss of Treaty Resources and land in which to exercise Treaty Rights.

Alternative 7 – Crow Creek/Wells Canyon Access Road
Under this transportation alternative, 114 acres would be disturbed. The effects to Treaty Resources would be similar to those described in the Proposed Action. The impact would be a temporary, site-specific loss of Treaty Resources and land in which to exercise Treaty Rights.

Alternative 8 – Middle Access Road
Under this transportation alternative, 99 acres would be disturbed. The effects to Treaty Resources would be similar to those described in the Proposed Action. The impact would be a temporary, site-specific loss of Treaty Resources and land in which to exercise Treaty Rights.

4.14.1.5 No Action Alternative

The No Action Alternative would continue current management practices in the Project Area. Trust Assets/Treaty Resources would not be affected by the Project. The unoccupied federal lands in the Project Area would remain open for the Tribes to exercise Treaty Rights.

4.14.2 Mitigation Measures

Mitigation measures, elicited during consultation with the Tribes, have been communicated to Simplot. These measures may include, but are not limited to: providing timber from the site to the Tribes in the form of firewood or teepee poles; purchase of reclamation seed from the Tribes; and incorporating plants of Tribal importance into reclamation seed mixes.

Mitigation has been included with the Action Alternatives which is protective of resources. Sediment from the mine pits would be contained. Surface and groundwater, and also fisheries, would be protected from selenium increases by the cover design. Fish ladders would be provided at crossings of fish bearing streams. Wildlife would be protected by the prevention of selenium uptake from the cover design. Weed control measures would be in place.

4.14.3 Unavoidable (Residual) Adverse Impacts

The temporary use of 1,340 acres of unoccupied federal lands for the Project would affect the exercise of Treaty Rights during the life of the mine and subsequent reclamation. The potential for the indirect impact of selenium uptake due to bioaccumulation in plants and animals utilized by the Tribes would be minimized by Environmental Protection Measures. The change in topography (open pits, exposed highwalls, overburden piles) as a result of mining and reclamation represents an unavoidable adverse impact to lands of cultural importance to the Tribes.

4.14.4 Relationship of Short-Term Uses and Long-Term Productivity

The general area of Southeastern Idaho is of cultural importance to the Tribes. Although no specific areas of traditional cultural significance have been identified within the Project Area, the short-term use of natural resources and the temporary unavailability of 1,340 acres of land during the mining activities would adversely impact the long-term productivity of these lands in terms of providing Treaty Resources.

4.14.5 Irreversible and Irretrievable Commitments of Resources

The Proposed Action and Action Alternatives represent an irretrievable commitment of Treaty Rights Resources for the duration of mining, mining reclamation, and rehabilitation of the area. The loss of timber would be an irreversible commitment of resources. Conifer forests in particular may not recover to current stature and complexity for at least 200 years (**Section 4.5**).

The change in topography (open pits, exposed highwalls, overburden piles) as a result of mining and reclamation represents an irretrievable commitment of lands of cultural importance to the Tribes.

4.15 Transportation

Issue:
Use of public roads in the Project Area for mine access may affect current traffic characteristics of the roads with increased risk of accidents and potential for spills.

Indicators:
Relative increase in traffic on public roads in the Project Area as a result of proposed mining activities, change in traffic types, and road design features to deal with this;

Changes in existing primary access to and through the CNF on county or open USFS roads caused by the mining and associated activities.

4.15.1 Direct and Indirect Impacts

Except where the Smoky Canyon Road (FR 110) crosses the Panel C Haul Road and there is a guard shack and gate, public, motorized access across or along the existing Smoky Canyon Mine haul/access roads is not currently allowed for safety reasons. This would continue to be the case for the haul/access roads in the Proposed Action and transportation alternatives, except for the proposed crossings of the Wells Canyon Road (FR 146) as part of the proposed Panel G West Haul/Access Road. Non-motorized (pedestrian, bike, or horseback), public access across the mine access/haul roads is currently allowed, and this would continue to be

the case for the proposed haul/access roads of the Proposed Action and transportation alternatives. Non-motorized (pedestrian, bike, or horseback), public access along the mine access/haul roads is currently discouraged for safety reasons, and this would continue to be the case for any future haul/access roads.

The Proposed Action and Action Alternatives would affect a few existing motorized access routes in the CNF. Specific effects of the proposed mining operations and alternatives on motorized, public access along existing roads in the CTNF (Forest Routes) are described below. Impacts to public motorized access routes would be limited to where existing access routes would be physically affected by the proposed mining and transportation facilities. Most of these impacts would have durations equal to the mining operations themselves because reclamation of the mining and transportation facilities would restore the previous public access conditions. In some cases, permanent changes or improvements in the existing public access routes would be made during the proposed mining operations.

4.15.1.1 Proposed Action

Panel F, Including Lease Modifications and the Panel F Haul/Access Road (Component of Agency Preferred Alternative)

Mining Panel F, including the lease modifications, would not result in any direct or indirect impacts to improved public roads in the area. The current access provided to mine employees and vendors via Forest Route 110 (FR 110 Smoky Canyon Road) would continue to be used. The Panel F Haul/Access Road would connect the existing non-public, Panel E mine road (FR 896) with the northern Panel F area. All mine employees and vendors needing to travel to Panel F would access the panel via this non-public, mine haul/access road.

The Panel F Haul/Access Road would affect an unimproved road that begins at the Crow Creek Road (FR 111) near Sage Creek, crosses private land, enters the CNF as FR 179, and terminates about ¾ mile up from the mouth of South Fork Sage Creek Canyon where it turns into Forest Trail 092, a non-motorized trail. This road would be crossed by the access/haul road fill for the proposed Panel F Haul/Access Road on USFS land at the mouth of South Fork Sage Creek Canyon (**Figure 3.10-1**). Motorized access into the South Fork Sage Creek drainage area west of the proposed Panel F Haul/Access Road on this unimproved road would be unavailable during the life of the Panels F and G mining operations. Non-motorized public access to this area would still be available across the haul/access road. This impact to public access through the CNF would be minor (see page 4-1 for definitions) since the majority of this road is located on private land, and primary access to this road from the Crow Creek Road is controlled by a locked, private gate. Once mining operations are completed, the Panel F Haul/Access Road would be removed, and motorized access into the South Fork Sage Creek drainage past this location would resume, if allowed under the Revised CNF Travel Plan (USFS 2005f).

Panel G, Including the Panel G West Haul/Access Road (Component of Agency Preferred Alternative)

Under the Proposed Action, mine employees, vendors, and visitors would obtain access to Panel G via the current FR 110 access to the Smoky Canyon Mine, the existing non-public mine road to the south end of Panel E (FR 896), the Panel F Haul/Access Road, and then the Panel G West Haul/Access Road west and south to Panel G. The Panel G West Haul/Access Road would affect the following FS roads currently open to the public: FR 145 (Sage Meadows Road), FR 1102 (Diamond Creek Road), the access road into the Wells Canyon Lease (FR 220), and FR 146 (Wells Canyon Road). The proposed Panel G West Haul/Access Road would affect the following USFS roads that are closed to the public: FR 1248, FR 651, FR 689, FR 560, and FR

557. These closed roads are old timber and mineral exploration roads. From north to south, the Panel G West Haul/Access Road would overlie and eliminate FR 1248 and would then cross FR 145 about 1/10 mile from its terminus, cutting off motorized access to the head of non-motorized Forest Trails 102 and 402. This effect would be minor as non-motorized public access across the haul/access road to Forest Trails 102 and 402 would continue. This haul/access road would not directly affect FR 1102 itself, but would affect access to non-motorized Forest Trails 403 and 093 from FR 1102. This effect would be minor as non-motorized public access to these trails from FR 1102 would continue across the haul/access road. In this section, the haul/access road would cross and/or eliminate closed FR 561, FR 689, FR 560, and FR 557. In addition, short, previously established open-to-the-public exploration access roads (FR 554 and FR 690) that head north into the Panel G area off FR 146 would be eliminated by mining activities. Non-motorized Forest Trail 404 would also be eliminated by mining activities.

At the west mouth of South Fork Deer Creek Canyon, the haul/access road would cross FR 146 with an at-grade crossing. Motorized access across the haul/access road on FR 146 would continue at this grade crossing where signs would warn public motorists of the haul road traffic and provide directions on how to safely cross the road intersection. Signs would also be placed to warn motorists not to turn onto the haul road or drive along it. Temporary closures of FR 146 would be in place during construction of the grade crossing. Signs, road cones, barriers, and construction personnel would be used to warn and redirect traffic during these construction period road closures.

A similar situation would exist at the location where FR 146 intersects the proposed mine disturbance areas for Panel G (i.e., staging area, the south overburden fill site, and the Panel G West Haul/Access Road). The portion of the existing road to be impacted would be rerouted across this disturbance area in a manner that would allow continued public motorized access along FR 146. There may be temporary closures of FR 146 in this area to place and grade material during construction, but it is anticipated that this would normally be a matter of a few days at a time. Signs, road cones, barriers, and construction personnel would be used to warn and redirect traffic during these construction period road closures. During the placement of overburden fill material for the completion of the staging area, berms would be in place on either side of the rerouted FR 146 to keep traffic from straying into the active mine site. Signs would be posted along this portion of the public road to indicate that this is an active mine area and that no stopping or parking is allowed. Haul trucks crossing FR 146 in this area would do so at a signed, gated, attendant-operated crossing to stop the general public momentarily in order to allow mine traffic to access either side of the public road. This would be similar to the existing grade crossing of the Smoky Canyon Road by the Panel C Haul/Access Road at the current mining operations, and the effect on public access would be approximately the same. No mine-related haul or vendor traffic would use these Forest Routes or any other public roads to access the Panel G area. Some mine visitors or employees may use these roads. Typical seasonal closures of Forest Routes due to snow would continue. Impacts to public access along FR 146 would be negligible to minor depending on the duration of road closures and the time of year they occur.

It is currently proposed that once mining operations cease in Panel G, the portion of the Panel G West Haul/Access Road from Panel G to the pass between Deer Creek and Diamond Creek would be narrowed from 100 feet to approximately 18-20 feet and become part of Forest Routes 146 and 1102. The remaining segments of this haul/access road would be reclaimed. The segments of Forest Routes 146 and 1102 that are no longer needed would also be fully reclaimed. The new sections of Forest Routes 146 and 1102 would be permanently improved in

the quality of the grade, curvature, and road surface compared to their current condition. The relocation of FR 1102 out of the Deer Creek riparian area would be a major improvement compared to the existing condition. However, non-motorized access to the CNF west of the new section of FR 1102 would be slightly more difficult than the current condition because the new road would be located up the side of the mountain to the east of the current road and along the east side of upper Deer Creek. There would not be a similar access impact from the replacement of the upper part of FR 146 because the current and future roads are both located on the steep, isolated south slope of South Fork Deer Creek Canyon.

During mining of Panel G, there may be an increase in utilization of the Georgetown Canyon Road (FR 102) and the Wells Canyon Road (FR 146) by visitors to the mine from the Soda Springs and Montpelier areas. The western sections of the Georgetown Canyon Road are scheduled to have some improvement as part of the Twin Creek Timber Sale Project. Additional improvements to this section of the Georgetown Canyon Road are proposed as part of a Forest Highway Aquatic Organism Project planned for 2008. The road above these potential improvements may need to have some work done to accommodate any increase in traffic. There could also be similar increased utilization of the portion of the Crow Creek Road between Wells Canyon and Montpelier Reservoir.

Power Line Between Panels F and G
No impacts to transportation resources would occur under this component of the Proposed Action.

4.15.1.2 Mining Alternatives

Mining Alternative A – No South and/or North Panel F Lease Modifications
Impacts to public transportation resources would be the same under this alternative as previously described for the Proposed Action.

Mining Alternative B – No External Seleniferous Overburden Fills
Impacts to public transportation resources would be the same under this alternative as previously described for the Proposed Action.

Mining Alternative C – No External Overburden Fills at All
Impacts to public transportation resources would be the same under this alternative as previously described for the Proposed Action.

Mining Alternative D – Store and Release Covers on Overburden Fills (Component of Agency Preferred Alternative)
Impacts to public transportation resources would be the same under this alternative as previously described for the Proposed Action.

Mining Alternative E – Power Line Connection from Panel F to Panel G Along Haul/Access Road (Component of Agency Preferred Alternative)
Impacts to public transportation resources would be the same under this alternative as previously described for the Proposed Action.

Mining Alternative F – Electrical Generators at Panel G
This alternative would increase the required vendor deliveries to the Panel G area via whichever transportation alternative to Panel G is selected. This is because the electrical generators would require approximately 400,000 gallons of diesel fuel per year in addition to the existing

fuel requirements for the mining equipment. Deliveries of fuel, lubricants, coolant, and maintenance parts for the generators would be in addition to normal deliveries of such materials for the mining operation, and this would increase vendor traffic to the mine by about 40 to 45 truck loads a year, a moderate increase.

4.15.1.3 Transportation Alternatives

For Transportation Alternatives 1-5, mine employees, vendors, and visitors would obtain access to Panel G via the current FR 110 access to the Smoky Canyon Mine, the existing non-public mine road (FR 896) to the south end of Panel E, a proposed Panel F haul/access road, and then along one of the alternative routes to Panel G.

Alternative 1 – Alternate Panel F Haul/Access Road
Impacts to public transportation resources would be the same under this alternative as previously described for the Proposed Action.

Alternative 2 – East Haul/Access Road
The East Haul/Access Road would affect currently open-to-the-public FS roads FR 146 and FR 740. From south to north, the East Haul/Access Road would cut across the existing alignment of FR 146 (Wells Canyon Road) just below the upper end of Wells Canyon (**Figures 2.6-8a** and **3.10-1).** As described above for the Proposed Action, FR 146 would be relocated through this area to allow continued public access on FR 146 during mining. The haul/access road would cross Deer Creek just above and to the west of the end of an existing private access road near the lower end of non-motorized Forest Trail 093. Non-motorized access to the trail would be allowed to cross the haul road. The haul/access road would cut across the upper end of open-to-the-public FR 740 (Manning Creek Road) about ¼ mile east from where an unnumbered spur road off of FR 740 ends and non-motorized Forest Trail 402 begins (**Figures 2.6-8a** and **3.10-1**). Non-motorized access across the haul/access road in this area would continue, and this impact would be minor. The East Haul/Access Road would also overlie and therefore cut off motorized access to about one mile of open-to-the-public FR 740. This would be a moderate impact to this Forest Route. This part of the haul/access road would also cut off motorized access from FR 740 to the existing drill access road into the Panel F area. This drill access road is currently closed to public, motorized access with a locked gate. Non-motorized access across the haul/access road up to the Panel F area would continue. Impacts to FR 179 and Forest Trail 092 would be similar to the impacts identified above with the Proposed Action Panel G West Haul/Access Road.

Alternative 3 – Modified East Haul/Access Road
Impacts to public transportation for this alternative would be the same as described under Alternative 2.

Alternative 4 – Middle Haul/Access Road
This alternative would avoid the effects to Forest Roads 145, 1102, and 146 described for the Proposed Action Panel G West Haul/Access Road. It would have no effect on any other Forest Roads but would cross non-motorized Forest Trails 404, 093, 102, and 403. Non-motorized travel on these trails could cross the haul/access road.

Alternative 5 – Alternate Panel G West Haul/Access Road
Impacts to public transportation for this alternative would be the same as those described for the Proposed Action Panel G West Haul/Access Road, except it would not affect closed FR 1248.

Alternative 6 – Conveyor from Panel G to Mill
The conveyor would cross the existing drill access road into the Panel F area and the road in the bottom of South Fork Sage Creek Canyon (FR 179) that would be cut off by the Panel F Haul/Access Road. These would be negligible impacts as both of these roads are currently not open to public, motorized access; FR 179 is accessed via private land and the existing drill road is blocked by a locked gate.

The conveyor structure would be more difficult to cross than a haul/access road. Except where the conveyor structure is elevated to provide sufficient clearance under it, there would be insufficient clearance under the structure for persons on foot, bicycles or horseback to safely cross under the conveyor. Points of adequate clearance may occur along the conveyor route where small topographic dips and drainages are spanned by the conveyor structure. Persons attempting to cross under the conveyor would need to move along its length to find safe crossing locations. This would present a major, negative impact to non-motorized access across the conveyor route. Motorized access across the conveyor corridor would be similarly blocked, but the conveyor would not cross any publicly available motorized access routes.

Alternative 7 – Crow Creek/Wells Canyon Access Road
If the conveyor were built, this alternative would provide access to Panel G for mine employees working there, vendors supplying the mining operations, and visitors to the mine. The existing Crow Creek Road (FR 111), which is under Caribou County, Idaho and Lincoln County, Wyoming jurisdiction, would be widened to a 30-foot road surface and re-aligned in some locations to improve lines of sight and reduce road curvature. The existing single lane road in Wells Canyon (FR 146) would be replaced from the intersection with the Crow Creek Road up to the Panel G operations with a new access road having the same design standards as the improved Crow Creek Road. The existing sections of FR 146 that would be relocated would be reclaimed. These new or upgraded roads would be surfaced with crushed rock and maintained as necessary by the mine to allow year-round access to Panel G from Star Valley. These would be major improvements to these roads and would make public, motorized access from Star Valley up to the end of Wells Canyon possible year-round compared to the current condition where the Crow Creek road is typically blocked by snow in winter at about where the road crosses Sage Creek.

Traffic on the affected portion of Crow Creek Road would increase from the approximate 20 vehicles per day during the week and 60 vehicles per day on the weekends due to the added mine traffic. The mine employee traffic is estimated to be approximately 105 vehicle round trips per day (automobiles and light trucks) split into two 12-hour shifts, 365 days per year. In addition, approximately 15 vendor and visitor round trips would occur each day. These would be a mixture of semi-trucks, delivery vans, and light vehicles. The most common type of semi-truck using the road would be delivering fuel for the mine equipment. This would be a major change in traffic density and composition for this rural route.

The increased traffic would have the potential for increased chances of traffic accidents along this route, although increased widths and improved sight distances should reduce this potential for accidents. Accidents involving fuel delivery trucks could create situations resulting in fuel spills into the Crow Creek drainage where the current potential for such spills is essentially non-existent due to the lack of this type of traffic. The indirect effects of increased traffic on air quality, noise levels, water quality, and wildlife are discussed in other sections of this EIS. Dust abatement would be required on the Crow Creek Road (FR 111) and the Wells Canyon Road FR 146) to mitigate some of the air quality concerns.

This increased traffic up the Crow Creek road would shift the majority of the mine access traffic in Star Valley from the current focus through Auburn and the Stump Creek/Smoky Canyon roads to a new focus through Fairview to the Crow Creek/Wells Canyon roads. Approximately 30 to 40 vehicles per day would still go to the existing mine and mill facilities in Smoky Canyon, and approximately 120 vehicles per day would go to Panel G via Crow Creek and Wells Canyon roads. These shifting traffic patterns would decrease existing direct and indirect impacts caused by traffic (traffic accidents, air pollution, noise, water pollution, wildlife) along the current Auburn/Stump Creek/Smoky Canyon routes and increase them along the Fairview/Crow Creek/Wells Canyon routes.

Improvements to the Crow Creek and Wells Canyon roads and maintenance of this access year-round during mining would likely increase recreational visitation to the CNF via these routes compared to the present. Seasonal residents along Crow Creek could decide to reside in the area year-round with the improved access and plowed road. This could increase winter recreation in the part of the CNF and Crow Creek Valley accessed by these routes. The improvement of these roads could also increase through traffic between the Georgetown Canyon and Crow Creek areas.

Alternative 8 – Middle Access Road
Impacts to public transportation for this alternative would be the same as those described for Alternative 4 in combination with Alternative 6.

4.15.1.4 No Action Alternative

There would be no changes to existing public transportation in the Project Area under the No Action Alternative.

4.15.2 Mitigation Measures

Where the haul/access roads cut off existing Forest Routes (FR 179 and FR 740), turnaround areas would be built by Simplot at the temporary termination of the Forest Routes to allow safe and convenient turning of vehicles. At these locations, trails for non-motorized access would be built across the haul/access roads to allow convenient and safe non-motorized crossing of the haul/access roads (see Recreation and Land Use).

To reduce environmental effects of mine employee traffic under Alternative 7 (Crow Creek/Wells Canyon Access Roads), Simplot would employ a bus service to make one round trip per shift from one or more parking/pickup locations in Star Valley to Panel G.

To reduce the potential for oil spills getting into Crow Creek under Alternative 7, in the event of a fuel tanker accident on the road in this area, Simplot would require all fuel vendors to participate in a spill-response training program and make sure that all vendor trucks carry some spill response materials. Specific Simplot personnel at Panel G would be specially trained in responding to fuel spills along the Crow Creek Road. Spill response supplies and equipment (booms, absorbents, etc.) necessary to respond to a significant fuel spill along Crow Creek would be pre-positioned at Panel G or some location along Crow Creek for ready use.

4.15.3 Unavoidable (Residual) Adverse Impacts

Under the Proposed Action and all transportation alternatives but Alternatives 6 and 7, the unavoidable adverse impacts to public access routes and access to the CNF would be minor.

The conveyor (Alternative 6) would present a major impediment to public access across the conveyor corridor. Alternative 7 would increase traffic density on the Crow Creek Road by about 6 times compared to current conditions if all employees accessed Panel G with private vehicles. This could be reduced if Simplot provided bus service for commuting employees. Large delivery trucks would be part of this additional traffic where such vehicles are currently non-existent on the Crow Creek and Wells Canyon roads.

Following completion of the proposed mining operations and subsequent reclamation activities, all mine-related traffic in the Project Area would cease, and public access to the CNF would return to pre-existing conditions. Improvements made to existing public access routes during mining would remain after reclamation.

4.15.4 Relationship of Short-Term Uses and Long-Term Productivity

The local short-term use of the mineral resources for phosphate mining would result in ongoing employment and other economic benefits to the local and regional economies. Local public access routes in the Project Area affected by the Proposed Action or alternatives would be restored to conditions equal to or better than existed before the mining operations began.

4.15.5 Irreversible and Irretrievable Commitments of Resources

Any permanent changes made during mining operations to existing public roads would constitute irreversible commitments for these facilities. All other changes to existing forest routes would be restored to previous conditions during reclamation activities.

4.16 Social & Economic Resources

Issue:
The heritage values (see **Section 3.13,** Cultural Resources) of the Project Area may be compromised by the Project.

Indicators:
Acres to be removed from historic land uses with local heritage value, and duration of the mining activities. See also **Section 4.9**, Grazing and **Section 4.13**, Cultural Resources.

Issue:
Noise effects from mine operations, mine traffic along haul roads, and traffic on access roads may affect area residents.

Indicators:
Estimated noise levels from mining operations, haul truck traffic related to mining and access road traffic. See also **Section 4.2**, Air Resources and Noise.

Issue:
Potential closure of the mine and effects on the local economy.

Indicators:
Numbers of employees, contractors, and their dependents that could be affected by potential mine and fertilizer plant closure and loss of personal/public income. Appropriate multipliers would be used to estimate economic and social impacts.

Issue:
Potential closure of the mine, resulting in decreased domestic phosphate production, effect of reduced fertilizer supply, increased price on national agriculture, and increased foreign natural resource dependence.

Indicators:
Percentage of U.S. phosphate fertilizer market derived from Don Plant production and ability of other domestic and foreign sources to satisfy this demand, if necessary.

Issue:
Chemical degradation of water, soil, and vegetation in the Project Area may impact local farmers and compromise the viability of their farms/ranches in terms of both agribusiness and tourism.

Indicators:
Predicted levels of any offsite contamination of water, soil, and vegetation of farms and ranches within the Project Area with emphasis on compliance with applicable standards. See also **Section 4.3** (Water), **Section 4.4** (Soils), and **Section 4.5** (Vegetation).

Issue:
Nearby property values may be changed by proximity of mine and transportation activities.

Indicators:
Relative potential change of property values from mining operations in the area including relative potential change in property values within the Star Valley if mining were to cease.

4.16.1 Direct and Indirect Impacts

Socioeconomic impacts were evaluated at three different levels: 1) the effect on the Star Valley area of Wyoming, which includes the towns of Afton and Thaynes; 2) the four-county area of Bannock, Caribou, and Power Counties, Idaho and Lincoln County, Wyoming; and 3) an expanded 27-county area that was used to determine the indirect and induced employment and wages resulting from operation of the Smoky Canyon Mine and Don Plant. Star Valley was evaluated separately because it does not receive royalties or tax money from the Smoky Canyon Mine, yet it is the place of residence for most of the mine's employees. The four-county area is influenced by both Smoky Canyon Mine and the Pocatello fertilizer plant.

Direct socioeconomic impacts are those that are caused by the action and occur at the same time and in the local area of the action, including such things as Smoky Canyon Mine and Don Plant employment, royalties, and income tax.

Indirect socioeconomic impacts are those that are caused by the action but may occur later in time or are farther removed from the location of the action including such things as indirect or induced employment and the purchase of goods and services.

The Proposed Action, mining alternatives, and the transportation alternatives would all result in continued operation of the Smoky Canyon Mine and the Don Plant beyond the life of the existing mining operations. Some of the mining alternatives could shorten the life of the proposed mining operations and reduce royalty income to the government.

This EIS does not attempt to quantify either the real estate value of any individual property in the Study Area or the amount that any individual property may change in value as a result of the

alternative selection process. However, it does try to identify the characteristics/amenities that subjectively influence property values and describe which ones may be affected. It is possible that any of the Action Alternatives could affect the characteristics/amenities that influence property values in the Crow Creek valley. Proximity to the mine expansion and related facilities would likely determine the degree to which characteristics/amenities are affected. Because the Agencies cannot approve any alternative that would violate laws, impacts to resources such as water quality and endangered species would likely have little effect on property values. Mining impacts on visual resources, noise, and recreational resources can play a role in indirect effects on property values, although the role of each is subjective. There are also factors outside the influence of the Proposed Action and Alternatives that can affect property values.

4.16.1.1 Proposed Action

The Smoky Canyon Mine is a significant employer of residents of Star Valley and provides the highest paying jobs in the area. The mine employs 210 persons, while the associated fertilizer plant near Pocatello, Idaho employs 350 persons. Indirect employment above the direct employment is an additional 1,452 persons. The Proposed Action would result in continued employment for these individuals beyond the life of the existing mining operations at the Smoky Canyon Mine.

Significant socioeconomic impacts to an area occur when there is a large migration of population into, or out of, the area. Since there is no anticipated change in employment as a result of the Proposed Action, there is no anticipated change in population or in-migration to Bannock, Caribou, or Power Counties, Idaho or Lincoln County, Wyoming. Therefore, the Proposed Action would not result in changes to the current status of community resources such as schools, housing, police and fire protection, and water and sewage services.

Property values along Crow Creek Road may be affected by the development of the mine panels due to perceived changes in the environment of the Project Area. It is beyond the scope of this EIS to predict in detail how such land values would be impacted. However, the Project would affect some of the areas' characteristics/amenities that subjectively affect property values (i.e., noise, visual, recreation, traffic); these impacts may be positive or negative and may change over time as desired property characteristics change. Under the Proposed Action, most of the expected disturbance would be approximately two miles or more from the Crow Creek Valley area.

The Project effects on air quality are described in **Section 4.2** and are estimated to be in compliance with applicable air quality standards and regulations in the vicinity of Crow Creek valley. Air quality impacts from the Proposed Action are not expected to have an impact on property values in Crow Creek valley.

Proposed Action noise effects are discussed in **Section 4.2** and are described as being negligible to minor to Crow Creek residents. Noise from the Proposed Action is not expected to have an impact on property values in Crow Creek valley.

The effects of the Proposed Action on water resources are described in **Section 4.3**. Decreases in water quality of certain reaches of Deer Creek, Sage Creek, and Crow Creek are expected to occur. Any contamination of the streams could be perceived by Crow Creek residents as a negative change of the characteristics of the affected properties.

The effects of the Proposed Action on local recreation and land use are described in **Section 4.10**. The Proposed Action is described as having negligible to minor impacts on motorized access and recreation in the Project Area as the Wells Canyon Road would remain open. Non-motorized access across forest lands involved in the mining would be affected to a minor to moderate degree. Effects would be short-term. These restrictions to the current unrestrained use of the Project Area for non-motorized recreation may be perceived by some visitors to the CNF as diminishing the forest land recreation values that are a benefit to property owners along Crow Creek.

The visual impacts of the Proposed Action are described in **Section 4.12** and would be minor to residents along Crow Creek as most of the Project disturbance would not be visible from Crow Creek valley. As described in **Chapter 2**, transportation of ore from Panel G to the existing mill area would be along the westernmost analyzed haul/access route. This aspect of the Proposed Action would not impact the scenic values that have a subjective effect on property values along Crow Creek.

The Proposed Action would not result in noticeable changes to traffic in Crow Creek valley (**Section 4.15**). Traffic would enter the mine via the existing roads in Smoky Canyon. Transportation of ore from Panel G to the existing mill area would be along the westernmost analyzed route. Haul roads would not be visible from the Crow Creek Road. Traffic patterns on Crow Creek Road would change very little.

The Proposed Action would temporarily affect heritage resources by temporarily restricting access to traditional livestock trailing corridors (**Section 4.9**); this impact would be minor. Further, the Proposed Action might alter the ability of Tribal members to exercise Treaty Rights for use of Forest resources as discussed in **Section 4.14**.

Star Valley, Wyoming

The Proposed Action would result in continued employment for approximately 174 residents of Star Valley at the Smoky Canyon Mine. Annual payroll for these workers is approximately $7.6 million per year, or about 3 percent of total nonagricultural payroll for Lincoln County, Wyoming. The income from these 174 employees helps support the Star Valley economy through sales tax, personal property tax, and purchases of good and services.

Four-County Area

The Proposed Action would result in continued economic benefits to the economy of Bannock, Caribou, and Power Counties, Idaho and Lincoln County, Wyoming. The primary benefits to local and state governments are royalties paid for mining on federally owned land, and other income and property taxes. The Smoky Canyon Mine pays a federal lease royalty of five percent of gross value mined. One-half of the royalty is returned to the Idaho State government, which in turn disburses 10 percent of the funds it receives to Caribou County, which contains the current mine. The operation also pays property taxes directly to Caribou County and other government entities, such as school districts; these payments would continue under the Proposed Action. As mentioned in Chapter 3, the Smoky Canyon Mine provides royalty payments that annually range from 1.6 to 2.0 million dollars. Further, employees pay income, sales, and other taxes.

Under the Proposed Action, employment would continue at the Smoky Canyon Mine and the Pocatello fertilizer plant beyond the life of the existing mining operations. Direct employment at the Smoky Canyon Mine is 210 (including 14 employed at the Conda pumping plant), while the Pocatello fertilizer plant employs about 350 individuals. Annual wages and salaries for these

560 persons is $52.1 million, or about 2 percent of total nonagricultural payroll for the four counties.

Twenty-Seven-County Area
In addition to the direct employment, there is indirect and induced employment. The indirect and induced employment is that of suppliers to the Smoky Canyon Mine and the Don Plant and employment due to spending by employees of the two operations. The majority of the operating inputs for both the Smoky Canyon Mine and the Pocatello fertilizer plant are purchased in Southeastern Idaho. The majority of the heavy equipment parts and operating supplies required by the mine are purchased from dealerships in Pocatello, Idaho. The mine also purchases engineering supplies from suppliers in Salt Lake City, Utah. The fertilizer plant purchases natural gas from producers in the Rocky Mountains. The area examined to determine indirect and induced employment was expanded from the four counties to the 27-county area shown in **Figure 3.16-2** to capture the effect of the Don Plant on the natural gas producing areas in the Rocky Mountains.

Continued operation of the Smoky Canyon Mine and Don Plant would result in ongoing employment for the 560 employees at the mine and plant and the 1,452 additional persons considered indirect and induced employment in the 27-county area examined. The jobs created as a result of the Smoky Canyon Mine and Don Plant, including indirect and induced employment, pay higher wages than the average job in the 27-county area. The average job created by the Smoky Canyon Mine and Don Plant, including direct, indirect, and induced employment, has an annual wage of $54,400, as compared to an average annual wage for the 27-county area of $30,327.

The Proposed Action would not result in impacts to land ownership, population, demographics, personal income, local infrastructure, local government finances, agricultural economics, the phosphate industry, property taxes, or mine profits taxes.

A continuing ore supply to the Pocatello fertilizer plant would be maintained under the Proposed Action for another 13-15 years past the currently approved operations. The Don Plant is a significant supplier of phosphate fertilizer to the agricultural industry in the western half of the United States. The plant receives 100 percent of the ore mined at Smoky Canyon Mine.

4.16.1.2 Mining Alternatives

If the ore recovery under these mining alternatives were equal to the Proposed Action, then socioeconomic effects would be the same, with the continuation of mining and mining-related employment. However, additional costs associated with the alternatives could affect ultimate pit size and ore recovery, both of which affect royalties paid, number of employees, and mine-life.

As mine-life is diminished by an alternative, new deposits would need to be mined to continue a steady supply of ore to processing facilities to avoid closure. More phosphate mines of lesser depth, compared to the Proposed Action, would ultimately lead to a greater disturbance per ton of phosphate rock mined. Maximizing recovery [pit depth] at each mine tends to keep this ratio as low as possible.

If ore recovery were reduced as much as potentially could occur, as described in geology (**Section 4.1**), then the socioeconomic effects of each alternative would vary as described below.

Mining Alternative A – No South and/or North Panel F Lease Modifications
If the ore recovery under this alternative were equal to the Proposed Action, then socioeconomic effects would be the same. In this case, less ore would be mined over a smaller area. Cost estimates have shown that under Mining Alternative A, up to about 10.7 percent less ore would be mined than the Proposed Action (both Panels F and G) with no South Lease Modification and 3 percent less ore with no North Lease Modification, thereby reducing the life of the mine by 1.8 years and 0.5 year from the Proposed Action, respectively. Mining in Panel G would need to be moved up in schedule to accommodate the shorter mine life of Panel F. This would shorten employment at the Smoky Canyon Mine, Panels F and G by up to 2.3 years, reduce local employment income by $7.6 million (2.3 years x $7.6 million/year = loss of $17.5 million into local economy), and reduce federal lease royalties paid by up to 2.3 years or $3.7 to $4.6 million (2.3 x $1.6 to $2.0 million).

Not mining the North Lease Modification would have no effect on Crow Creek property values. Not mining the South Lease Modification could be perceived by recreationists in the middle Deer Creek watershed as a favorable change because the disturbance from the southern portion of the Panel F pit would not encroach into the Deer Creek watershed. This could have a positive effect on perceived forest land recreation values; which may be one of the factors that subjectively affects property values along Crow Creek.

Mining Alternative B – No External Seleniferous Overburden Fills
If the ore recovery under this alternative were equal to the Proposed Action, then socioeconomic effects would be the same. Cost estimates have shown that under Mining Alternative B, up to about 19.3 percent less ore would be mined than the Proposed Action (both Panels F and G), thereby reducing the life of the Panels F and G mine by 3.2 years from the Proposed Action. This would mean a loss of about $24.3 million in salaries into the Star Valley economy from this Project. Mining in Panel G would need to be moved up in schedule to accommodate the shorter mine life of Panel F. This would shorten employment at the Smoky Canyon Mine, Panels F and G, by up to 3.2 years and reduce federal lease royalties paid by 3.2 years or $5.1 to $6.4 million.

Under this mining alternative, impacts to some of the areas' characteristics/amenities that could subjectively affect property values would be similar to the Proposed Action.

Mining Alternative C – No External Overburden Fills at All
If the ore recovery under this alternative were equal to the Proposed Action, then socioeconomic effects would be the same. Cost estimates have shown that in order to compensate for the increased cost associated with rehandling material under Mining Alternative C, it is predicted that up to 46 percent less ore would be mined than the Proposed Action (both Panels F and G), thereby reducing the life of the Panels F and G mine by 7.7 years from the Proposed Action. This would mean a loss of about $59.8 million in salaries to the Star Valley economy. Mining in Panel G would need to be moved up in schedule to accommodate the shorter mine life of Panel F. This would shorten employment at the Smoky Canyon Mine, Panels F and G, by up to 7.7 years and reduce federal lease royalties paid by up to 7.7 years or $12.3 to $15.4 million.

Under this mining alternative, impacts to some of the areas' characteristics/amenities that could subjectively affect property values would be similar to the Proposed Action.

Mining Alternative D – Store and Release Covers on Overburden Fills (Component of Agency Preferred Alternative)
If the ore recovery under this alternative were equal to the Proposed Action, then socioeconomic effects would be the same. Cost estimates have shown that under Mining Alternative D, it is predicted that up to 18 percent less ore would be mined than the Proposed Action (both Panels F and G), thereby reducing the life of the Panels F and G mine by 2.9 years from the Proposed Action. This would mean a loss of about $22 million in salaries to the Star Valley economy. Mining in Panel G would need to be moved up in schedule to accommodate the shorter mine life of Panel F. This would shorten employment at the Smoky Canyon Mine, Panels F and G, by up to 2.9 years and reduce federal lease royalties paid by up to 2.9 years or $4.7 to $5.8 million.

Under this mining alternative, impacts to some of the areas' characteristics/amenities that could subjectively affect property values would be similar to the Proposed Action.

Mining Alternative E – Power Line Connection from Panel F to Panel G Along Haul/Access Roads (Component of Agency Preferred Alternative)
There would be some increased costs associated with the longer power lines along the haul/access roads if this mining alternative were selected. The effects of these increased costs on ore recovery and mine life have not been estimated. Ore recovery under this alternative is assumed to be equal to the Proposed Action; therefore, socioeconomic effects would be the same.

Under this mining alternative, impacts to some of the areas' characteristics/amenities that could subjectively affect property values would be similar to the Proposed Action.

Mining Alternative F – Electrical Generators at Panel G
The capital cost of the electrical generators at Panel G would be similar to the cost of the power line to this panel in the Proposed Action, but the annual operating costs would be approximately five times more than the power line. The total increase in costs would be similar to those for Panel G under Alternative C. If the ore recovery under this alternative were equal to the Proposed Action then socioeconomic affects would be the same. However, under Mining Alternative F, up to 38 percent less ore would be mined than the Proposed Action, thereby reducing the life of the Panels F and G mine by 6.5 years from the Proposed Action. This would shorten employment at the Smoky Canyon Mine, Panels F and G, by up to 6.5 years and reduce federal lease royalties paid by up to 6.5 years or $10.4 to $13 million.

Under this mining alternative, impacts to some of the areas' characteristics/amenities that could subjectively affect property values would be similar to the Proposed Action.

4.16.1.3 Transportation Alternatives

None of the transportation alternatives have been identified as having negative effects on potential ore recovery or mine life compared to the Proposed Action.

Alternative 1 – Alternate Panel F Haul/Access Road
This transportation alternative is a relatively minor modification to the Proposed Action Panel F Haul/Access Road located in a relatively isolated area away from local residents. Its socioeconomic effect would be the same as the Proposed Action.

Alternative 2 – East Haul/Access Road
The East Haul/Access Road would be the closest haul/access road to the residences of Crow Creek valley. The East Haul/Access Road would extend from Panel G east towards the Crow Creek Road, approximately two miles north of the location of the residences in Census Block 1161 (**Section 3.15**). Mine traffic would be audible and visible from some locations in the Crow Creek valley. This alternative would affect public access to the CNF. Further, this route would require either the purchase of private land or the negotiation of a right-of-way across private land. Visual impacts (**Section 4.12**) of the haul/access road along the west side of Crow Creek valley, changes in access to the CNF across this road (**Sections 4.11** and **4.16**), and increased noise (**Section 4.2**) would affect the current, rural quality of life for property owners and perceived, adjacent, aesthetic qualities that are some of the resources that may subjectively affect property values along Crow Creek. It is beyond the scope of this EIS to predict in detail how such land values would be impacted.

Alternative 3 – Modified East Haul/Access Road
This transportation alternative would avoid disturbance of private land and reduce noise and visual effects of the haul/access road to the Crow Creek valley area compared to Alternative 2 (**Sections 4.2** and **4.12**). Its effects on access to the CNF and associated recreation values would be similar to Alternative 2. The effects of this alternative on property values along Crow Creek would be less than Alternative 2 but more than the Proposed Action.

Alternative 4 – Middle Haul/Access Road
Due to its remote location in the middle Deer Creek watershed and negligible environmental impact to the Crow Creek area, this alternative would have negligible impacts to socioeconomics.

Alternative 5 – Alternate Panel G West Haul/Access Road
Due to its remote location, and relatively minor impacts to forest land resources above those already described for the Proposed Action, this transportation alternative would have negligible impacts to socioeconomics.

Alternative 6 – Conveyor from Panel G to Mill
This transportation alternative would have much lower impacts on the surface environmental resources of the local area compared to any of the haul/access road alternatives but would have a larger impact on access across it compared to a haul/access road or the mine panels themselves (**Section 4.10**). The conveyor would have sufficient clearance underneath it for livestock, hikers, and horseback riders to cross the corridor in a few locations where there are existing FS trails, but not in most other locations along the conveyor corridor. This restriction on access across the conveyor would be a major impact on forest land recreation values in this local area, which could be perceived by local private landowners as diminishing aesthetic values for their property, which could affect property values along Crow Creek. As stated in **Section 4.2**, there would be no noticeable noise increases at current residences along the Crow Creek Road from the conveyor.

Alternative 7 – Crow Creek/Wells Canyon Access Road
This alternative would increase traffic on the Crow Creek and Wells Canyon Roads (**Section 4.15**), which could affect the development of property in Crow Creek valley. Road improvements and year-round access along Crow Creek Road and the Wells Canyon Road may eventually make the area more desirable to development of permanent, rather than seasonal homes, and this increased access may benefit property values. Increased noise, visual disturbance, and

traffic would impact characteristics/amenities that may subjectively affect property values along Crow Creek Road.

Alternative 8 – Middle Access Road
This transportation alternative would have negligible impacts to socioeconomics for the same reasons as Alternative 4.

4.16.1.4 No Action Alternative

Under the No Action Alternative, the mine would cease operation when the currently approved mine panels are mined out and remain closed until a mine plan is approved, at an unknown point in the future. The Smoky Canyon Mine staff would decrease as mining operations cease due to lack of permitted ore reserves. This would require mining, milling, and supporting administrative employees at the Smoky Canyon Mine to seek alternate employment. Upon closure of the mine, employment would cease for the 210 employees of the mine with potential decreases in employment for vendors supplying the mine. Once any stockpiled ore or concentrate is consumed, the Don Plant just west of Pocatello, Idaho could also cease operation, resulting in an additional 350 persons becoming unemployed and also potential effects on business and employment for vendors supplying the plant. Staff reductions would occur not only at the Smoky Canyon Mine and the Don Plant processing plant in Pocatello, but also in company headquarters located in Boise, Idaho. The Simplot Games, held annually in Pocatello, would be discontinued under the No Action Alternative.

Under the No Action Alternative, Simplot would consider other means to maintain ore production, which are described below. It should be noted that none of the following are considered economically feasible in order to maintain processing capability at the associated Don Plant in Pocatello. As such, the most likely scenario of the No Action Alternative would be the closure of the Mine and Plant. The impacts of a closure would mimic the recent closing of the Astaris Mine and phosphorus processing plant, and total economic losses to the area could be measured in the hundreds of millions of dollars.

Purchase Ore Elsewhere for the Don Plant
If mining at the Smoky Canyon Mine did not continue, the operation of the Don Plant would be terminated unless suitable ore was obtained from alternate sources and shipped to the plant. Simplot currently does have other phosphate reserves, but they are not permitted or as ready to mine as those at Panels F and G. It would take years to permit and construct a new mine and associated infrastructure to replace the Smoky Canyon Mine. Replacement sources of feedstock for the plant could not be readily purchased on the open market because:

- The Don Plant is designed to receive beneficiated ore concentrate and not raw ore. This limits the potential suppliers to only those able to provide beneficiated ore concentrates. The Don Plant would need to construct a rail-based ore delivery and handling system and a new mill and tailings pond for beneficiating raw ore.

- The processing systems at the Don Plant are specifically designed to only handle ore from the Smoky Canyon Mine. Other sources of ore in Southeastern Idaho would not be as compatible with the Don Plant process. Therefore, the process may have to be modified.

- The few other phosphate mines in Southeastern Idaho are also vertically integrated operations with their own milling and processing facilities. Large quantities of additional phosphate ore are not readily available on the open market for purchase by Simplot.

- If Simplot could locate an alternate source of ore at a competitive cost for the Don Plant, then the Don Plant would remain in operation, maintaining the current level of staffing.

Mine Other Simplot Leases Instead of Panels F and G
Although this action may reduce environmental impacts at Panels F and G, it may not be better environmentally on a regional basis. Simplot currently holds leases in the Sulfur Canyon/Swan Lake Gulch and Dairy Syncline Project Areas, but currently has no existing mining, milling, or transportation infrastructure in place at either lease area. Development of either of these leases would require new and extensive construction of mining operation and support facilities, haul roads, and ore processing or transportation systems; these operations would have their own set of environmental impacts. At this point in time, it would be impossible to permit these leases in a time frame that would not result in an idling or potential closure of the Don Plant in Pocatello.

Local and Regional Areas
The No Action Alternative is not expected to impact land ownership patterns (private vs. public, etc.), agriculture, or agricultural economics in the Project Area. There would be no additional noise, traffic, or visual impacts from mining to affect characteristics that subjectively influence property values along Crow Creek. Population demographics may be affected should Star Valley residents relocate in search of other employment opportunities. Demographics and individual land ownership may be impacted if there is an out-migration of residents relocating for employment. It cannot be anticipated how many unemployed workers (and families) would remain in the area and how many would move. Prediction of the effects of the No Action Alternative and subsequent unemployment on property values cannot be concluded, other than to acknowledge that they are likely tied to the extent that the local community is dependent on the mining industry. Potential impacts to personal income, county finances, the phosphate industry, mineral lease payments, tourism, and property taxes are discussed below.

<u>Star Valley, Wyoming</u>
Under the No Action Alternative, production at the Smoky Canyon Mine would cease when the currently approved mine panels are mined out. The mine would remain closed either permanently or until such time that an acceptable mine plan is approved. The most direct effect of ceasing production at the Smoky Canyon Mine would be 160 residents of Star Valley becoming unemployed and the loss of approximately $7.6 million in annual payroll. Compared to the Proposed Action, there would be a loss of $98.8 million in employment income to the Star Valley area. The jobs at the Smoky Canyon Mine are among the highest-paying available to residents of Star Valley, and some of the few that include benefits packages such as health care.

In addition to increased unemployment and reduced wages spent in the local economy, increased use of public assistance programs would result. The community service providers in Star Valley, the Wyoming Department of Family Services, and the Lincoln County Health Department would experience an increased demand for their services under the No Action Alternative. It is anticipated that additional personnel may be temporarily needed by these organizations should the Smoky Canyon Mine cease production.

Star Valley in recent years has experienced an influx of wealthy residents. The No Action Alternative may accelerate this change in social structure of Star Valley. As employees of the

Smoky Canyon Mine leave the area for alternative employment opportunities, should they become unemployed as a result of the No Action Alternative, residences and real estate in Star Valley would be available for purchase. Star Valley's economy would be altered, with a lesser focus on natural resources extraction and a greater emphasis on tourism and land development.

Four-County Area

The No Action Alternative would result in closure of the Smoky Canyon Mine upon completion of mining of the currently approved mine panels. Once any stockpiled ore and concentrate is processed, the Don Plant may also cease operation. The No Action Alternative would result in the loss of 560 jobs with approximately $52.1 million in wages and salaries.

Royalty payments would cease upon mine closure under the No Action Alternative. The No Action Alternative would also result in reductions in the property tax paid to Caribou County and to other local taxing entities such as school districts. The phosphate mining and processing industry pays approximately 41 percent of the property taxes in Caribou County. Increased use of public assistance and unemployment compensation funds would result from the No Action Alternative as the Smoky Canyon Mine and the Pocatello fertilizer plant close, and remain closed until a mine plan is approved.

Twenty-Seven-County Area

In addition to the 560 Simplot employees, an estimated additional 1,452 persons across a 27-county area in northeast Colorado, northern Utah, southwestern Wyoming, and southeastern Idaho could become unemployed. Estimated annual wages for these 1,452 persons are $76,792,365. The change in employment and wages in the 27-county area may not be directly observable since other fluctuations in the economy may mask the effect.

Phosphate Industry

The Don Plant ceasing operations would result in closure of about 30 percent of the ammonium phosphate manufacturing capacity in the western United States. The other two ammonium phosphate manufacturing plants in the western United States are the Agrium Conda Plant north of Soda Springs, Idaho and the Simplot Phosphates Manufacturing Complex at Rock Springs, Wyoming. While the Don Plant represents a major portion of the ammonium phosphate manufacturing capacity in the western United States, it represents 2.4 percent of nationwide capacity. The three western plants represent 8 percent of nationwide capacity, with the Florida and Gulf Coast plants accounting for 92 percent of nationwide ammonium phosphate manufacturing capacity (Chemical Market Reporter 2002b). With the drop in export sales of ammonium phosphate fertilizers since the late 1990s, and agricultural chemical production in general dropping since 1998, enough excess plant capacity exists nationwide to supply ammonium phosphate fertilizer should the Smoky Canyon Mine fail to obtain the required operating permits, under current conditions. However, there may be additional associated transportation costs with increased delivery of phosphate from the eastern to the western United States.

4.16.2 Mitigation Measures

No mitigation and monitoring of socioeconomic resources are necessary under the Proposed Action or the Action Alternatives. The No Action Alternative poses the greatest possibility of altering the socioeconomic resources of Star Valley and the four-county area. However, no mitigation or monitoring is necessary due to established programs in place such as economic monitoring conducted by state employment and social service agencies, the U.S. Bureau of Census, and the U.S. Bureau of Labor Statistics. Social programs operated by the state and

federal governments are capable of addressing issues arising from closure of the mine should the No Action Alternative be adopted.

4.16.3 Unavoidable (Residual) Adverse Impacts

There would be no residual adverse impacts to socioeconomic resources as a result of the Proposed Action or the Action Alternatives.

4.16.4 Relationship of Short-Term Uses and Long-Term Productivity

The short-term use of mining of the phosphate ore would result in beneficial long-term effects from increased public funds available for social programs and/or infrastructure improvements due to increased federal lease royalties. There would also be an increase in wealth and economic stimuli from the manufacture of goods and services related to mining phosphate ore from the leases.

4.16.5 Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, there would be no irreversible and irretrievable commitment of socioeconomic resources.

All the Action Alternatives continue operation of the Smoky Canyon Mine; therefore, they have similar effects on irreversible and irretrievable commitment of socioeconomic resources as would the Proposed Action. Alternatives A, B, C, D, and F would have shorter lives than the Proposed Action and consequently would pose incremental losses of economic values compared to the Proposed Action.
Implementing one of the alternatives that allow for continued operation of the Smoky Canyon Mine has a greater economic value than closing the mine.

Under the No Action Alternative, there would be an irreversible and irretrievable loss of economic value of the Smoky Canyon Mine.

Under the No Action Alternative, there is high likelihood of the mine and Don Plant ceasing operation until a revised mine plan is approved. Former employees of the Smoky Canyon Mine may leave Star Valley as alternative employment opportunities arise and place their residences and real estate up for sale. Placing more real estate in Star Valley up for sale would undoubtedly increase the influx of buyers from outside Star Valley. This would result in an irreversible change in the social characteristics of Star Valley. Changes in social characteristics of Star Valley would include an increase in the number of part-time residents, smaller families, and higher incomes, primarily among the newly arrived residents. Additionally, the economic structure of Star Valley would be irreversibly altered. Natural resources extraction would play a much smaller role in the area's economy, while real estate development and tourism would be more important.

4.17 Environmental Justice

Issue:
Reducing or limiting hunting and/or gathering opportunities (i.e., ability to exercise treaty rights) and/or access to resources affects the Tribes adversely, even if temporarily.

Indicators:
Inability to exercise treaty rights or access treaty resources.

Impacts to treaty resources.

Issue:
Increased health risks due to consumption of water, fish, and wildlife.

Indicator:
Exceedances of standards protective of human health for selenium in water, fish, and wildlife.

4.17.1 Direct and Indirect Impacts

Based on the analysis below, it has been determined that this Project would not cause disproportionately high and adverse effects on any minority or low-income populations as per EO 12898 regarding environmental justice.

The communities of Afton and Fairview, Wyoming, and ranchers along Crow Creek Road would continue to be affected by the presence of the Smoky Canyon Mine, but none of these communities are minority or low income as a whole, and none would be exposed to high and adverse environmental impacts.

Risks associated with the consumption of water, fish, wildlife, and other natural resources possibly impacted by the Project were discussed to determine the potential for human health or environmental affects in **Section 3.1**. As discussed in **Sections 4.3**, **4.5**, and **4.7** (Water, Vegetation, and Wildlife), BMPs and mitigation measures would preclude uptake of selenium in plants and animals and prevent water contamination. Therefore, there would be no disproportionately high or adverse human health or environmental effects to the Shoshone-Bannock Tribes as a result of the Proposed Action or Alternatives.

Impacts to Treaty Resources
The mine disturbance would eliminate certain springs and other water sources (**Section 4.3**), which could affect the distribution of wildlife in the nearby areas. These would be replaced by other water sources provided by Simplot in locations off the mine panels, which could potentially attract wildlife into the vicinity of these water sources. Timber, understory vegetation, and soil would be undisturbed beyond the perimeter of the active mine area, but within the mine panel footprint these resources would be removed (**Sections 4.4 and 4.5**). Wildlife would also be displaced from within the mine panel footprint area into adjacent suitable habitat (**Section 4.7**). In the area immediately adjacent to the active mine area, wildlife would be disturbed by the nearby activity. Some wildlife would eventually adjust to the disturbance and would populate these areas. The degree to which small mammals and big game would be displaced outside the mine footprint is uncertain.

During mining, direct disturbance of perennial streams would be minimized so access to fishing in the undisturbed reaches would be unaffected. The mining operations would be designed with mitigation measures to minimize chemical and sedimentation impacts on aquatic plants and wildlife. Sediment increases of a few percent over background are possible in the perennial streams with potential negative impacts on fish in downstream reaches (**Section 4.8**).

Reclamation would be concurrent with mining, resulting in regraded pits and overburden fills that are in different stages of reclamation, ultimately leading to a condition where grass and forb coverage is restored. Depending on the final seed and plant mix selected, reclamation vegetation may contain species with traditional values. Small mammals and big game would gradually re-occupy the reclaimed mine areas. The new patterns of vegetation (forest and grassland) along the reclaimed mine panels would present new wildlife habitat patterns as well, which could result in increased use of the reclaimed areas by big game, small mammals, and raptors.

Although these resources are being described as treaty resources, these resources are also available to other forest users, and therefore mining impacts affect all of the users.

Increased Selenium in Water, Fish, And Wildlife

Concentrations of selenium may increase in South Fork Sage Creek, Sage Creek, Crow Creek, and lower Deer Creek, due to groundwater discharges, which could affect aquatic life in these streams. Under the Agency Preferred Alternative, these concentrations would be within existing water quality standards established for protection of aquatic life. The anticipated selenium concentrations in any of these streams would not present a human health hazard for direct contact or ingestion. Bioaccumulation in fish could occur but this is not likely to occur to the point where limitation on consumption of the fish would be advisable. Any such limitation is more likely for chronic consumption of fish by children than by adults.

The design of the cover in areas of seleniferous overburden fills would prevent the bioaccumulation of selenium and other COPCs from the overburden in the vegetation growing on the reclaimed areas. This cover would also prevent the accumulation of COPCs in the terrestrial wildlife of the immediate area, so there should be no increased toxic effects from traditional uses of vegetation and wildlife that is hunted in the reclaimed mine areas. The only toxicological effects would be from wildlife that may consume COPCs and travel to this area from existing releases at other mine sites.

Inability to Exercise Treaty Rights or Access Treaty Resources

The Caribou National Forest and Grasslands include over 1,000,000 acres of largely undeveloped land, and most of these acres are available to practice treaty rights. The Project Area would include 1,340 acres, or 0.13 percent of the land potentially available for Tribal use. Tribal members would retain access to the remaining acres of unoccupied lands within Southeast Idaho (BLM, Sawtooth, etc.). There are no unique resources in the Project Area that are not available on the rest of the CTNF.

The physical effects of the mining disturbance itself, hence the physical surface resources affected by the disturbance, would be limited to the disturbance footprint, a very small part lands available for Tribal treaty rights. The physical occupation of the Project Area by the proposed mining operations would be for a limited time and then the majority of the disturbance area would be reclaimed; therefore the impacts to Tribal treaty rights would be temporary (**Section 4.14**).

4.17.2 Mitigation Measures

Tribes would be advised if bioaccumulation in fish of Lower Deer Creek may present a risk to 'chronic' consumers. Mitigation measures for environmental justice are not deemed necessary.

4.17.3 Unavoidable (Residual) Adverse Impacts

There would be no unavoidable, residual adverse impacts to environmental justice as a result of the Proposed Action or Alternatives.

4.17.4 Relationship of Short-Term Uses and Long-Term Productivity

Environmental justice would not be affected by this Project in the short term or long term.

4.17.5 Irreversible and Irretrievable Commitments of Resources

There would be no irreversible or irretrievable impact to environmental justice.