

Subject: **Roads Analysis** associated with Toolbox Fire Recovery

Location: Silver Lake Ranger District

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The roads analysis process is a tool to determine the appropriate balance between the benefits of access to the national forests and the costs of road-associated effects to ecosystem values. Roads analysis integrates ecological, social, and economic aspects of road management. The process includes six steps that will take you from analysis to reporting of findings.

The six steps of roads analysis include setting up the analysis, describing the situation, identifying issues, assessing benefits, problems and risks, describing opportunities and setting priorities, and reporting. Each step will be discussed as it pertains to the specific roads analysis completed for the Toolbox Fire Recovery EIS.

The charge of completing a roads analysis was given and the **setting up the analysis** began. The interdisciplinary team assigned to the task had representatives from engineering, timber, silviculture, fire, wildlife, recreation, hydrology/soil, archeology, and fisheries. The project area was the same area considered under the Toolbox Fire Recovery EIS.

Describing the situation began with a map of the existing roads, which came from the 1999 roads layer used in Geographical Information Systems. Each team member was asked to consider the road system by individual road and how it related to their resource. For example, as the hydrologist on the team, I considered the road system and how the location of each road coincided with riparian areas and meadows within the project area.

The team then **identified the issues** associated with the road system and identified any information needs. The maps were field verified by the engineer on the team. Several issues were identified and include: mule deer road densities, cultural site protection, stream proximity of roads for sedimentation reduction and fish protection, access for fire, timber and silviculturally related activities, and recreation access.

The interdisciplinary team then met to evaluate each road within the project area. The road was located on a map and each specialist, as a representative of their resource, **assessed the benefits, problems, and risks** associated with any action to that specific road. Underlying this discussion of specific road actions was the **description of opportunities and priorities** as they relate to step 3. The Land and Resource Management Plan (LRMP) (1989) states that the road density within mule deer summer/transition range was to be 1 mile per square mile or less. Overall, the road density of roads open to motorized vehicle traffic was to be managed at 2.5 miles/square mile (LRMP, 1989). Archeological sites must be protected. Timber, silviculture, and fire had access needs to certain sections of the analysis area to successfully complete their work. Wildlife areas, soil protection, and aquatic habitat protection were also high priorities. The management strategies or road actions were based on a consensus of resource needs and benefits amongst those resources represented on the interdisciplinary team and the road densities were calculated after the recommendations were completed. In other words, the resource needs dominated the recommendations of the interdisciplinary team and road densities were an end result of the recommendations. The road actions were: maintain as is, increase maintenance level, decrease maintenance level, implement seasonal travel restrictions, close year round, or decommission or convert to other use. The actions that were most prevalent during our assessment were to maintain as is, close, or decommission the road. In some instances where the maintenance level was not reflective of the current maintenance level, the strategy was to increase the maintenance level. The benefiting resource of the road action was noted at this point.

The roads within the analysis area that would need to be surfaced or resurfaced were also discussed at this point. The condition of the road was field inventoried and the recommendations are found in the table below.

Table 1. Road Reconstruction

Road Number	Reconstruction Termini	Miles of Reconstruction	Surfacing Type Required
2901-022	2901 to 2901-219	1.6	Surfacing (Pit run cinders)
2901-185	2901-188 to 2901-034	1.8	Surfacing (Pit run cinders)
2700-292	2700 to 2700-591	1.2	Surfacing (Pit run cinders)
2800-505	Milepost 0.7, Graham Creek	0.1	Culvert Backfill
3006-114	3006-112 to 3006-120	0.4	Surfacing (Pit run cinders)
2700-021	2700-3038	3.6	Resurfacing (Pit run cinders)
3006-000	2800 to 3006-015	1.4	Resurfacing (Pit run cinders)
3006-015	3006 to Milepost 0.8	0.8	Resurfacing (Pit run cinders)

The potential material sources for surfacing materials are included in the analysis area. This includes three cinder pits that are currently developed:

- Rim Cinder Pit: NW, SE, Sec.34, T.29S., R.16E
- Thompson Cinder Pit: NW, Sec.24, T.30S., R.13E.
- 3004 Cinder Pit: NE, NE, Sec.5, T.31S., R.16E.

The **reporting** for the roads analysis has two forms. One is a map generated through GIS with the road actions recommended from the roads analysis team and the associated benefiting resource (available on file). The second is a tabular form of the recommendations which shows the road number and the associated activity along a reported length of the road (see table 2).

Table 2. Roads Analysis Recommendations

ROUTE	Close	Decommission	Open -Increase Maint. Level	Open -Same Maint. Level	Total
2700000				4.114	4.114
2700014	0.408		0.869		1.277
2700016	0.654			0.972	1.626
2700017		0.162		0.083	0.245
2700018	1.154			1.699	2.853
2700020		0.756		0.254	1.01
2700021				2.391	2.391
2700027	0.454				0.454
2700039		0.067			0.067
2700040		0.154			0.154
2700042		0.131			0.131
2700043	0.19	0.353			0.543
2700044	0.157				0.157
2700046		0.396			0.396
2700048	0.345				0.345
2700163		0.005			0.005
2700164	0.751	0.264			1.015
2700185		0.084			0.084
2700187		1.432			1.432
2700188	0.592	0.321			0.913
2700195				0.623	0.623
2700262	0.352				0.352
2700265		0.11			0.11
2700266		0.172			0.172
2700269		0.379			0.379
2700270				0.374	0.374
2700273	0.404				0.404
2700274		0.168			0.168
2700277		0.378			0.378
2700280	0.475				0.475
2700290	0.533				0.533
2700292				1.933	1.933
2700295				0.245	0.245
2700296		0.174			0.174
2700297		0.059			0.059
2700298		0.349			0.349
2700300	0.496				0.496
2700301		0.278			0.278
2700506				0.171	0.171
2700515		0.151		0.357	0.508

Road Analysis Recommendations (Continued)					
ROUTE	Close	Decommission	Open -Increase Maint. Level	Open -Same Maint. Level	Total
2700516		0.134			0.134
2700517		0.922			0.922
2700520	0.687				0.687
2700523		0.206			0.206
2700524		0.248			0.248
2700525		0.147			0.147
2700526	0.507				0.507
2700592		0.253		0.463	0.716
2800000				1.091	1.091
2800011	0.652			0.803	1.455
2800013				1.353	1.353
2800036				0.852	0.852
2800066				1.74	1.74
2800227		0.407			0.407
2800327		0.405			0.405
2800331		0.056			0.056
2800472	0.542				0.542
2800481		0.884			0.884
2800482		0.743		1.296	2.039
2800503				0.005	0.005
2800505				1.776	1.776
2800507		0.242			0.242
2800508		0.261			0.261
2800509				0.031	0.031
2800548		0.16			0.16
2800600	0.453				0.453
2800601	0.213				0.213
2800602		0.618			0.618
2800604		0.296			0.296
2800605	0.519				0.519
2800607	0.492				0.492
2800608		0.034			0.034
2800611	0.413				0.413
2800630	0.205				0.205
2800639		0.093			0.093
2800641	0.1				0.1
2800650	0.3				0.3
2800653				0.619	0.619
2800654	0.179				0.179
2800662		0.166			0.166
2800720		0.382			0.382
2804000		0.104		1.676	1.78
2804012		0.243			0.243

Road Analysis Recommendations (Continued)					
ROUTE	Close	Decommission	Open -Increase Maint. Level	Open -Same Maint. Level	Total
2804027				0.297	0.297
2804028				0.742	0.742
2804066		0.175			0.175
2804073				0.063	0.063
2901000				5.304	5.304
2901011	0.298				0.298
2901013				2.241	2.241
2901016				0.406	0.406
2901017				1.082	1.082
2901018	1.103		0.87		1.973
2901020				1.158	1.158
2901021		0.208			0.208
2901022				0.531	0.531
2901023	0.325	0.173			0.498
2901024			0.206		0.206
2901034				0.183	0.183
2901041		0.606			0.606
2901051		0.177			0.177
2901096	0.117				0.117
2901099		0.316			0.316
2901103		0.645			0.645
2901107		0.276			0.276
2901108	1.552				1.552
2901109		0.086			0.086
2901128		0.244			0.244
2901134		0.385			0.385
2901138		0.164			0.164
2901139		0.412			0.412
2901141		0.52			0.52
2901142		0.179			0.179
2901143	0.173	0.943			1.116
2901144	0.563				0.563
2901146		0.396			0.396
2901147	0.583				0.583
2901148	0.332				0.332
2901183		0.159			0.159
2901185				1.412	1.412
2901198				0.134	0.134
2901207		0.324			0.324
2901208	0.915				0.915
2901212		0.218			0.218
2901216		0.257			0.257
2901218		0.144			0.144

Road Analysis Recommendations (Continued)					
ROUTE	Close	Decommission	Open -Increase Maint. Level	Open -Same Maint. Level	Total
2901219		0.452			0.452
2901224				0.062	0.062
2901225		0.29			0.29
2901236		0.197			0.197
2901241				0.437	0.437
2901242		0.475			0.475
2914000				6.688	6.688
2914012	0.35				0.35
2914013	1.156				1.156
2914014		0.374			0.374
2914015	0.9				0.9
2914016	1.234				1.234
2914017		0.474			0.474
2914018		0.39			0.39
2914020		0.476			0.476
2914021	2.749				2.749
2914022		0.944			0.944
2914024		0.184			0.184
2914025		0.077			0.077
2914100		0.216			0.216
2914101		0.085			0.085
2914102	0.66	0.145			0.805
2914103	0.508				0.508
2914104		0.766			0.766
2914105		0.353			0.353
2914108	0.632				0.632
2914109		0.391			0.391
2914110				0.195	0.195
2914111		0.786			0.786
2914112				0.15	0.15
2914114		0.242			0.242
2914115	1.139				1.139
2914117		0.369			0.369
2914118		0.162			0.162
2914119		0.849			0.849
2914120		0.361			0.361
2914122	0.947	0.262			1.209
2914123		1.034			1.034
2914124		0.405			0.405
2914130				0.493	0.493
2914131				1.078	1.078
2914181		0.644			0.644
2914184		0.377			0.377

Road Analysis Recommendations (Continued)					
ROUTE	Close	Decommission	Open -Increase Maint. Level	Open -Same Maint. Level	Total
2914186				0.619	0.619
2914187		0.285			0.285
2914188		0.181			0.181
2914200		0.174			0.174
2914201		0.227			0.227
2914202		0.2			0.2
2914203		0.624			0.624
2914210		0.259			0.259
2916000				8.307	8.307
2916013		0.248			0.248
2916014		0.095			0.095
2916023				0.177	0.177
2916026	0.698				0.698
2916027	1.535				1.535
2916028		0.876			0.876
2916029		0.414	0.943		1.357
2916030	0.501	0.401		0.043	0.945
2916032				0.054	0.054
2916033				1.059	1.059
2916034		0.284			0.284
2916035	0.363				0.363
2916036		0.723			0.723
2916037		0.12			0.12
2916038		0.093			0.093
2916039	0.754				0.754
2916040	0.577	0.279			0.856
2916042	0.244				0.244
2916043	0.23				0.23
2916044	0.78				0.78
2916045	0.384				0.384
2916049				0.145	0.145
2916051				0.616	0.616
2916062	0.913				0.913
2916065	0.716	0.5			1.216
2916066		0.643	0.349	0.729	1.721
2916067		0.404			0.404
2916068			0.502		0.502
2916069		0.314			0.314
2916070		0.044			0.044
2916074	0.257				0.257
2916086	0.437	0.587			1.024
2916087	0.451				0.451
2916088		0.155			0.155

Road Analysis Recommendations (Continued)					
ROUTE	Close	Decommission	Open -Increase Maint. Level	Open -Same Maint. Level	Total
2916090		0.3			0.3
2916091	0.466				0.466
2916092		0.4			0.4
2916093		0.113			0.113
2916102		0.014			0.014
2916122			0.61		0.61
2916125	0.718				0.718
2916200				0.094	0.094
2916202		0.223			0.223
2916203	0.415				0.415
2916205		0.15			0.15
2916206				0.088	0.088
2916207	0.221				0.221
2916216		0.333			0.333
2916217		0.104			0.104
2916219		0.262			0.262
2916220	0.306				0.306
2916441		0.132			0.132
2916442	0.578				0.578
2916443	0.137	0.189			0.326
2916444	0.421				0.421
2916445		0.283			0.283
2916446		0.308			0.308
2916447		0.264			0.264
2916448	0.298				0.298
2916449		0.39			0.39
2916450	0.358				0.358
2916451		0.703			0.703
2916453		0.286		1.572	1.858
2916454	0.43				0.43
2916457			0.043		0.043
2916464	1.834				1.834
2916670	0.543				0.543
2917000				5.211	5.211
2917012				0.235	0.235
2917014		0.9			0.9
2917020		0.051			0.051
2917100		0.15			0.15
2917101		0.348		0.766	1.114
2917103	0.355	0.174			0.529
2917400		0.171			0.171
2917405	1.145				1.145
2917406	0.292	0.328			0.62

Road Analysis Recommendations (Continued)					
ROUTE	Close	Decommission	Open -Increase Maint. Level	Open -Same Maint. Level	Total
2917409				0.316	0.316
2917410		0.116			0.116
2917411	0.11	0.334			0.444
2917413				0.387	0.387
2917414		0.207			0.207
3006000				1.257	1.257
3006011	0.551				0.551
3006012	0.397				0.397
3006013	0.156			0.182	0.338
3006015				3.353	3.353
3006016				2.695	2.695
3006017				0.723	0.723
3006018				1.03	1.03
3006020		0.289			0.289
3006022	0.236				0.236
3006023		0.133			0.133
3006024		0.09			0.09
3006104		0.437			0.437
3006110	0.274				0.274
3006111				0.212	0.212
3006112				0.789	0.789
3006113				0.201	0.201
3006114				1.645	1.645
3006115	1.046				1.046
3006118		0.035		0.471	0.506
3006119		0.034			0.034
3006120	1.392				1.392
3006121	0.32				0.32
3006122				0.139	0.139
3008000				3.499	3.499
3008011	0.722				0.722
3008012	1.846				1.846
3008013	1.047				1.047
3008014	0.529				0.529
3008015				0.576	0.576
3008020		0.074			0.074
3008021		0.457			0.457
3008022		0.257			0.257
3008024		0.132			0.132
3008026		0.14			0.14
3008100		0.307			0.307
3008103	0.277				0.277
3012000				2.354	2.354

Road Analysis Recommendations (Continued)					
ROUTE	Close	Decommission	Open -Increase Maint. Level	Open -Same Maint. Level	Total
3012012				0.087	0.087
3012019	0.562				0.562
3012022	0.682				0.682
3012023	0.737				0.737
3012024		0.365			0.365
3012028				0.01	0.01
3012067		0.171			0.171
3012107		0.223			0.223
3012112				0.721	0.721
3036000				0.375	0.375
3036011				0.738	0.738
3036012	1.337				1.337
3036013	0.277	0.329			0.606
3036108	1.155				1.155
3038000			7.455		7.455
3038011				2.367	2.367
3038012	0.165				0.165
3038013	0.48	0.116			0.596
3038014	0.53				0.53
3038015	0.114				0.114
3038016				2.121	2.121
3038017	0.418				0.418
3038018	0.276				0.276
3038019				0.999	0.999
3038020				0.301	0.301
3038021	0.267	0.679			0.946
3038022				0.013	0.013
3038023				1.027	1.027
3038024				0.929	0.929
3038026		1.158			1.158
3038027		1.356			1.356
3038028				1.293	1.293
3038029	0.901				0.901
3038030				1.276	1.276
3038031		0.397			0.397
3038033	0.176				0.176
3038034				1.143	1.143
3038041			3.344	0.178	3.522
3038045		0.028			0.028
3038046		0.184			0.184
3038050		0.126			0.126
3038051		0.263			0.263
3038052		0.304			0.304

Road Analysis Recommendations (Continued)					
ROUTE	Close	Decommission	Open -Increase Maint. Level	Open -Same Maint. Level	Total
3038053		0.131			0.131
3038055	0.217				0.217
3038056		0.283			0.283
3038057		0.105			0.105
3038061		0.713			0.713
3038062		0.12			0.12
3038064		0.409			0.409
3038065		0.366			0.366
3038066		0.19			0.19
3038070	1.245				1.245
3038085		0.127			0.127
3038093	0.837				0.837
3038101		0.205			0.205
3038102		0.498			0.498
3038105		0.139			0.139
3038114				0.52	0.52
3038115		0.47			0.47
3038116				0.922	0.922
3038118		0.145			0.145
3038119				1.039	1.039
3038120	0.365				0.365
3038123		0.335			0.335
3038124				1.515	1.515
3038125	0.663				0.663
3038126	0.332				0.332
3038127	0.433			0.405	0.838
3038188		0.625			0.625
3038190		0.253			0.253
3038191	1.515				1.515
3038192		0.286			0.286
3038193		0.527			0.527
3038200	0.887				0.887
3038201		0.354			0.354
3038202	0.719				0.719
3038205	0.719				0.719
3038207		0.497			0.497
3038208		0.243			0.243
3038210		0.201			0.201
3038211		0.253			0.253
3038213		0.108			0.108
3038237	0.609				0.609
3038238	0.262				0.262
3038239		0.68			0.68

Road Analysis Recommendations (Continued)					
ROUTE	Close	Decommission	Open -Increase Maint. Level	Open -Same Maint. Level	Total
3038240	0.2				0.2
3038242		0.191			0.191
3038243	0.156				0.156
3038244	0.179				0.179
3038245		0.111			0.111
3038246		0.44			0.44
3038247		0.576			0.576
3038248		0.251			0.251
3038268		0.573			0.573
3038270		0.344			0.344
3038302		0.23			0.23
3038326		0.351			0.351
3038328		0.222			0.222
3038332		0.075			0.075
3038385		0.368			0.368
3038421		0.154			0.154
3142501		0.331			0.331
3142502	0.628			0.081	0.709
3142503				0.249	0.249
3142508		0.272			0.272
3142509		0.237			0.237
7645020		0.102			0.102
7645030		0.076			0.076
7645031		0.347			0.347
7645622	0.109				0.109
7645623		0.12			0.12
7645624		0.157			0.157
7645651			0.224		0.224
7645656				0.437	0.437
NO_DATA	2.526	2.233		2.652	7.411
Grand Total	75.401	71.605	15.415	108.519	270.94