Appendix C: Monitoring Plan

The following pages show the monitoring plan for the unauthorized routes that are proposed for addition. If a resource is not mentioned below it is because that specialist will not be doing any additional monitoring for these roads under Travel Management other than what would normally be required in the Land and Resource Management Plan (LRMP).

Botany Monitoring Plan

Under each different alternative of the Modoc National Forest Travel Management EIS, there would be different botany concerns requiring differing monitoring needs.

Alternative 1

Alternative 1 provides for cross-country travel, which poses the possibility of effects upon all special status plants on the Forest. Although this would ideally call for monitoring of each plant occurrence as often as possible, this is impractical.

It is recommended, therefore, that the highest priority plants (Endangered and Threatened) would be monitored yearly to determine the effect of cross-country travel upon these plant occurrences. At present, there are 1 Endangered plant occurrence and 16 Threatened plant occurrences known on the Forest, so it should take about three weeks with a two-person crew (one of whom is either the Forest Botanist or Assistant Forest Botanist) to implement botany monitoring protocols upon these sites, including clerical work to appropriately document and file monitoring records. In addition, the plant occurrences in Table B-1 would be monitored, providing a representative sample of Alternative 1's effects upon special status plant populations. In total, this would require six weeks per year with a two-person crew to monitor 34 plant occurrences, including clerical work, and would thus require a budget of about $8,000 per year. Because of the possibility that new roads affecting special status plant occurrences could be created in any year, there should be no time limit on monitoring.

Alternative 2

Table B-1 shows most of the special status plant occurrences located within one hundred feet of roads proposed for addition under Alternatives 2 and 5, save those for *Iliamna bakeri*. *I. bakeri* was removed because it is an upland shrub, growing in conifer or scrub communities, which germinates immediately following fires, and is therefore not especially prone to severe damage, by motorized vehicle traffic. The other species represented here are smaller, and thus more likely to suffer damage by vehicles, and occur in more sensitive habitats, such as meadows, vernal pools, riparian areas, or soft gravelly soils. This leaves 7 rare plant species in 17 occurrences potentially affected by 20 proposed routes.

It is recommended that all 17 occurrences be monitored each year for four years. If no noticeable effects are identified on any of these sites within those four years, then the need to continue monitoring should be re-examined. This would require a two-person crew (one of whom is either the Forest Botanist or Assistant Forest Botanist) three weeks to implement botany monitoring protocols upon these sites, including clerical work to appropriately document and file monitoring records. This would require a budget of about $4,000 per year for four years; however, this regiment may be adjusted at the end of the first year based on findings and professional judgement.

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Alternative 3

No routes would be proposed for addition under this Alternative, and cross-country travel would be prohibited. Therefore, there would be no need for monitoring the effects of implementing this Alternative.

Alternative 4

The botany monitoring plan would be similar to that for Alts. 2 and 5 above, except that four less occurrences (*Calochortus longebarbatus* sites 78A and 82, *Dimeresia howellii* site 2, and *Gratiola heterosepala* site 9) would be monitored, as the routes that would affect them are not proposed for addition in this Alternative.

It is recommended, therefore, that all 13 occurrences be monitored each year for four years. If no noticeable effects are identified on any of these sites within those four years, then the need to continue monitoring should be re-examined. This would require a two-person crew (one of whom is either the Forest Botanist or Assistant Forest Botanist) three weeks to implement botany monitoring protocols upon these sites, including clerical work to appropriately document and file monitoring records. This would require a budget of about $4,000 per year for four years, since it would require about the same amount of driving and organizational time as monitoring for Alternatives 2 or 5; however, this regiment may be adjusted at the end of the first year based on findings and professional judgment.

Alternative 5

Under Alternative 5 no routes would be added that would impact any known Threatened, Endangered, or Sensitive plant species occurrences. Therefore, monitoring would only be needed for the nine known occurrences of Watch List plant species. Monitoring for these Watch List species occurrences (*Carex halliana, Dimeresia howellii, Gratiola heterosepala, Pogogyne floribunda*) would follow protocols similar to those described for Alternative 2.

It is recommended, therefore, that all 9 occurrences be monitored each year for four years. If no noticeable effects are identified on any of these sites within those four years, then the need to continue monitoring should be re-examined. This would require a two-person crew (one of whom is either the Forest Botanist or Assistant Forest Botanist) three weeks to implement botany monitoring protocols upon these sites, including clerical work to appropriately document and file monitoring records. This would require a budget of about $3,000 per year for four years. However, this regiment may be adjusted at the end of the first year based on findings and professional judgment.

Table C-1. Special-Status Plant Occurrences for Botany Monitoring

Species	Status	Occurrence Number	Acres	District Name	Route Number	Miles	Alternative		
							2	4	5
Buxbaumia viridis	Sensitive	1	.10	Warner Mtn.	BA473 BA474	.15 .11	X	X	
Buxbaumia viridis	Sensitive	4	.10	Warner Mtn.	BA406 BA407	.53 .62	X	X	
Buxbaumia viridis	Sensitive	7	.10	Warner Mtn.	BA472	.12	X	X	
Calochortus longebarbatus var. *longebarbatus*	Sensitive	20	1.3	Big Valley	TR310	.06	X	X	
Calochortus longebarbatus var. *longebarbatus*	Sensitive	77	186	Devil's Gdn.	JW2135	.13	X	X	
Calochortus longebarbatus var. *longebarbatus*	Sensitive	78A	31	Devil's Gdn.	BA143	.50	X		
Calochortus longebarbatus var. *longebarbatus*	Sensitive	82	3.3	Devil's Gdn.	ML432	.21	X		
Carex halliana	Watch List	7	29.2	Doublehead	BA2204	.09	X	X	X
Dimeresia howellii	Watch List	2	.6	Warner Mtn.	BA497	.22	X		X
Eriogonum umbellatum var. *glaberrimum*	Sensitive	6	1	Warner Mtn.	SS551	.10	X	X	
Gratiola heterosepala	Watch List	9	357	Devil's Gdn.	BA173	.08	X		X
Gratiola heterosepala	Watch List	13	51.4	Devil's Gdn.	ML584	.10	X	X	X
Gratiola heterosepala	Watch List	16	.5	Doublehead	BA55	.17	X	X	X
Gratiola heterosepala	Watch List	18	1.6	Doublehead	BA2217	.22	X	X	X
Pogogyne floribunda	Watch List	4	1.6	Doublehead	BA71	.97	X	X	X
Pogogyne floribunda	Watch List	10	8.2	Doublehead	ML299	2.27	X	X	X

Species	Status	Occurrence Number	Acres	District Name	Route Number	Miles	Alternative		
							2	4	5
Pogogyne floribunda	Watch List	29	24	Devil's Gdn.	SS312	.86	X	X	X

The Modoc National Forest recently issued the Noxious Weed Treatment Project Final Environmental Impact Statement (NWTPFEIS; R5-MB-167; Aug. 2008). As part of the NWTPFEIS, we will monitor noxious weeds on the Forest as part of the Early Detection – Rapid Response and treatment effectiveness monitoring. The NWTPFEIS, as a forest-wide weed monitoring and treatment project, covers all areas under consideration in the Motorized Vehicle Travel Management project.

Heritage Resources Monitoring Plan

As identified in the Modoc National Forest Travel Management EIS under Heritage Resources under Alternatives 2, 4, and 5, it has been recommended to relocate two previously recorded archaeological sites to see if they are actually within the affected area of the route designation and monitor their condition, and to monitor another 242 archaeological sites that have been identified as being within route designation corridors. These efforts are designed to enable a better determination of the affects, if any, upon these cultural resources by route designation. The effects may be the result of the continuing use of these routes after designation. Thus, there is a total of 244 archaeological sites that require some level of relocation and monitoring.

It is recommended that this process be spread over a three-year period.

First, both of the archaeological sites marked for relocation should be relocated within this time period. If either of these sites is found to be within the designated route corridor it would have a new archaeological site record completed and a baseline condition assessment made a part of that record. If a site is determined to be outside of the route corridor, its updated site record may be deferred to a later date.

Second, a sample of the 242 archaeological sites designated for monitoring should be examined each year. It is recommended that a 10 percent sample be selected—or 24 sites per year for three years. If no noticeable effects are identified on any of these sampled sites, then the need to continue monitoring should be reexamined.

It is anticipated that given the relatively light use that most of the designated routes exhibit at present, if use does not increase significantly as a result of designation, that continued light use should have little noticeable effect on these sites.

Hydrology and Soils Monitoring Plan

Monitoring of soils and hydrology resources will occur on unauthorized routes added to the Forest transportation system, using the Best Management Practices Evaluation Program. See Appendix G , Water Quality Monitoring Plan.

Aquatics Monitoring Plan

Monitoring of aquatic resources will occur on unauthorized routes added to the Forest Transportation System utilizing the Best Management Practices Evaluation Program. In areas that have the greatest potential for impacts to aquatic species, monitoring of fine-grained sediments would be implemented using Stream Condition Inventory protocols. Sites monitored may vary from year to year.

Facilities Monitoring Plan

Condition Surveys are performed on all maintenance level 3,4, and 5 roads every 5 years, with approximately 20 percent completed each year.

Condition Surveys are performed on maintenance level 1 & 2 roads based on a random sample generated by the Washington Office. It is a relatively small sample. All of the roads that are proposed for addition will be classified as level 2.

In addition to the formal condition surveys, we monitor road conditions continually as they are driven for other purposes. As problems are identified, they are addressed as resources allow.

There will be no additional monitoring resulting from Travel Management; however whatever roads are added to the system will be monitored based on the guidelines listed above.

Wildlife Monitoring Plan

Wildlife monitoring on the routes added to the system will be done annually and will begin at the rate of 15 routes per year. However, this regiment may be adjusted at the end of the first year based on findings and professional judgment.

Recreation Monitoring Plan

There is no monitoring proposed for recreation.

Visual Resources Monitoring Plan

There is no monitoring proposed for visual resources.