Appendix H: Resource Monitoring Plans

Water Quality Monitoring Plan

The Water Quality Monitoring Plan presented here was developed to meet state water quality objectives as identified by the State of California Regional Water Quality Management Plan, which is intended to protect and maintain the identified beneficial uses of water flowing from NFS land. Best Management Practices (BMPs) were developed specifically for the purpose of meeting all state water quality objectives. The BMP (Practice: 4-7) for Off-Highway Vehicle (OHV) use is described below. Although the BMP text is included verbatim below, note that BMP practices for "OHV" apply to all motor vehicle use on motorized trails and any cross-country use.

Water Quality Monitoring of Off-Highway Vehicle (OHV) Use According To a Developed Plan

Objective: To provide a systematic process to determine when and to what extent OHV use will cause, or is causing adverse effects on water quality.

Explanation: Each Forest OHV plan (Lower Trinity and Mad River Motorized Travel Management EIS & ROD) will:

- Identify areas or routes where OHV use could cause degradation of water quality.
- Establish baseline water quality data for normal conditions as a basis from which to measure change.
- Identify water quality standards and the amount of change acceptable.
- Establish monitoring methods and frequency.
- Identify controls and mitigation appropriate in management of OHVs.
- Restrict OHV use to designated routes.

Implementation: Monitoring results are evaluated against the OHV plan objectives for water quality and the LRMP objectives for the area. These results are documented, along with the actions necessary to correct identified problems.

If considerable adverse effects are occurring, or are likely to occur, immediate corrective action will be taken. Corrective actions may include, but are not limited to, reduction in the amount of OHV use, signing, or barriers to redistribute use, partial closure of areas, rotation of use on areas, closure to causative vehicle type(s), or total closure, and structural solutions, such as culverts and bridges. Closure is accomplished through authority of the Forest supervisor.

Water Resources Monitoring Plan

- Over the next 10 year period, monitor and evaluate at least 20% of routes added to the NFTS annually which were identified as high risk. Also monitor at least 20% of routes identified as moderate risk routes located on earthflows. Monitoring is predicated on available funding.

- The recommended protocol for monitoring of newly added routes is the Region 5 OHV Trail-Monitoring Protocol, commonly referred to as the "Green-Yellow-Red". This protocol was developed in Region 5 specifically to evaluate OHV route impacts to soil and water resources (See Table H-1).

Table H-1. Green-Yellow-Red Descriptions (Soil and Water Resources)

	Green Condition		Yellow Condition		Red Condition
G1	**Water control** is provided by enough functional waterbreaks to divert runoff from the trail before it has the volume and velocity to cause erosion. Where present, rills occur on less than 1/3 of the distance between waterbreaks.	Y1	Waterbreaks do not divert all runoff from the trail because they are nearly filled to capacity and/or are partially breached, or spaced too widely. Where present, rills occur on more than 1/3 of the distance between waterbreaks	R1	Waterbreaks no longer divert runoff from the trail because they are full and/or have been breached, or are absent or spaced too widely. Gully or rill erosion may be present.
G2	No accelerated **erosion off-trail.** Runoff at waterbreak outlets and on slopes adjacent to the trail is dispersed effectively. All sediment is filtered by vegetation or litter.	Y2	Rill erosion and/or sediment deposition occurs at waterbreak outlets and/or on slopes adjacent to the trail. All sediment is filtered or deposited before it reaches a watercourse with a scoured channel.	R2	Gully erosion occurs at waterbreak outlets or on slopes adjacent to the trail and/or sediment is transported to an intermittent or perennial watercourse.
G3	**Sediment traps**, where present, are all functional and have adequate capacity for at least one season of use. Trapped sediment can be retrieved during normal maintenance.	Y3	Where present, most sediment traps are full or nearly full, but still functional. Most trapped sediment can be retrieved during normal maintenance.	R3	Where present, sediment traps have been breached and have a plume of sediment and/or a gully below the breach. Most sediment cannot be retrieved.
G4	**Tread wear** is minimal. Tread is generally incised less than 6 inches. Tread wear is generally evident on less than 1/3 of the distance between waterbreaks or on less than 1/3 of the tread width.	Y4	Tread wear is evident. Tread is generally incised 6 to 12 inches and tread wear is generally evident on more than 1/3 the distance between waterbreaks and on more than 1/3 of the tread width. If present, "whoops" or "stutterbumps" and high berms are well-developed.	R4	Tread wear is severe. Tread incision is generally greater than 12 inches deep and tread wear is generally evident on the entire distance between waterbreaks. If present, deep "whoops" and "stutterbumps" force traffic off the trail.
G5	**Tread width** is generally no greater than 1.5 times the design width for the designated use.	Y5	Tread width is generally greater than 2 times the design width for the designated use and appears to be increasing.	R5	Tread width is generally greater than 3 times the design width for the designated use and has caused or is causing severe resource damage.

	Green Condition		Yellow Condition		Red Condition
G6	Unauthorized **user-created trails** are limited to single tracks or single passes generally less than 300 feet long. Tracks are not eroded and have little effect on water control.	Y6	Unauthorized user-created trails are common, well-defined, and generally greater than 300 feet long. Water control is inadequate. Areas with resource damage can be revegetated/restored with ordinary effort.	R6	Unauthorized user-created trails have caused severe resource damage such as gully erosion, eroded hill climbs, or extensive damage to vegetation and/or sensitive habitat. Restoration will usually require a major effort (e.g., large equipment, topsoil replacement, etc.)
G7	**Approach to watercourse crossing** is short and has a gentle gradient. Tread is stable, shows little evidence of erosion, and is at design width. No damage to riparian vegetation outside the tread.	Y7	Approach to watercourse crossing is short and steep or long and gentle. Tread may show some evidence of erosion and may show evidence of widening. Minimal damage to riparian vegetation.	R7	Approach to watercourse crossing is both steep and long and/or tread is unstable and shows evidence of accelerated erosion. Approach may be widening and damaging riparian vegetation.
G8	**Routes on earthflows and sensitive terrain** show no signs of mass wasting (cracking or slumping of the travel surface). Drainage structures (waterbars etc.) are oriented properly and are effectively dispersing water.	Y8	Routes on earthflows have altered travel surfaces. Drainage structures are not functioning because they are not at an effective orientation to the slope. This is correctable with routine maintenance. Travel surfaces do not show any signs of mass wasting (slumping or cracking).	R8	Routes on sensitive terrain have signs of mass wasting on their travel surface (slumping, cracking) or are missing sections due to slope failures which have already occurred.

Botanical Resources Monitoring Plan

The Botanical Resources Monitoring Plan was developed to meet objectives of protecting the unique values for which the Lassics Botanical Area on the Mad River Ranger District and the Horse Mountain Botanical Area on the Lower Trinity Ranger District (USDA 1995).

Objective: To provide a systematic process to evaluate if motorized recreation within 100 feet of unauthorized routes added to the National Forest Transportation System (NFTS) is impacting serpentine vegetation or creating new routes that could impact Sensitive plant species (see Table 3.8-4).

Location: The following routes within the Lassics Botanical/Geologic Special Interest Area and Horse Mountain Botanical Special Interest Area will be monitored.

Table H-2. Routes within Lassics Botanical and Geologic Special Interest Area and Horse Mountain Botanical Special Interest Area that will be Monitored

Route	Length (miles)	Botanical Area
JM714	0.06	Horse Mtn.
TH02	0.08	Horse Mtn.
JM-2085	0.26	Lassics
JM-892	0.02	Lassics
JM-894	0.15	Lassics
TH108	0.18	Lassics
TH267	0.20	Lassics
TH278	0.05	Lassics
TH279	0.12	Lassics
TH281	0.05	Lassics

Timing: Monitoring will commence within one year of the addition of the routes to the NFTS in order to obtain baseline information on current conditions adjacent to routes. Monitoring shall occur in late Fall, following hunting season. Monitoring shall occur every other year thereafter and end on the ninth year.

Methodology: If disturbance off the route is noted it will be quantified as to severity and extent. Severity will be described in terms of impacts to adjacent vegetation. The extent of the disturbance will be recorded via a GPS and the square footage of area disturbed will be recorded. The disturbed area will be photo documented.

Implementation: If adverse effects are noted, or are likely to occur, corrective action will be taken. Corrective actions may include, but are not limited to, signing, barriers, closure to causative vehicle type(s), or removal of the route from the Motor Vehicle Use Map (MVUM). Botanical resource data found during monitoring will be entered into Natural Resource Information System, a national database.

Protocol: If Sensitive or Survey and Manage species are found on routes currently subject to mitigation(s), and hence not on the MVUM, those routes will remain off of the MVUM until corrective action is taken. If Sensitive or Survey and Manage species are found on routes that are on the Motor Vehicle Use Map, they will be taken off of the MVUM until corrective action is taken. The recommended protocol for monitoring of newly added routes is the Region 5 OHV Trail-Monitoring Protocol, using the Green-Yellow-Red indicators.

Table H-3. Green-Yellow-Red Descriptions (Botanical Resources)

Green Condition	Yellow Condition	Red Condition
There is no evidence of disturbance off of the tread surface of the route.	There is some evidence of disturbance in the immediate vicinity of the tread surface where vehicles have pulled over to let others pass.	There is evidence of disturbance beyond the immediate vicinity of the tread surface and vehicle disturbance obvious to where it invites others off the route.

Noxious Weed Monitoring Plan

The Noxious Weed Monitoring Plan was developed to meet the objective of preventing the introduction and spread of priority noxious weeds from existing weed infestations located on unauthorized routes proposed for addition to the NFTS. Priority weeds are listed in the table below.

Location: The following noxious weed sites on associated routes will be monitored (See Table 3.9-5 in the FEIS):

Table H-4. Noxious Weed Sites to be Monitored

Route ID	Weed Species	Weed Site ID
JM-2079	yellow star-thistle	53CESO08NRM0201PFB25 05105401PFB27 05105402PFB162 05105402PFB160
JM-2080	diffuse knapweed	05105401PFB27
JM-2090	yellow star-thistle	53CESO08NRM022 53CESO08NRM024 53CESO08NRM025 53CESO08NRM023
JM-2112	yellow star-thistle	05105498PFB57
JM-2123	yellow star-thistle	05105498PFB57
JM858	yellow star-thistle	54CESO2006001
MM790	scotchbroom	53CYSC08NRM003a 53CYSC09JDM02
MM791w	French broom	05105303CCS001
MM813	scotchbroom	53CYSC08NRM005
MM815	yellow star-thistle	05105301PFB52
MM817	French broom scotchbroom yellow star-thistle	53GEMO08NRM007 53CYSC08NRM00a 53CESO08NRM006b
MM833	French broom	53GEMO08NRM007
MM836	yellow star-thistle	53CESO08NRM009
MM838	yellow star-thistle	05105398PFB18 53CESO08NRM09 53CESO08NRM010 53CESO08NRM011
MM839	yellow star-thistle	53CESO08NRM012 53CESO08NRM013 53CESO08NRM014 53CESO08NRM015
MM842	yellow star-thistle	53CESO08NRM016
MM850	yellow star-thistle	53CESO08NRM018 05105398PFB19
MM852	yellow star-thistle	05105398PFB19
PK804	scotchbroom	05105301PFB88
PD857x	yellow star-thistle	05105498PFB57

Route ID	Weed Species	Weed Site ID
TH227	diffuse knapweed	05105401PFB62 05105498PFB63 05105498PFB64 05105498PFB66 05105403CLS001 05105404CCS002
TH223	diffuse knapweed	05105401PFB62 05105498PFB63 05105498PFB64 05105498PFB66 05105403CLS001 05105404CCS002
TH349	yellow star-thistle	05105498PFB57

Timing: Monitoring will commence at the end on one full growing season following treatment in order to determine if weed removal treatments have been effective. Monitoring shall occur in late Fall, following the first rains. Monitoring shall occur every year thereafter for up to four years.

Methodology: Priority will be given to sites treated. Rangeland General Forms (weed inventory forms) shall be completed for each site visited to quantify weed species present.

Implementation: If weeds are found to be present at sites noted above corrective action will be taken. Corrective actions are described in the following table. Weed infestation data found during monitoring will be entered into NRIS, Natural Resource Information System, a national database and weed treatment data will be entered into FACTS, the Forest Activity Tracking database.

Table H-5. Corrective Actions for Noxious Weeds

Weed Species	Mitigation/Treatment
French broom	Remove all plants in their entirety from travel way and turnouts at all sites associated with each infested route year one before placing route on the Motor Vehicle Use Map in year two. Treatment shall occur twice during the year, once early before seed set and a second time to capture any seedlings emerging later in the season.
scotchbroom	Remove all plants in their entirety from travel way and turnouts at all sites associated with each infested route year one before placing on the Motor Vehicle Use Map in year two. Treatment shall occur twice during the year, once early before seed set and a second time to capture any seedlings emerging later in the season.
diffuse knapweed	Remove all plants in their entirety from travel way and turnouts at all sites associated with each infested route in year one. Treatment shall occur twice during the year, once early before seed set and a second time to capture any seedlings emerging later in the season. Travel way and turnouts must be field verified as weed free at the end of the growing season in year two with effective treatment (no diffuse knapweed the year after last treatment) before placing associated routes on the Motor Vehicle Use Map.
yellow star-thistle	Remove all plants in their entirety from travel way and turnouts at all sites associated with each infested route. Treatment shall occur twice during the year, once early before seed set and a second time to capture any seedlings emerging later in the season. Travel way and turnouts must be field verified as weed free at the end of the growing season year two with effective treatment (no yellow star-thistle the year after last treatment) before placing associated routes on the Motor Vehicle Use Map.

Protocol: If priority weed sites are found on routes currently subject to mitigation(s), and hence not on the MVUM, those routes will remain off of the MVUM until introduction or spread is mitigated from moderate or high to low. If priority weed sites are found on routes that are on the MVUM, they will be taken off of the MVUM until introduction or spread is mitigated from moderate or high to low.

Table H-6. Green-Yellow-Red Descriptions (Noxious Weeds)

Green Condition	Yellow Condition	Red Condition
There is no evidence of priority noxious weeds on designated routes.	Due to proximity there is potential for priority noxious weeds to spread from system roads to designated routes.	There is evidence of priority noxious weeds on routes.

Port Orford Cedar Monitoring Plan

Port Orford cedar monitoring will be two-fold:

1) Annual monitoring for the illegal use (outside allowed season of use) of designated unauthorized routes rated as high risk of introducing *Phytophthera lateralis* into POC stands; and

2) Monitoring POC stands within 300 feet of routes for signs of *Phytophthera lateralis* if illegal use is identified.

Cultural Resource Monitoring Plan

A Cultural Resource Monitoring Plan was developed as a Standard Resource Protection Measure allowable under the Off Highway Vehicle Programmatic Agreement (OHV PA) for cultural resources and may be used without additional consultation with SHPO, ACHP, or others. The plan was developed specifically to assess the condition of resources within or nearby APEs (areas of potential effects.)

1. All route Use Levels are low.
2. All of the five sites designated At-Risk will be monitored over a two-year period. During the third year, the Forest will reassess the need to continue monitoring the At-Risk sites.
3. All of the remaining sites designated to be monitored and Not-At-Risk will be monitored once during the first two years (a total of two sites.) During the third year, the Forest will revise the monitoring plan if results indicate that those specific areas no longer require prescribed monitoring. If so indicated, monitoring will then be subsumed under the OHV PA.
4. Where monitoring for condition assessment indicates effects are ongoing, appropriate resource protection, or standard treatment measures will be developed to minimize or eliminate effects. The following year, there will be monitoring of the effectiveness of such measures. After two years, assessment will be made for continued monitoring. (See Table 3.11-15 in the FEIS)