Appendix D-Follow-up Actions

Resource	Monitoring Driver	Follow-up Actions
Air Quality	*D-AQ-1*	Continue to monitor trends in air quality related parameters as a number of new industrial sources come on line over the next few years
Cooperation Air Quality Cooperation	*D-CM-1*	In 2006, continue interviews of Forest Service Staff to ensure their work with partners is captured.
		Update the key contacts database to reflect all existing partners and potential partners.
		Formalize informal partnerships through Memorandums of Understanding and other Agreements.
Fire	*G-WS-8*	Table G-WS-8. Reach agreement on "where appropriate" statement in Activity Limit Code E applies and does not apply. Supporting rationale. (1) Difficult to retain or return slash following prescribed burning on these ELT's. Monitoring shows that to date PB's have not affected soils. Also burning returns nutrients back to the site. 2) Returning/retaining slash after every harvest increases fire risk near private property, recreation sites, or high use roads. It is difficult to demonstrate fuels reduction when 2-4' of slash remains following harvesting. . See SOILS O-WS-10.
	O-ID-2. .O-ID-4	Increase the use of prescribed fire (underburning) in the red and white pine types. Increase mechanical treatments where feasible.
	O-ID-3	Use Fire Regime Condition Class and Prioritization exercise with other resource groups to determine highest priority areas for treatment
	S-VG-4	FIDT interpret S-VG-4 & G-VG-2 to determine flexibility to diverge from 60% canopy closure within patches 100 ac or greater. Supporting rationale. This standard precludes fuel treatments that may affect the red and white pine over story within stands below 60% canopy closure. Ramifications of this standard include: (1) It is contrary to historic disturbance patterns that were necessary to establish & maintain pine ecosystems. (2) May limit implementation of hazardous fuels reduction projects in areas of heavy under story fuel accumulation. (3) May limit pine regeneration. (4) May limit under story vegetative diversity.
Insects and Disease	*36 CFR 219.12(k)(5)(iv).*	-Proposed 2006 "Slow-the-Spread" project in Cook County (pheromones) – Implement as proposed to include post treatment surveys to monitor effectiveness. -Gypsy moth trapping program – continue to coordinate with Minnesota Dept of Agriculture in their annual, state-wide program to monitor gypsy moth population trends. -Annual aerial insect/disease surveys (conducted by USFS State/Private Forestry) – continue to use this tool in determining insect/disease infestation levels and trends.
	36 CFR 219.12 (k)(5)(iv).	-Provide recurring training, as needed, to field personnel in the ecological roles of insect/disease as well as tools in recognizing potentially unnatural populations/outbreak conditions. Note: The Superior has a 2-day training for FS personnel scheduled in June, 2006. -Include insect/disease concepts in all environmental education efforts.
	O-ID-1	Actively incorporate insect/disease concepts into all vegetative management prescriptions.
	O-ID-1	Implement Forest Plan direction that provides for healthy, sustainable forest conditions which limits the potential for damage from fires, insects and diseases.

Resource	Monitoring Driver	Follow-up Actions
NNIS	*O-WL-37 (Terrestrial)*	In 2006, continue monitoring BWCAW Fuels treatment units, Virginia treatment units, Tomahawk treatment units, Silver Island units, Dunka treatment units, Inga South Treatment units.
	O-WL-37 (Aquatic)	There is a need to continue developing standardized monitoring protocols for spiny water flea and rusty crayfish in 2006. Monitoring in 2006 will include infested waters, adjacent water bodies, and establishment of monitoring sites for early detection and rapid response.
		There is a need to increase inter-agency and inter-governmental aquatic NNIS monitoring efforts. The SNF will seek additional monitoring partners in 2006 including Quetico Provincial Park, Voyageurs National, Park, and the Nature Conservancy.
		Monitoring protocol developed for spiny water flea – Will be completed in 2006. Continue monitoring for two species.
Public Health	O-PH-1 & O-PH-4	Because this monitoring is required by law/policy, all three types of water testing will continue to be carried out at the indicated locations, frequencies, etc. in future fiscal years. Procedures used in FY 05 to follow-up on PWSB sampling results yielding positive test results for total coliform meet requirements as spelled out in the Federal and State Safe Drinking Water law and USDA-FS policy. Those procedures will continue to be used in future years.
	PWSB Monitoring	Improve quality control in the sample collection process for routine monthly PWSB samples. For example, make sure that employees assigned the job of sample collection are adequately trained to guard against contamination while filling the sample bottles. Supporting rationale: Positive test results for total coliform observed in FY 05 (and in previous years) most likely arise from improper sample collection methods rather actual contamination of the water supply itself.
	S-PH-1	Interpret S-PH-1 language. Supporting rationale. Clarify what type of public health threat (address hazardous materials, drinking water, wastewater ect) the standard is intended to mitigate.
Recreation Motor Vehicles	36 CFR 219.21g	Ensure Road Management Decisions Reflect MA Direction. (Example: cRNA's SPNM)
	D-RMV-2	Issue correction to Forest Plan glossary, replace existing ORV definitions with national definitions, as per Washington Office Plan Appeal direction.
		Ensure public forest ATV maps reflect accurate inventories
	O-REC-1	Begin to Implement Recreation Facilities Master Plan.
Scenic Resources	*D-SC-1*	Need to prepare at least one corridor management plan in 2006.
		Need to field check effectiveness of project design features & mitigation measures when projects begin to be implemented.
Socio-Economic	D-SE-3	Determine appropriate monitoring data needs and methods to indicate trends for how forest management activities are maintaining the desired characteristics of the areas and species of interest (traditionally and culturally) as identified in research and/or by interested communities and individuals. Chapter 4 of the 2004 Forest Plan indicates a 1-5 year measurement and evaluation/reporting frequency.
	D-SE-1 and 2, O-SE-1, O-SE-3,)-SE-4, O-SU-2, O-SU-3, O-SU-4 and O-SU-5	Determine appropriate monitoring data needs and methods to indicate trends showing to what extent does the Forest provide commodity resources and non-commodity opportunities in an environmentally acceptable manner that contribute to the social and economic sustainability and diversity of local communities. Chapter 4 of the 2004 Forest Plan indicates 5 year measurement and evaluation/reporting frequency.

Resource	Monitoring Driver	Follow-up Actions
Soils	D-WS-12; & 36 CFR 219.12k2	FIDT project regarding nutrient sensitive ELT 18: complete guidance by end of July 06. Relates to Land Suitability Class.
	D-WS-12;& 36 CFR 219.12k2	BWCAW EIS—originally planned on 10%, implementation monitoring, moves into effectiveness monitoring..
	O-WS-9	Monitoring on ELT 18 related to Trail EIS needs. Monitoring designed specifically for ELT 18, ability to regenerate, and productivity issue.
		Develop or revise AML's used in FEIS that will address the landscape level/forest wide monitoring (ties to analysis done for Plan)
	O-WS-10	Emphasize that monitoring needs to include all activities that has soil disturbance whether it is for plant communities, recreation, engineering, or etc.
	All	Note: There needs to be more "integration" in our monitoring report-- ELTs/LTAs could be tied more to veg component (specifically, land suitability class).
	Soils Table G-WS-8	FIDT to discuss how to best integrate & interpret soil S&G's when implementing vegetation and fire treatments. Supporting rationale. This standard precludes fuel treatments that may affect the red and white pine over story within stands below 60% canopy closure. Ramifications of this standard include: (1) It is contrary to historic disturbance patterns that were necessary to establish & maintain pine ecosystems. (2) May limit implementation of hazardous fuels reduction projects in areas of heavy under story fuel accumulation. (3) May limit pine regeneration. (4) May limit under story vegetative diversity.
Timber	(36 CFR 219.12(k)[5][ii].	Unsuitable lands (such as inoperable, steep slopes, ELT 18's, etc) must be addressed as part of the analysis and implementation.
	Forest Plan TABLE APP-D3 p.D-3 and EIS Table 2-9 p2-31.	Current NEPA analyses (initiated since 7/2004) – insure integration and implementation of proper mix of treatments by management area; monitor during implementation for adaptive management opportunities. Continue to track cumulative treatments on a Forest-wide basis
	(36 CFR 219.12(k)[5][ii].	Accomplish required 10-year review of all non-suitable lands to confirm appropriate classification. Change classifications based on new information/data (such as improved soils classification, changes due to legislative actions, etc). Track changes in suitability in both directions i.e., non-suitable lands that are now suitable and previous suitable lands that are now non-suitable. Next scheduled 10-year review in 2014. Insure appropriate land suitability classification review during project/mid-level analyses; make needed changes as the opportunity allows and document/track in FACTS/FSVeg databases.
	(36 CFR 219.12(k)[5][i]	Monitor progress towards adequate restocking through 1st and 3rd year survival/stocking surveys. Identify and re-treat lands which are on a trajectory away from meeting minimum standards and re-evaluate/re-treat to insure compliance by 5 years after final harvest. Document in FSVeg/FACTS databases.
	(36 CFR 219.12(k)[5][iii].	Evaluate, both during project analysis and during implementation, whether maximum size limits for harvest areas are effective in meeting Forest Plan/ecological objectives. Document through the Forest IDT. Adaptive management.

Resource	Monitoring Driver	Follow-up Actions
Timber *Cont'd*	Objective O-VG-20 & 21	Current NEPA analyses (initiated since 7/2004)-insure implementation, where conditions allow, of large patch openings (300-1000 ac); proactively manage temporary forest openings to provide for increased average size while reducing amount of "edge" and retaining a range of sizes/edge habitat. Monitor during implementation for adaptive management opportunities. Continue to track cumulative treatments on Forest-wide basis.
	Obj O-VG-20 & 21	Analyze and track by individual NEPA analysis and FACTS database; monitor progress and effectiveness during the year to facilitate needed changes in course/direction so as to meet Forest Plan objectives.
Transportation	*O-TS-3.*	Monitor closure and subsequent use of new OML 1 roads.
Tribal Rights & Interests	O-TR-3	Districts and SO need to track and document contacts and management actions relating to the objective of planning for and allowing the continued free personal use of these products by band members: consultation, agreements and project implementation, and meetings. This would allow for consistent monitoring and evaluation of the status of tribal and Superior National Forest interactions.
		The Forest also has the opportunity to pursue working with the 1854 Authority resource specialist and other tribal specialists to accomplish monitoring relating to common resource interests and treaty rights.
Vegetation	D-VG-1 to D-VG-8	Since desired conditions are long-term and not easily measured (FP, Page 1-7), detecting impediments to reaching desired conditions is difficult during a first year of Forest Plan implementation. However, overall, during this first year of implementation, projects generally are promoting conditions that should trend the Forest toward desired conditions. For example, Landscape Ecosystem (LE) vegetation conditions are generally are trending toward objectives and associated standards and guidelines are being met. Where LE vegetation conditions are not trending toward objectives, no obvious factor or problem with implementability can be singled out in this first year that would drive either a Forest Plan amendment or reanalysis. It will continue to be important to annually measure and evaluate vegetation and LE objectives (FP, p. 2-55).
	O-VG-1-3,9,13,14 & 16	Forest composition, structure, age. Continue to monitor conditions. Efforts to improve forest inventory should continue.
	O-VG-1 O-VG-6 to -8 O-VG-15	Seek opportunities to promote within-stand diversity. Supporting rationale. Forest vegetation within-stand diversity. No management recommendations other than continuing to Managers should continue to expand their knowledge of the ecological conditions of native ecosystems, including expanding knowledge of Native Plant Community classification.
	O-VG-12.	To implement this Forest Plan objective for seeking to reestablish adequately stocked stands to address timber management objectives while maintaining an adequate representation of brushy or sparsely-treed habitats, a more comprehensive Forest-wide inventory is needed. Managers should consider plan objectives and information on range of natural variability of native ecosystems to form a better understanding of how to implement and monitor this objective.
Watershed	O-WS-1	Long-term monitoring at established reference reach sites and stream cross sections should occur at established random sites at least once every 3-5 years. Need to include water chemistry data collection in 2006 and in the future.
	O-WS-2 (c)	Continue establishing stream reference reach monitoring sites. Need to include water chemistry data collection in 2006 and in the future. Need to formally establish lake and wetland monitoring sites as well as monitoring protocols.

Resource	Monitoring Driver	Follow-up Actions
Watershed *Cont'd*	O-WS-6	Road/stream crossing and stream habitat restoration projects should be monitored at least once every 3-5 years. Need to institute post-project monitoring to evaluate success/effectiveness of each project. Protocols initiated in 2005 will be further refined and adopted in 2006 and 2007.
	O-WS-2(a), 3.4 & 5	See Management Recommendation below for riparian vegetation management
	D-AQ-1 & 3	(1) Annually, continue to add to the mercury-in-fish and precipitation chemistry databases to detect/assess trends. (2) Continue to monitor at intervals of no more than five years to detect trends in mercury levels in loons—next sample collection should be in the year 2010 or sooner..
	O-WS-2(b)	Initiate monitoring program to evaluate road/stream/wetland crossing improvement projects in 2006. This monitoring program would utilize the Coarse Level Culvert Survey Protocol and established stream cross sections and longitudinal profiles. A formal monitoring protocol should be developed in 2006-2007. Expand the systematic process used to assess road and trail crossings to address wetland crossings that does not involve streams. Include "streamless" crossings in the identification of priority locations for crossing improvement projects
	O-TS-4 & 5	Monitor compliance with FP standards and guidelines as well as mitigation measures for individual road and trail construction projects. Work with SNF engineering, timber, watershed, and fisheries and aquatics staff to ensure that project designs and construction contracts include appropriate design criteria. Report on individual project compliance annually. A formal monitoring protocol should be developed by watershed, fisheries and aquatics, and engineering staff in 2006-2007.
	O-WS-8	Update the upland young/upland open analysis for the entire Forest every three years. Supporting rationale. Existing information is 10-12 years old and should be revised to assist with required NEPA watershed/fish and aquatics analyses. This process should be initiated in 2006 or 2007. Forest Hydrology, Fisheries and GIS staff should cooperate to accomplish this task.
	Proactive Riparian Management Objectives, S&G's	Ensure that vegetation management NEPA decisions include proactive riparian management, particularly in the near-bank zones. Supporting rationale. To fully implement the intent of the Forest Plan and ROD, the Forest must move away from mitigative management and toward proactive riparian management.
	Multiple WS standards and guideline	Design a systematic monitoring protocol to evaluate implementation of the Watershed standards & guidelines. Supporting rationale. Highest priority for better tracking should be on WS direction that varies from the MFRC site level guidelines. Forest Hydrology, Fisheries, Soils, & Timber Administration should cooperative to develop these.
WL. MIH. Aquatic	O-WL-36	Long-term monitoring should occur at established stream reference reaches every 3-5 years based on a randomized selection protocol.
		Water chemistry variables/measurements should be included in stream reference reach protocol.
		Monitoring associated with the Dark River Habitat Restoration Project should occur every 3-5 years beginning in 2006.
		Monitoring associated with other stream and lake habitat restoration projects should be implemented during and following project completion and then every 3-5 years following.
		Need to continue coordinating with State and Tribal agencies to conduct fishery assessments as well as share fishery information.

Resource	Monitoring Driver	Follow-up Actions
WL. MIH. Terrestrial	O-WL-31	Develop habitat model and implement surveys for goshawk. Supporting rationale. To implement and monitor progress toward management of habitat needs for 20-30 pairs of northern goshawk. habitat model and ongoing surveys are needed. Also refer to RFSS recommendation for goshawk.
	O-WL-34	For MIH 10. Riparian Upland Forest: reference recommendation for Watershed (tab 4. line 49)
	O-WL-36	To monitor implementation of the Forest Plan objective for lake and stream habitat. a lake habitat monitoring protocol should be developed for the Forest that includes lake habitat. fish population and water quality parameters.
	O-WL-1 and -2 Landscape Ecosystem Objectives for Management Indicator Habitats (MIHs) 1-9 (forest types/ages)	Continue to monitor objectives annually based on 1) annual condition of MIHs on the ground (by way of a look at a "snapshot" of data at the end of each fiscal year) and 2) annual snapshot of MIHs plus conditions that would result from all other unimplemented decisions at the end of each fiscal year. Supporting rationale. Based on FY05 data. trends for MIHs are generally moving in the direction of Forest Plan objectives when compared to the conditions present at the time the ROD was signed. Changes between the FEIS condition and condition after the ROD was signed are due to: 1) changes made between the Landscape Ecosystem GIS map used in FEIS Dualplan analysis and a new Landscape Ecosystem map developed for practical implementation of the Plan (issue described in Vegetation section of Monitoring Plan); 2) ongoing improvements to vegetation inventory; or 30 changes from natural disturbances or succession; or 3) additional vegetation projects implemented after data for FEIS was frozen in the winter of 2004. These are changes that were anticipated in the Forest Plan (described on page 2-55 in Vegetation Overview). At year one of implementation. no substantial concerns related to objectives are identified.
	O-WL-1 and -2 Objectives for MIH 9 Lowland Black Spruce/Tamarack	Establish permanent bird monitoring sites in lowland conifer MIH 9. Supporting rationale. Bird surveys associated with MIH 9 are currently inadequate since long-term song-bird monitoring plots on the Superior include very few plots in this MIH. Because of overall Forest Plan objectives for increasing vegetation management to create young and retain old growth MIH 9. Monitoring songbirds is an efficient and cost-effective way to track species associated with MIH 9.
WL. Sensitive Species. Plants.	O-WL-18	**Virginia** - monitoring of sites after treatment is required **Tomahawk** - Monitoring of site after treatment is required **Kawishiwi Admin Site** – monitoring of sites in 2006
WL. Sensitive Species. Terrestrial WL.	O-WL-18	In partnership with others, continue to identify, learn about, and appropriately manage and monitor RFSS and their habitats. This action also addresses all other RFSS objectives (O-WL-19 to O-WL-30). Supporting rationale. RFSS' distribution, populations, and habitat requirements at landscape and site levels are not fully understood. Gaining information is important to ensure effective management.
	O-WL-26 &27	Expand butterfly inventory, based on areas likely to experience gypsy moth outbreaks. Supporting rationale. As outbreaks of the non-native invasive species gypsy moth become more common and widespread, treatments with Btk (a bacterium toxic to gypsy moth and to other butterfly/moth species) may increase and threaten sensitive butterflies. To manage to maintain or protect rare butterflies it is important to improve our understanding of their distribution and habitat use.
	O-WL-1 & 2 Landscape Ecosystem Objectives for Mgt Indicator Habitats (MIHs) 1-9 (forest types/ages) O-WL-1 & 2 Landscape Ecosystem Objectives	Continue to monitor objectives annually based on 1) annual condition of MIHs on the ground (by way of a look at a "snapshot" of data at the end of each fiscal year) and 2) annual snapshot of MIHs plus conditions that would result from all other unimplemented decisions at the end of each fiscal year. Supporting rationale. Based on FY05 data, trends for MIHs are generally moving in the direction of Forest Plan objectives when compared to the conditions present at the time the ROD was signed. Changes between the FEIS condition and condition after the ROD was signed are due to: 1) changes made between the Landscape Ecosystem GIS map used in FEIS Dualplan analysis and a new Landscape Ecosystem

Resource	Monitoring Driver	Follow-up Actions
WL. Sensitive Species. Terrestrial WL. *Cont'd*	for Mgt Indicator Habitats (MIHs) 1-9 (forest types/ages). Cont'd	map developed for practical implementation of the Plan (issue described in Vegetation section of Monitoring Plan); 2) ongoing improvements to vegetation inventory; or 30 changes from natural disturbances or succession; or 3) additional vegetation projects implemented after data for FEIS was frozen in the winter of 2004. These are changes that were anticipated in the Forest Plan (described on page 2-55 in Vegetation Overview). At year one of implementation, no substantial concerns related to objectives are identified.
WL. Sensitive Species. Aquatic	O-WL-28 and O-WL-29	Long-term monitoring at established reference reach sites and stream cross sections should occur at established random sites at least once every 3-5 years. Need to include water chemistry data collection in 2006 and in the future.
		Presence/absence information for aquatic RFSS is currently limited. It will be important to continue support of survey and inventory efforts to identify individuals and populations of aquatic RFSS on the Forest as well as to continue establishing long-term aquatic RFSS population monitoring sites.
		Historical road stream crossing and stream habitat improvement projects were not all designed to improve aquatic habitat conditions for RFSS. The Forest needs to continue identifying, designing, and implementing road/stream crossing and stream habitat improvement projects that will directly or indirectly benefit aquatic RFSS populations and habitat.
		The Forest has not proactively managed riparian areas and habitat in the past. There is a need to strongly encourage a mindset change in NEPA teams to ensure that vegetation management decisions include proactive riparian management which benefits aquatic conditions and RFSS
		Continue establishing stream reference reach monitoring sites. Need to include water chemistry data collection in 2006 and in the future. Need to formally establish lake and wetland monitoring sites as well as monitoring protocols.
		Continue survey and inventory efforts to identify individuals and populations of RFSS on the Forest as well as continue establishing long-term RFSS population monitoring sites.
		Initiate monitoring program to evaluate road/stream crossing improvement projects in 2006. This monitoring program would utilize the Coarse Level Culvert Survey Protocol and established stream cross sections and longitudinal profiles. A formal monitoring protocol should be developed in 2006.
		Monitor compliance with FP standards and guidelines as well as mitigation measures for individual road and trail construction projects. Work with SNF engineering, timber, watershed, and fisheries and aquatics staff to ensure that project designs and construction contracts include appropriate design criteria. Report on individual project compliance annually. A formal monitoring protocol should be developed by watershed, fisheries and aquatics, and engineering staff in 2006-2007.
		Road/stream crossing and stream habitat restoration projects should be monitored at least once every 3-5 years. Need to institute post-project monitoring to evaluate success/effectiveness of each project. Protocols initiated in 2005 will be further refined and adopted in 2006 and 2007.
		Monitoring associated with the Dark River Habitat Restoration Project should occur every 3-5 years beginning in 2006.
		See Management Recommendation for riparian vegetation management in the Riparian-Aquatics Section.

Resource	Monitoring Driver	Follow-up Actions
WL. Sensitive Species. Aquatic *Cont'd*		See Management Recommendation "multiple WS standards and guidelines" in the Riparian-Aquatics Section.
		A lake habitat monitoring protocol should be developed for the Forest that includes lake habitat, fish population and water quality parameters.
		Coordinate with Forest GIS specialists to update the upland young/upland open analysis for the entire Forest every three years. This should be initiated in 2006 or 2007.
		Continue to coordinate with State and Tribal agencies to conduct fishery assessments as well as share fishery information.
		There is a need to update the upland young/upland open analysis for the entire Forest every three years. Existing information is based on 10-12 year-old data. This information should be revised to assist with RFSS Biological Evaluation Analyses as well as other NEPA watershed analyses
		Continue to coordinate future mussel surveys with MNDNR –Ecological Services Division
WL. Threatened and Endangered Species.	O-WL-4 to O-WL-17	Continue to survey, monitor, and improve understanding of species' ecology and management measures for Canada lynx, gray wolf, and bald eagle,
	O-WL-8 O-WL-16 O-WL-18	Develop methods in collaboration with other agency partners for tracking incidental take of lynx or wolf. Supporting rationale. The FWS Biological Opinion includes Reasonable and Prudent Measures for lynx and wolf management in Forest Plan. The Service recommends that the Superior National Forest document and report to the Service annually any known lynx or wolf mortality within the National Forest proclamation boundaries in Minnesota due to vehicle collisions, accidental trapping, or poaching. This project should be undertaken in FY06.
		Update the Forest Plan programmatic Biological Assessment annually with new information on lynx, wolf, and bald eagle. Supporting rationale. To promote efficient and effective management of threatened species on the National Forest, the Forest Plan programmatic Biological Assessment should be This would consist primarily of updating Status of Species with any new information, but would also include new information or science on species' ecology and management.