Green Mountain and Finger Lakes National Forests - 2025 Monitoring Implementation Guide
Required Monitoring Elements

Planning Rule Required Monitoring Element (36 CFR 219.12(a)(5))	Monitoring Category	Forest	Detailed Monitoring Question	Monitoring Driver	Measurement Indicator(s)	Rationale to Retain	Data Collection Methodology	Frequency	Best Available Scientific Information (BASI) References
Element 1 Status of select watershed conditions (see FSH 1909.12, chapter 30, Section 32.13a)	Water	Both	To what extent are management activities maintaining or restoring watershed functions?	Forest Plan Goal 4 and associated Objectives	1) Number of sub-watersheds in each watershed condition class. 2) Number of essential projects completed in priority watersheds per year.	New question starting 2019. This monitoring provides meaninful information, is efficient to conduct, and within budget constraints.	1) Utilize the Watershed Condition Assessment Tracking Tool (WCATT) to identify how many sub-watersheds on each Forest are in which functionalist category. Qualitatively describe any changes from prior years and what led to those changes. 2) Report the number of Watershed Restoration Action Plan-identified Essential Projects that were completed each year per Forest. Utilize the Watershed Improvement Tracking (WIT) database. Qualitatively describe how completion of these projects, if any, move the Forest toward meeting goals. Collect annually, report biennially.	1) Annually 2) Annually	Watershed Condition Framework, and Watershed Condition Classification Technical Guide
Element 2 Status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems (see FSH 1909.12, chapter 30, Section 32.13b)	Water	Both	To what extent are management activities conserving or improving water quality?	Forest Plan Goal 2 and associated Fisheries Objectives Forest Plan Goal 4 and associated Objectives Forestwide Management Direction, Section 2.3.2 Soil, Water, and Riparian Area Protection and Restoration Standards S-1 to S-4, and S-7; and Guidelines G-1 to G-6, G-11, G-12, and G-14 Forestwide Management Direction, Section 2.3.18 Transportation Analysis, Road Design and Construction Standards S-3 and S-6	1) Miles of stream and acres of lake/ pond on NFS lands by Vermont/ New York water quality classification. 2) Ambient Biomonitoring Network (ABN) stream reach score for a representative subset of stream reaches across the Forest. 3) Implementation and effectiveness monitoring for Best Management Practices (BMPs).	New question starting 2019. This monitoring provides meaninful information, is efficient to conduct, and within budget constraints.	1) Review state reporting of 303(d) waterbodies (Impaired Waters). Find spatial data of these waterbodies, clip to GMNF and FLNF administered lands, and calculate miles and acres as needed. 2) Utilize any available data from the Vermont Department of Conservation that documents current year ABN data on NFS lands in Vermont. Qualitatively assess implications for land management impacts on surface water quality. 3) Review all BMP monitoring completed by the Forest for each two-year BMP monitoring reporting period and provide qualitative discussion of impacts of land management activities on surface water quality. Differentiate between GMNF and FLNF.	1) Biennially, in line with 303(d) reporting periods 2) Annually 3) Biennially	Clean Water Act. https://www.epa.gov/tmdl https://dec.vermont.gov/watershed/map/monitor/biomonitoring National Best Management Practices for Water Quality Management on National Forest System Lands Volume 1: National Core BMP Technical Guide
Element 2 Status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems (see FSH 1909.12, chapter 30, Section 32.13b)	Vegetation	Both	To what extent are management activities and natural processes leading to increased structural diversity within forested stands and across forested landscapes, moving areas toward desired objectives identified under Goal 2 of the Forest Plan?	Forest Plan Goal 2 and Goal 6, and associated Objectives	1) Number of acres and proportion of each forest type in each age class. 2) Number of acres and proportion of harvest acres treated with uneven-aged management. 3) Number of acres treated explicitly to enhance early successional characteristics. 4) Number of acres treated explicitly to enhance late successional characteristics. 5) Number of acres treated with various methods to explicitly enhance the health, longevity, and/or structural diversity of forested stands at the stand and landscape scales.	No change to 2018 question. This question addresses a critical Forest Plan objective, along with composition.	Vegetation treatment activity as tracked in the Forest Activity Tracking System (FACTS) and FSVeg databases	Every 5 years	n/a
Element 3 The status of focal species to assess the ecological conditions required under § 219.9 (see FSH 1909.12, chapter 30, Section 32.13c)	Aquatic Ecosystems	GMNF	Does the headwater streams ecosystem provide a full array of riparian and aquatic communities and stream channel types supported by the varied physiographic conditions across the Forest?	Forest Plan Goals 2 and 4, and associated Objectives	Number of wild brook trout (*Salvelinus fontinalis*) per stream mile.	No change to 2018 question. The headwater streams ecosystem has been identified as a priority for monitoring on the GMNF because high quality surface waters fill an essential niche in overall ecosystem health and provide important habitat for a richly biodiverse community of aquatic dependent species. Brook trout (Salvelinus fontinalis) is the best option for which there is both a strong tie to ecosystem conditions that can't be better monitored using more direct indicators. This monitoring provides meaningful information within staffing and budget constraints.	A subset of the historically sampled streams will be selected where, three reaches will be sampled, and the combined value will be used to estimate a "trout per mile" statistic which will be used as an index. Ideally this will be further refined in the future. Sampling may be conducted using 3 pass depletion or single pass IBI.	Annually	Carle, F.L. and M.R. Strub. 1978. A new method for estimating population size from removal data. Biometrics 34:621-630 Rosgen, D.L. 1996. Applied River Morphology. 2nd edition. Wildland Hydrology Books, Pagosa Springs, CO. 390 pp S.J. Kozel and W.A. Hubert. 1989. Factors influencing the abundance of brook trout in forested mountain streams. Journ. of Freshwater Ecology 5(1):113-122 Y. Kanno, B.H. Letcher, J.C. Vokoun, and E.F. Zipkin. 2014. Spatial variability in adult brook trout (S. fontinalis) survival within two intensively surveyed headwater stream networks. Can. J. Fish. Aquat. Sci 71: 1010-1019 Raleigh, R.F. 1982. Habitat suitability models: Brook trout. USDI Fish and Wildlife Service. FWS/OBS-82/10.24. 42 Vermont Agency of Natural Resources. 2015. Riparian Management Guidelines for Agency of Natural Resources Lands. VTANR. 72p
Element 3 The status of focal species to assess the ecological conditions required under § 219.9 (see FSH 1909.12, chapter 30, Section 32.13c)	Terrestrial Wildlife Habitat	FLNF	Does the grasslands ecosystem provide a full array of habitat types across the Forest and align with the Forest Plan for overall abundance?	Forest Plan Goal 2 and associated Objectives	Detection and non-detection, and relative abundance of savannah sparrow (*Passerculus sandwichensis*)	No change to 2018 question. The grasslands ecosystem has been identified as a priority for monitoring on the FLNF because un-grazed grasslands are rare within the region and support numerous wildlife species that are important for maintaining the ecological diversity on the Forest. Savannah sparrow (Passerculus sandwichensis) is the best option for which there is both a strong tie to ecosystem conditions that can be monitored to supplement more direct indicators. This monitoring question will provice meaningful information within staffing and budget capabilities.	Utilize sampling method refined by Dr. Charles Smith during years of surveys on the FLNF. This method is described in yearly reports from surveys conducted on the forest. Method includes a meandering surveys across grassland units, while recording species presences and use.	Annually	Personal communication with Dr. Charles Smith; https://www.pwrc.usgs.gov/bbs/participate/BBS%20Instructions.pdf. Dieni, J.S. and S.L. Jones. 2002. A field test of the area search method for measuring breeding bird populations. Journal of Field Ornithology 73(3): 253-257. Ralph, C.J., G.R. Geupel, P. Pyle, T.E. Martin, and D.F. DeSante. 1993. Handbook of Field Methods for Monitoring Landbirds. USDA Forest Service GTR PSW-149. Albany, CA. Smith, C.R. (ed.) 1990. Handbook for Atlasing American Breeding Birds. Vermont Institute of Natural Science, Woodstock, VT. 70 pp.

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Element 4 The status of a select set of the ecological conditions required under § 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern (see FSH 1909.12, chapter 30, Section 32.13b)	Rare Plant Populations	Both	What are the population trends for sensitive plants (increasing, decreasing, or stable)? To what extent are management activities affecting conditions for sensitive plant populations?	Forest Plan Goal 2 and associated Objectives	Population trends for plants listed as Regional Forester Sensitive Species (RFSS): 1) Number of ramets or genets 2) Percent reproductive 3) Spatial extent of population 4) Number of populations of a species 5) Ranked condition of populations	No change to 2018 question. Since RFSS are species of viability concern, monitoring these (or other rare plants tracked by the state) helps to understand whether viable populations are being maintained. This is an excellent direct indicator that is generally within budget constraints.	Rare plant populations are monitored every five years (every ten years for aquatic species); the subset monitored in any given year is determined by its last monitoring date and its population trend. Monitoring visits are timed to occur within the appropriate phenological window (i.e. flowering or fruiting time). Data collected includes size and extent of the population, number of reproductive individuals, percent reproductive, number of populations of a species, and known or observed threats. The population trend is estimated using these data. For example, populations with fewer total individuals, fewer reproductive individuals, or a smaller spatial extent, from the last monitoring date, are said to be declining. Additional data are collected and can be found in the Vermont Rare Plant Survey form. These forms are then reported to the state.	Every 5 years for terrestrial species Every 10 years for aquatic species	https://www.regulations.gov/document/FWS-R4-ES-2016-0121-0069 https://fpr.vermont.gov/sites/fpr/files/Forest_and_Forestry/Your_Woods/Library/VTNNHP%20Rare%20Plant%20PC%20Form.pdf
Element 5 The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives (see FSH 1909.12, chapter 30, Section 32.13d)	Recreation	Both	To what extent are management activities providing high quality recreation services that meet the expectations of the public?	Forest Plan Goal 12 and associated Objectives	1) Percent Meets Expectations (PMEs) in National Visitor Use Monitoring (mean visitor satisfaction compared to mean importance). PME data reported for developed facilities, access, services, and feeling of safety in developed sites, undeveloped areas, and designated wilderness. 2) Trend in number of visitors, visitor satisfaction and changes in visitor participation by activity over 5 year NVUM reporting periods.	Revised 2018 question. This is the national standard. This indicator tracks the congruence between the agency's performance and customer evaluations of importance. National Visitor Use Monitoring (NVUM) is done every 5 years.	Visitor satisfaction from NVUM.	Every 5 Years	National Visitor Use Monitoring (NVUM) information available at: https://www.fs.usda.gov/about-agency/nvum
Element 6 Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area (see FSH 1909.12, chapter 30, Section 32.13e)	Soils	Both	Within site plots how are soil/site quality and productivity changing over the long term, in response to factors such as acid deposition, climate change, invasive species, and other environmental problems? How are management activities potentially mitigating or exacerbating changes in soils? More specifically: 1) Are soil nutrient levels changing, and are the changes affecting soil/site productivity? 2) What toxins exist in the soil (such as from the atmosphere), and how are they changing in quantity and type over time? Is this affecting productivity?	Forest Plan Goal 3 and associated Objectives	Within site plots established in wilderness areas measure changes over time for: 1) Soil quality - Soil nutrient levels, soil organic matter, total soil carbon, and toxins by major horizon. 2) Soil productivity - Forest health. 3) Soil climate - Soil temperature and moisture, depth of freezing, correlated with selected meteorological parameters.	No change to 2018 question but moved from "other retained monitoring". The Long-term Soil Monitoring Project (LTSMP) and LEMP are only in wilderness areas, so do not reflect changes due to forest management. This can help with differentiating between timber management and stressors and their respective effects on soil productivity. Atmospheric deposition of SOx, Nox, and Hg, and climate change, may decrease soil productivity and health. This is important monitoring because it provides information needed to differentatiate between soil stressors from timber management contrasted to those from other sources (e.g. atmospheric deposition and climate change). It is fairly efficient to conduct, and is within our financial capacity to implement, with the help of ongoing partnerships.	1)Vermont Long-term Soil Monitoring Methods Manual Version 2, Description Protocols V2017 and Sampling Protocols V2017 2) Forest Service Long Term Ecological Monitoring Project Methods	Every 10 years	Ross, D. S., Bailey, S. W., Villars, T. R., Quintana, A., Wilmot, S., Shanley, J. B., Halman, J. M., Duncan, J. A., & Bower, J. A. (2021). Long-term monitoring of Vermont's forest soils: Early trends and efforts to address innate variability. Environmental Monitoring and Assessment, 193(12). https://doi.org/10.1007/s10661-021-09550-9
Element 6 Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area (see FSH 1909.12, chapter 30, Section 32.13e)	Forest Health	Both	To what extent are insects and disease organisms impacting forest conditions?	Forest Plan Goal 2 and associated Objectives Forestwide Management Direction, Section 2.3.9 - Forest Health and Disturbance Processes; Pests, Diseases, and Non-Native Invasive Species Standards and Guidelines	Insect or disease infestations: 1) Number of outbreaks by species. 2) Acres affected by species. 3) Trends in outbreak persistence, spread, and associated tree mortality	Revised 2018 question. Insect and disease represent a potentially major stressor in the ecosystem. It is important to monitor both individual outbreaks of insect and disease as well as trends that may indicate ecosystems stress resulting from climate change, deposition or other factors. It is necessary to adapt management practices to achieve long term forest management goals. The monitoring question meets intent for this monitoring element and is very cost effective.	Reports provided by Forest Health Protection Office in Durham NH and VT-ANR-FPR annual Forest Insect and Disease Conditions reports. Supporting documenation from stand level data collected in FSVeg (NRIS)	Every 5 years	n/a
Element 7 Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities (see FSH 1909.12, chapter 30, Section 32.13f; and FSH 1909.12, chapter 10, section 13.1)	Program Management	Both	How do actual resource and service accomplishments compare to those projected in the Forest Plan Appendix D, Proposed and Probable Practices?	Forest Plan Goal 1 and associated Objectives	Actual annual resource and service accomplishments for management activities listed in the Forest Plan, Appendix D, Table D-5.	No change to 2018 question. This schedule of management practices provides information and direction to achieve the desired future conditions set out in the Forest Plan goals and objectives. This question shows how well management activities are meeting Plan direction.	Compile information from annual accomplishment reports, sold timber sale contracts, and personal communication with resource program managers.	Annually	n/a
Element 8 The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C)) (see FSH 1909.12, chapter 30, Section 32.13g)	Soils	Both	To what extent are management activities impacting soil quality and productivity?	Forest Plan Goal 3 Objective: Minimize the adverse impacts on soils from management activities.	Within the Forest Service Soil Disturbance Monitoring Protocol sampling and monitoring areas including select areas where timber harvest, prescribed fire, and other management activities have been implemented: 1) Amount of forest floor impacted 2) Amount of topsoil displacement 3) Severity of rutted, burned or compacted soil 4) Severity of platy/massive soil structures, or puddled soil	No change to 2018 question. The USFS Soil Disturbance Monitoring Protocol outlines a framework for monitoring soil disturbances from forest management pre- and postactivity. FSM 2509.18-91-1 requires Forest Service staff to establish and monitor compliance with soil quality standards. This monitoring provides meaninful information, is efficient to conduct, and within budget constraints.	USFS Soil Disturbance Monitoring Protocol. Collect data annually and evaluate every 5 years.	Annually	Page-Dumroese, D.; Neary, D.; Trettin, C., tech. eds. 2010. Scientific background for soil monitoring on National Forests and Rangelands: workshop proceedings; April 29-30, 2008; Denver, CO. Proc. RMRS-P-59. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 126 p.

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Other Retained Monitoring

Monitoring Category	Forest	Monitoring Item Name: Management Question	Detailed Monitoring Question	Monitoring Driver (GMNF)	Monitoring Driver (FLNF)	Measurement Indicator(s)	Rationale to Retain	Data Collection Methodology	Frequency	Best Available Scientific Information (BASI) References
Air	GMNF	**Air Particulate:** To what extent are air quality and atmospheric deposition affecting sensitive components of the forest ecosystem?	What is the composition of particles in the air, and how are the levels of particulates changing over time?	Forest Plan Goal 5 and Objectives	Not applicable	Elements and compounds (type and amount) present in the particulate matter.	No change to 2018 question. This measures which atmospheric stressors are affecting the plan area. Particulate monitoring at the national network of monitoring sites (ncluding our IMPROVE site) characterizes air quality and trends throughout the nation. Air quality is a major factor influencing forest ecoysytem and human health. Question, indicator/ measurement, and monitoring protocols are based on BASI. The protocol does not address to what extent air quality and atmospheric deposition are affecting sensitive components of the forest ecosystem; it only measures air quality and atmospheric depostion. However, it is an EPA station that is part of a nation-wide network, and EPA pays for the analysis. Effects on sensitive components of forest ecosystems are addressed in several other monitoring questions.	The Interagency Monitoring of Protected Visual Environments (IMPROVE) Air Monitoring Station at Mount Snow collects aerosol data every third day and the filters are changed weekly. The filters are analyzed at the UC Davis Air Quality Research Center. IMPROVE data is reported annually.	Annually	https://airquality.ucdavis.edu/improve https://views.cira.colostate.edu/fed/Express/ImproveData.aspx
Aquatic Ecosystems	Both	**Fish Habitat:** How well do Forest Plan components conserve or improve fisheries habitat?	To what extent are management activities conserving or improving fisheries habitat?	Forest Plan Goal 2 and associated Fisheries Objective: Maintain or enhance fish populations through habitat protection, enhancement, and restoration, and stocking programs. Forest Plan Goal 4 and associated Objectives	Forest Plan Goal 2 and associated Fisheries Objective: Maintain or enhance fish populations through habitat protection, enhancement, and restoration, and stocking programs. Forest Plan Goal 4 and Goal 5, and associated Objectives	1) Implementation and effectiveness monitoring for Best Management Practices (BMPs). 2) Aquatic habitat improved – miles of stream and acres of lakes and ponds (excluding fish stocking-related accomplishments).	New question starting 2019.	1) Review all BMP monitoring completed by the Forest for each two-year BMP monitoring reporting period and provide qualitative discussion of impacts of land management activities on surface water quality. Differentiate between GMNF and FLNF. 2) Report the miles and acres of aquatic habitat improved each year, broken out by Forest. Qualitatively assess if or how this moves the Forests toward Goals and Objectives.	1) Biennially 2) Annually	1) National Best Management Practices for Water Quality Management on National Forest System Lands Volume 1: National Core BMP Technical Guide 2) N/A - BASI would apply on a case-by-case basis to the projects completed by the Agency in support of preserving, conserving, or restoring aquatic habitat. Assessment and description of these projects and their impacts does not relate to a concise BASI reference list.
Aquatic Ecosystems	FLNF	**Pond Habitat:** How well do Forest Plan components conserve or improve ecosystem function and water quality in ponds?	To what extent are management activities improving ecosystem function and water quality in ponds?	Not applicable	Forest Plan Goal 2 and associated Fisheries Objective: Maintain or enhance fish populations through habitat protection, enhancement, and restoration, and stocking programs. Forest Plan Goal 4 and associated Objectives Forestwide Direction, Section 2.3.7 Range Management, Standard S-6, and Guidelines G-5 and G-6 Forestwide Direction, Section 2.3.9 Fisheries, Guideline G-5 Grassland for Grazing Management Area, Range Management, Guidelines G-1 and G-6	1) Proportion of all ponds not currently requiring impoundment maintenance, dredging, or treatment of non-native invasive aquatic vegetation. 2) Proportion of livestock ponds where livestock access to water (including pond outlets) is managed by fencing. 3) Implementation and effectiveness monitoring for Best Management Practices (BMPs) at livestock ponds. 4) Number of ponds maintained by dredging each year.	Revised question and indicators starting 2019.	1) Coordinate with Range, Wildlife, and Engineering staff to identify how many of the managed ponds, regardless of primary benefitting program, are in need of impoundtment or sedment management work. Qualitatively discuss the trends in meeting Goals and Objectives. 2) Coordinate with Range staff to identify how many livestock ponds do not currently have functioning controls on livestock access. Qualitatively discuss trends in and controlling factors on this number. 3) Review all BMP monitoring completed specifically on livestock ponds by the Forest for each two-year BMP monitoring reporting period and provide qualitative discussion of impacts of land management activities on surface water quality. 4) Coordinate with Range, Wildlife, and Engineering staff to identify how many of the managed ponds, regardless of the primary benefitting program, have been dredged per year. Qualitatively discuss trends and controlling factors.	Biennially	1) Small Impoundment Management in North America, American Fisheries Society, 2012. 2) RIPARIAN AREA MANAGEMENT: Grazing Management Processes and Strategies for Riparian-Wetland Areas, TR1737-20. 3) National Best Management Practices for Water Quality Management on National Forest System Lands Volume 1: National Core BMP Technical Guide 4) Small Impoundment Management in North America, American Fisheries Society, 2012.
Aquatic Ecosystems	FLNF	**Range Impacts:** How well do Forest Plan components limit impacts from livestock on ecosystem function and water quality in streams where grazing is authorized?	To what extent are management activities mitigating impacts to streams from grazing livestock?	Not applicable	Forest Plan Goal 2 and associated Objective: Maintain fish populations at or above current levels through habitat protection, enhancement, and restoration along with stocking programs. Forest Plan Goal 4 and associated Objectives Forestwide Direction, Section 2.3.2 Soil, Water, and Riparian Area Protection and Restoration, Standards S-1, S-2, and S-8, and Guidelines G-1 and G-10 Grassland for Grazing Management Area, Soil, Water, and Riparian Area Protection and Restoration, Standard S- 1.	Proportion of stream miles in or adjacent to Grassland for Grazing management areas that are protected from livestock impacts by fencing.	New question starting 2019.	Coordinate with Range staff to identify stream reaches subject to uncontrolled livestock access for any reason (e.g., lack of fencing or disrepair of existing fencing) and compare that to the total stream miles on the FLNF. Qualitatively discuss trends and controlling factors.	Biennially	Riparian Area Management: Grazing Management Processes and Strategies for Riparian-Wetland Areas, TR1737-20.
Aquatic Ecosystems	Both	**Stream Function:** How well do Forest Plan components provide desirable aquatic organism passage and stream function conditions?	To what extent are management activities ensuring stream crossing structures allow desirable fish habitat and stream function conditions such as aquatic organism passage and passage of water and debris associated with high flows?	Forest Plan Goal 2 and Fisheries Objectives Forest Plan Goal 4 and associated Objectives Forestwide Direction, Section 2.3.2 Soil, Water, and Riparian Area Protection and Restoration Standards S-5 and S-6 Forestwide Direction, Section 2.3.8 Fisheries Standard S-1 Forestwide Direction, Section 2.3.18 Transportation Analysis; Road Design and Construction Standards S-4 and S-5	Forest Plan Goal 2 and Fisheries Objectives Forest Plan Goal 4 and associated Objectives Forestwide Direction, Section 2.3.2 Soil, Water, and Riparian Area Protection and Restoration Standards S-5 and S-6 Forestwide Direction, Section 2.3.9 Fisheries Standard S-1 Forestwide Direction, Section 2.3.19 Transportation Analysis; Road Design and Construction Standards S-4 and S-5	Number of stream crossing structures improved per year to meet Aquatic Organism Passage design criteria (i.e., crossings mitigated to standard).	Revised 2018 question and indicator.	Report the number of crossings improved to meet aquatic organism passage design criteria each year, broken out by Forest. Qualititatively assess if or how this moves the Forests toward Goals and Objectives.	Annually	https://www.fs.usda.gov/restoration/Aquatic_Organism_Passage/overview.shtml
Fire	Both	**Hazardous Fuels:** Are fuel treatment activities reducing fuel loads?	To what extent have management activities reduced hazardous fuels?	Forest Plan Goal 21 and associated Objectives	Forest Plan Goal 5 and associated Objectives Forestwide Direction, Section 2.3.11 – Fire Management Standards and Guidelines	Number of KP6 and KP3 acres treated for hazardous fuels reduction.	No change to 2018 question. Desired conditions are to accomplish hazardous fuels reduction acres in Wildland Urban Interface (WUI) and on other forest lands.	FACTS Database Reporting	Annually	n/a

Monitoring Category	Forest	Monitoring Item Name: Management Question	Detailed Monitoring Question	Monitoring Driver (GMNF)	Monitoring Driver (FLNF)	Measurement Indicator(s)	Rationale to Retain	Data Collection Methodology	Frequency	Best Available Scientific Information (BASI) References
Fire	Both	**Prescribed Fire:** To what extent is prescribed fire benefitting resources?	Is prescribed fire restoring and/or maintaining desired vegetation composition and structure?	Forest Plan Goal 6 and associated Objectives Forestwide Direction, Section 2.3.10 Fire Management, Standards and Guidelines	Forest Plan Goal 5 and associated Objectives Forestwide Direction, Section 2.3.11 Fire Management, Standards and Guidelines	1) Acres of desired habitat restored or maintained. 2) Acres where fire is reintroduced into historically fire adapted landscapes.	Revised 2018 question and indicators. Important to track effectiveness of prescribed fire to restore and maintain ecosystem functions.	Annual prescribed fire random unit fire effects review with specialists. Utilize Fire Effects Monitoring and National Best Management Practices for Water Quality Management on NFS Lands Monitoring for "Wildfire Management Actions," are applied to prescribed fire effects monitoring and would be used for managing wildfire for resource benefit to ensure management practices are protecting natural resources. Review Monitoring Trends in Burn Severity Viewer website for incidents that may be detected and require additional documentation. https://www.mtbs.gov/viewer/index.html	Annually	n/a
Fire	Both	**Wildfire Occurrence:** To what frequency do wildfires occur?	How many wildfires occurred on National Forest System (NFS) land?	Forest Plan Goal 21 and associated Objectives	Forestwide Direction, Section 2.3.11 Fire Management, Standards and Guidelines	1) How many wildfires occurred on NFS land? 2) How many total acres? 3) How many human-caused wildfires? 4) How many wildfires in wildland urban interface (WUI)? 5) If human caused, what is the statistical cause?	Revised 2018 indicators. Suppression of wildfire is important for resource and property protection, and public safety.	InForm reporting ongoing, ensure accuracy and completenes of InForm fire reports. Track trends within Fire Family Plus and Fire Danger Operating Plan (FDOP). FDOP should be reviewed bi-annually for update needs. Collect information annually but evaluate trends every 5 years.	Every 5 years	n/a
Heritage	Both	**Heritage Resource Program Objectives:** How well do Forest Plan components provide protection and stewardship for significant heritage resources?	How many acres surveyed and how many sites protected during Forest project National Historic Preservation Act, Section 106 clearance?	Forest Plan Goal 16 and associated Objectives Forestwide Direction, Section 2.3.14 Tribal Relations, Standards and Guidelines Forestwide Direction, Section 2.3.15 Heritage Resources, Standards and Guidelines	Forest Plan Goal 16 and associated Objectives Forestwide Direction, Section 2.3.15 Tribal Relations, Standards and Guidelines Forestwide Direction, Section 2.3.16 Heritage Resources, Standards and Guidelines	1) Number of sites monitored, updated or recorded. 2) Number of acres surveyed.	Revised 2018 question and indicators. Needed to track compliance with National Historic Preservation Act, Archaeological Resources Protection Act (Section 106 and 110).	Heritage GIS geodatabase	Annually	n/a
Heritage	Both	**Heritage Resource Standards and Guidelines:** How well do Forest Plan components provide protection and stewardship for significant heritage resources?	How many National Historic Preservation Act, Section 110 activities have been completed?	Forest Plan Goal 16 and associated Objectives Forestwide Management Direction, Section 2.3.14 Tribal Relations, Standards and Guidelines Forestwide Management Direction, Section 2.3.15 Heritage Resources, Standards and Guidelines	Forest Plan Goal 16 and associated Objectives Forestwide Direction, Section 2.3.15 Tribal Relations, Standards and Guidelines Forestwide Direction, Section 2.3.16 Heritage Resources, Standards and Guidelines	Total number of Section 110 projects completed.	Revised 2018 question and indicators. Needed to track compliance with National Historic Preservation Act and stewarship through Section 110.	Heritage Project Tracker & Natural Resource Manager (NRM) HWeb	Annually	https://www.ecfr.gov/current/title-36/chapter-VIII/part-800?toc=1 https://outside.vermont.gov/agency/ACCD/ACCD_Web_Docs/HP/Archaeology/ARCHEO_GUIDELINES.pdf
Heritage	Both	**Heritage Resource Site Protection:** How well do Forest Plan components provide protection and stewardship for significant heritage resources?	How many projects were reviewed under National Historic Preservation Act, Section 106?	Forest Plan Goal 16 and associated Objectives Forestwide Direction, Section 2.3.14 Tribal Relations, Standards and Guidelines Forestwide Direction, Section 2.3.15 Heritage Resources, Standards and Guidelines	Forest Plan Goal 16 and associated Objectives Forestwide Direction, Section 2.3.15 Tribal Relations, Standards and Guidelines Forestwide Direction, Section 2.3.16 Heritage Resources, Standards and Guidelines	1) Total number of projects reviewed under Section 106 compliance. 2) Number of projects categorized by finding of effect.	Revised 2018 question and indicators. Needed to track compliance with National Historic Preservation Act, Archaeological Resources Protection Act (Section 106 and 110).	Heritage Project tracking index and annual State Historic Preservation Office (SHPO) Section 106 compliance report.	Annually	n/a
Human Dimensions	GMNF	**Local and Regional Economies:** To what extent have management activities supported regional and local economies?	What is the range of dollar amounts and board feet in timber sale contracts? Who has been awarded the timber sale contract?	Forest Plan Goal 17 and associated Objectives	Not applicable	1) Number of timber sale contracts awarded for ranges of board feet and monetary values, and location of contractor. 2) Number of board feet processed at local mills.	No change to 2018 question. Question effectively monitors contributions of the management of the plan area toward meeting social, cultural, and economic attributes of desired conditions in the Forest Plan. Monitoring Forest Service economic contributions to local economies remains a public concern especially towns within the proclomation boundary.	Bid Monitoring Reports	Every 5 years	n/a
Human Dimensions	Both	**Partnerships Maintenance and Enhancement:** To what extent are partnerships maintained and enhanced?	Are partnerships active and effective to help meet Forest Plan goals and objectives, and are Forest Service staff participating in partnership activities?	Forest Plan Goal 18 and associated Objectives	Forest Plan Goal 15 and associated Objectives	1) Number of formal partnership agreements (inter-agency, Challenge Cost Share, Memorandums of Understanding). 2) Number of Forest Service staff participating in outside organizations in official capacity (representing Forest Service interest). 3) Evaluation (narrative) of how the partnership has been effective in helping the Forest Service meet Goals and Objectives. 4) Number of people hours contributed by partnerships.	No change to 2018 question. Monitoring partnership contributions to management activities helps track progress toward meeting the desired conditions and objectives related to social and economic sustainability.	Natural Resource Manager (NRM)	Annually	n/a
Human Dimensions	Both	**Payments to Towns:** To what extent have Forest programs supported regional and local economies?	How much funding was paid to towns through Payment in Lieu of Taxes (PILT) and Secure Rural Schools (SRS) payments?	Forest Plan Goal 17 and Objective: Maintain communications with Forest communities with regard to Payment in Lieu of Taxes, 25 Percent Fund, and/or Secure Schools and Community Self-Determination Act.	Forest Plan Goal 14 and Objective: Maintain communications with Forest communities with regard to Payment in Lieu of Taxes, 25 Percent Fund, and/or Secure Schools and Community Self-Determination Act.	Amount of PILT and SRS payment to towns and/or counties.	Revised 2018 question and indicators. Tracking payments to towns is a good measurement of contributions to economic sustainability of communities. It remains important to inform municipalaties of federal programs that impact their financial bottom line / tax base.	Collect information from PILT and SRS payment websites: https://www.fs.usda.gov/working-with-us/secure-rural-schools/payments https://www.doi.gov/pilt	Annually	n/a

Green Mountain and FInger Lakes National Forests - 2025 Monitoring Implementation Guide
Other Retained Monitoring

Monitoring Category	Forest	Monitoring Item Name: Management Question	Detailed Monitoring Question	Monitoring Driver (GMNF)	Monitoring Driver (FLNF)	Measurement Indicator(s)	Rationale to Retain	Data Collection Methodology	Frequency	Best Available Scientific Information (BASI) References
Human Dimensions	Both	**Teacher Development and Forest Stewardship:** To what extent have Forest programs provided a diverse range of information and education opportunities?	Was educator development or support in forest stewardship offered?	Forest Plan Goal 19 and Objective: Include teacher development in stewardship of living systems in the educational outreach program.	Forest Plan Goal 19 Objective: Include teacher development in stewardship of living systems in the educational outreach program.	Number of programs offered.	Revised 2018 question and indicator. Programs designed to provide teacher emphasis on conservation can help toward goals and objectives related to social and economic sustainability. Monitoring will provide information showing commitment to teacher development and the next generation of forest users and stewards. The question includes non-traditional teachers, such as librarians, homeschoolers, and rotating education specialists. This is more meaningful in a state with a varied education system, small rural class sizes, combined grades, schools merging, and school choice. The measurement is more meaningful in that it encompasses classroom visits, trainings provided, and curriculum development. It can be monitored with minimal effort from other monitoring reports.	Year end reporting from partner organizations as well as Naturewatch, Interpretation, and Conservation Education (NICE) database reports. https://apps.fs.usda.gov/nicef/welcome;jsessionid=eeFF8QfMiVDXm2vVsJmFpKwQrMmMN-QFVVkykHWiTPz3LVo30HHf!303766105	Every 5 years	n/a
Invasive Species Population	Both	**Non-native invasive species:** How well do Forest Plan components prevent and control the spread of non-native invasive plants?	To what extent are non-native invasive species impacting other Forest resources?	Forest Plan Goal 2 and associated Objectives Forestwide Direction, Section 2.3.9 Forest Health and Disturbance Processes, Pests, Diseases; Non-Native Invasive Species, Standards and Guidelines	Forest Plan Goal 2 and associated Objectives Forestwide Direction, Section 2.3.10 Forest Health and Disturbance Processes, Pests, Diseases; Non-Native Invasive Species, Standards and Guidelines	Extent of infestations in a) vicinity of Regional Forester Senstive Species populations, b) wildlife openings and/or c) Ecological Special Areas/Research Natural Areas/Candidate Research Natural Areas: 1) Percentage of sites infested, within a), b) and c). 2) Acres and/or sites infested, within a), b) and c). 3) Acres and/or sites treated, within a), b) and c). 4) Control effectiveness upon completion of treatment.	Revised 2018 indicators. The Forest Service Handbook lists non-native invasive species (NNIS) as one of the stressors; extent of infestations helps to understand the size of the problem. NNIS Forest Plan Standards and Guidelines and NNIS treatment methods may or may not be effective; NNIS are already affecting riparian habitats and could easily begin to affect tree regeneration; ground-disturbing and light-increasing activities could easily spread NNIS or facilitate their growth; if monitoring does not occur in a timely manner, infestations may become impossible to control. Currently non-native invasive plants are tracked to answer this question. Other types of non-native invasive organisms are assessed differently through other resource areas (e.g., fisheries, timber). This is an excellent direct indicator that is generally within our budget. Resource areas (aka habitats of concern) include: rare plant populations, wildlife openings, and ecological special areas.	During the growing season, Forest Service and volunteer staff record: species, population extent, density and/or count, percent infested, and canopy cover. Spatial extent is collected using handheld GPS units or a tablet with FieldMaps or a similar application. Sites surveyed and treated are either those we most want to protect or those that have the greatest potential to be sources of seeds or plant propagules for places we most want to protect. All sites will have "treatment effectiveness" recorded immediately after treatment completion. Long-term treatment effectiveness will only be measured at selected sites due to limited capacity. We are interested in seeing the effects of NNIP on rare plant populations, wildlife openings, and ESA/cRNAs. These are the plant-adjacent resources areas; we assume other resource areas are monitored by their respective programs.	Annually	n/a
Lands	Both	**Land Ownership Adjustment:** Has Forest land ownership been adjusted to meet future needs and improve management effectiveness?	To what extent has the Forest's land base been adjusted through purchase, exchange, transfer, interchange, boundary adjustment and donation?	Forest Plan Goal 22 and associated Objectives	Forest Plan Goal 13 and associated Objectives.	Amount of acres adjusted.	No change to 2018 question. Amount of acres adjusted is a tangible way to report out on an accomplishment. This is a direct indicator and the information is readily available on a yearly basis.	Data is available in Landownership Adjustment Data System (LADS) https://usdagcc.sharepoint.com/sites/fs-nfs-alpa/apps/lads/r9/SitePages/Home.aspx	Annually	n/a
Lands	Both	**Special Uses - Lands:** How well do Forest Plan components ensure special use permits are properly administered?	Are special use permit authorizations administered to standard?	Forest Plan Goal 1 and associated Objectives Forestwide Direction, Section 2.3.19 Special Uses, Standards and Guidelines	Forest Plan Goal 1 and associated Objectives Forestwide Direction, Section 2.3.20 Special Uses, Standards and Guidelines	Percentage of special use permit authorizations administered to standard.	Revised 2018 question. Monitoring by administering authorizations to standard is required by Forest Plan direction and Forest Service policy. Tracking number and types of special use authorizations help track contributions to economic sustainability of communities, and in providing renewable energy.	Data is readily available in the Corporate Data Warehouse (CDW).	Annually	https://iweb.fs.usda.gov/login/common.jsp?option=9
Program Management	Both	**Project Implementation:** How well are project activities moving resources toward desired future conditions?	Are project activities improving desired future conditions? Are Forest Plan Standards and Guidelines, and project specific design criteria and mitigation measures effective at achieving desired results?	Forest Plan Goal 1 and associated Objectives Forest Plan Management Area direction (management area major emphasis and desired future conditions)	Forest Plan Goal 1 and associated Objectives Forest Plan Management Area direction (management area major emphasis and desired future conditions)	1) List of projects with completed NEPA decisions. 2) Recommended changes from project implementation monitoring.	Revised 2018 questions by incorporating Desired Future Conditions monitoring item and Standards and Guidelines - Implementation and Effectiveness Monitoring monitoring item into one monitoring item. It is important to know how well management activities comply with Forest Plan direction and NEPA decisions, and how effective they are in meeting desired conditions. This monitoring is critical to recommend meaningful project activity modication or changes to Standards and Guidelines for more effective Forest Plan implementation.	Track projects that have completed NEPA decisions. Document recommended changes to Forest Plan components or project activity design resulting from project implementation monitoring.	Annually	n/a
Range	FLNF	**Animal Unit Months:** How well do Forest Plan components provide for the sustainable use of grasslands for grazing?	Are management activities maintaining forage production sufficient to support approximately 10,000 Animal Unit Months (AUMs) annually?	Not applicable	Goal 7 and associated Objectives	Animal Unit Months (AUMs).	No change to 2018 question. This monitoring question directly adresses Forest Plan direction associated with range management.	The question, indicators, measures, and protocols are based on the BASI. The following protocols, developed by the Natural Resources Conservation Service, would be used: National Range and Pasture Handbook, CH. 4: Estimating and harvesting (double sampling) or Harvesting methods for determining production and composition. Pasture Condition Scoresheet, and Soil Quality Test Kit. The question tells us what we want to know, the protocols are efficient to conduct, and have very low costs.	Annually	https://www.nrcs.usda.gov/sites/default/files/2022-06/National_Pasture_Condition_Scoring_Guide_and_Score_Sheet_-_January_2020.pdf
Range	FLNF	**Range Improvements:** How well do Forest Plan components provide for the sustainable use of grasslands for grazing?	Are management activities providing functioning range improvements (watering facilities, fence, corral) to support approximately 10,000 Animal Unit Months (AUMs) annually?	Not applicable	Goal 7 and associated Objectives	1) Number and condition of functioning systems and those in need of maintenance or construction. 2) Miles of fence maintained to standard. 3) Number and condition of corrals maintained to standard.	No change to 2018 question. Maintenance and construction accomplishments can be readily quantified, enabling accurate program accomplishments. The monitoring protocal/methodology is relatively efficient to conduct, but does rely on close participation with partnerships which have been shown to fluctuate.	Collected primarily through the Annual Operating Instruction and pasture facilities inspection spreadsheet. Natural Resource Management (NRM) is not the primary source for maintenance needs of range infrastructure.	Annually	n/a
Recreation	Both	**Partner Contributions:** To what extent are partners contributing to management of recreation facilities and trail systems?	What is the trend in partner contributions towards the improvement, maintenance and operation of the Forest Recreation Sites and Trails System.	Forest Plan Goal 12 and Objective: Increase the effective use of partnerships in the improvement, maintenance and operation of the Forest trails system.	Forest Plan Goal 11 and Objective: Increase the effective use of partnerships in the improvement, maintenance and operation of the Forest recreation facilities and trails system.	Trend in total cash, non-cash and in-kind contributions from partner agreements	New question starting 2019. Replaced Trends in Partnerships monitoring item. Quantifiable data representing partner contributions given volunteer database reporting is inconsistent	The Natural Resource Management (NRM) Report "G&A by Cooperator Type and Associated Funds"	Annually	n/a

Monitoring Category	Forest	Monitoring Item Name: Management Question	Detailed Monitoring Question	Monitoring Driver (GMNF)	Monitoring Driver (FLNF)	Measurement Indicator(s)	Rationale to Retain	Data Collection Methodology	Frequency	Best Available Scientific Information (BASI) References
Recreation	Both	**Trail Maintenance:** Is the quality of the Forest Service trail system being improved through operation and maintenance?	How many miles of trail are maintained annually and how many trail miles are meeting standard?	Forest Plan Goal 12 and Objectives: Reduce total deferred maintenance on the GMNF trail system; and increase the number of miles that are operated and mainained to standard.	Forest Plan Goal 11 and Objectives: Reduce total deferred maintenance on the FLNF trail system; and increase the number of miles that are operated and mainained to standard.	1) Miles of trail maintained. 2) Miles of trail maintained to standard. 3) Trends in percent of total trail miles maintained. 4) Net change in designated system trail mileage.	Revised 2018 indicators. Trends can show our ability to maintain the NFS trail network.	The Natural Resource Manager (NRM) is a system of database tools for managing agency data across the Forest Service. The NRM trail database is where FS staff record annual accomplishments (Trail Annual Accomplishment allows user to see data as far back as 2011).	Annually	n/a
Soils	FLNF	**Grassland Soil Productivity, Condition, and Quality:** How well do Forest Plan components maintain or restore the natural, ecological functions of the soil?	Are the effects from management actvities resulting in significant changes to soil productivity?	Not applicable	Forest Plan Goal 3 and associated Objectives	Within sample pastures measure: 1) Plant compostion (desirable forage plants, legumes, plant vigor) 2) Grazing Severity 3) Soil Cover 4) Soil Compaction 5) Soil Erosion 6) Soil pH	Revised 2018 question and indicators. The pasture condition score will enable monitoring to determine whether management practices are affecting grassland soil productivity.	Natural Resources Conservation Service Pasture Condition Scoresheet and USDA Soil Quality Test Kit Guide	Every 3 years	USDA Forest Service, Natural Resources Conservation Service Guide to Pasture Condition Scoring, January 2020 Sanderson, M. A., Goslee, S. C., Gonet, J., & Stout, R. (2009). Pasture monitoring at a farm scale with the USDA NRCS pasture condition score system. Journal of Soil and Water Conservation, 64(6), 423–433. https://doi.org/10.2489/jswc.64.6.423
Terrestrial Ecology	Both	**Ecological Type Mapping and Representation:** How well do Forest Plan components maintain or restore ecological processes and systems within desired ranges of variability?	What proportion are ecological types on the Forest represented within the ecological reference area network?	Forest Plan Goal 6 and Objective: Manage at leata five percent of each ecological type present on theforest for old-growth characteristics.	Forest Plan Goal 5 and Objective: Manage at least five percent of each ecological type present on theforest for old-growth characteristics.	Proportion of each ecological type on the Forest that occurs within the reference area network.	Revised 2018 question and indicators. Representation of ecosystems within areas that are protected from any extractive uses helps to protect the full range of variation associated with ecosystems on the Forest. This question monitors what is missed by both the LEMP plots and the rare and outstanding sites. This monitoring focuses on representation and not condition, and directly addresses a Forest Plan objective threshold. Results change with ownership changes (i.e., land acquisitions or disposals) or theoretically with site designation changes (e.g., Managment Area reallocation by Forest Plan ammendment).	Compare Reference Area Network (RAN; GMNF/FLNF spatial data) proportions with all of GMNF/FLNF for: Ecological Land Unit Groups (ELUGs; TNC 2004), Land Type Associations (LTAs; GMNF/Burbank 1999), and Habitats (GMNF stand data) for the relevant time period.	Every 10 years	Burbank, D., C. Ferree, P. Girton, and J. Bove. 1999. "Preliminary Landtype Associations -Biophysical Features, Green Mountain National Forest." Unpublished report, Green Mountain National Forest, Vermont. The Nature Conservancy. 2004. Evaluation of the Biological and Biophysical Diversity of the Green Mountain National Forest and Vicinity; Recommendations for Increasing Biodiversity Protection. The Nature Conservancy, Montpelier, VT.
Terrestrial Wildlife Habitat	FLNF	**Grassland Habitat:** How well do Forest Plan components contribute toward restoration and maintenance of habitat for native and desirable non-native species?	What are the conditions of grasslands and pastures? What are the grassland bird use patterns of grazed and non-grazed grasslands?	Not applicable	Forest Plan Goal 2 and associated Objectives.	1) Vegetation database queries or 2) Long-term site inspection and vegetative measures of grassland and pasture condition or 3) Breeding bird surveys	Revised 2018 question.	Various collection methods including grassland vegetation surveys and/or pasture forage surveys and/or grassland bird surveys completed on units with planned management. Coordinate with Charlie Smith (or contractor for grassland bird surveys) or use data from Breeding Bird Survey to determine if management (grazing, mowing, etc.) activities are affecting bird populations. It seems as though these questions are still based on BASI and adequately (medium) meets the intent of the monitoring element. Vegetation monitoring will be completed every 3-5 years on two units chosen to represent the forest grassland ecosystem. Pasture forage surveys will be completed by the range program and may be used as information for this monitoring question.	Biennially	https://extapps.dec.ny.gov/docs/wildlife_pdf/gbirdstrafinal.pdf https://www.blm.gov/sites/default/files/documents/files/Library_BLMTechnicalReference1734-08_V1.pdf https://wildlife.tamu.edu/files/2013/09/Native-Grassland-Monitoring-and-Management-WF-001.pdf https://fwf.tennessee.edu/wp-content/uploads/sites/24/2020/07/Strategies-for-managing-early-succession-Weed-Tech.pdf
Terrestrial Wildlife Population	GMNF	**Sensitive Species:** How well do Forest Plan components maintain and restore habitats to ensure population viability for native and desirable non-native species?	Are management activities ensuring the protection and promotion of Regional Forester Sensitive Species (RFSS) habitats and populations?	Forest Plan Goal 2 and associated Objectives	Not applicable	1) What management activities protect or promote RFSS? 2) What monitoring of RFSS individuals, populations, and habitats has occured? 3) 3) What are the results of that monitoring? 4) Do RFSS conservation plans exist or are we moving toward creating plans? 5) If a plan exists, what actions are we taking to implement the plan?	New question starting 2019. The question will help determine how well RFSS are protected during project implementation.	Document the activities conducted relevant to any RFSS wildlife species during a given year. There is not an expectation to have a report for each species. Rather, the open-endedness of this question allows us to focus on several key species for the time period based on level of threat, distribution, and other factors. The long term goal is to consider the occurence and protection of all RFFS wildlife species. Possible activities that contribute to answering this question include: -Writing or updating a forest-specific conservation summary/plan -Monitoring or survey of individual species or habitats -Reviewing projects mid- and post-implementation for affect	Annually	https://downloads.regulations.gov/FWS-R4-ES-2016-0121-0069/content.pdf GMFL Wildlife Monitoring RFSS Question Framework updated April 2025
Terrestrial Wildlife Population	Both	**Threatened, Endangered, and Sensitive Bats:** To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?	Are threatened, endangered, and sensitive bat species continuing to persist on the landscape?	Forest Plan Goal 2 and Objective: Protect critical habitat and key habitat features upon which federally listed endangered, threatened, proposed species and Regional Forester Sensitive Species depend.	Forest Plan Goal 2 and Objective: Protect critical habitat and key habitat features upon which federally listed endangered, threatened, proposed species and Regional Forester Sensitive Species depend.	Species presence/no dectection, location, and/or number of individuals at North American Bat Monitoring Program (NABat) and pre-project monitoring sites.	Revised 2018 question and indicators. Most bat species on GMNF/FLNF are either endangered, theatened, or included on the Regional Forester Sensitive Species list (TES species). It is important to track TES bat species population viability and ensure their habitat is not adversely impacted as a result of Forest Service management activities. Continued collaboration with VT Fish and Wildlife Department (VFWD), NY Department of Environmental Conservation (NYDEC), and US Fish and Wildlife Service is critical to identify TES bat usage on/near GMNF/FLNF. Continued survey routes (NABat) will indicate presence/no dectection of TES species.	Continue with acoustic monitoring methodology during the bat active season for NABat and pre-project protocols. Collaborate with VFWD and NYDEC to report hibernacula counts. Implement established conservation strategies for Regional Forester's Sensitive Species where they exist; otherwise, maintain or enhance habitat conditions for these species through the development of specific site prescriptions during project development.	Annually	https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines https://www.nabatmonitoring.org/
Vegetation	Both	**Forest-wide Habitat Composition:** To what extent are management activities maintaining and restoring quality, amount, and distributions of habitats to desired levels?	To what extent are management activities and natural processes moving forest composition and age classes toward Forest Plan objectives (Tables 2.2-1 and 2.2-2)?	Forest Plan Goal 2 and Objectives, (especially long-term composition objectives provided by Table 2.2-1)	Forest Plan Goal 2 and Objectives, (especially long-term composition objectives provided by Table 2.2-1)	1) Number of acres and proportion in each type and of each age class. 2) Number of acres of treatments associated with habitat objectives, including: -To enhance softwood component or convert to mixedwood or softwood habitat. -To maintain, enhance, or restore oak habitat. - To maintain, enhance, or create aspen habitat. - To maintain, enhance, or create permanent or temporary upland opening habitat. - To maintain, enhance, or create old-growth characteristics.	Revised 2018 question and indicators. There are wide gaps between current and desired future condition for composition of the major habitats on the GMNF/FLNF. This monitoring item will track the extent to which management activities are making progress toward habitat composition objectives.	Vegetation treatment activity as tracked in the Forest Activity Tracking System (FACTS) and FSVeg databases	Every 5 years	n/a

Monitoring Category	Forest	Monitoring Item Name: Management Question	Detailed Monitoring Question	Monitoring Driver (GMNF)	Monitoring Driver (FLNF)	Measurement Indicator(s)	Rationale to Retain	Data Collection Methodology	Frequency	Best Available Scientific Information (BASI) References
Vegetation	Both	**Outputs Accomplished - Volume and Acres of Timber Offered and Sold:** To what extent are management activities providing sustainable supply of forest products?	How do actual outputs compare to those projected in Appendix D, Proposed and Probable Practices, specifically related to timber offered and sold?	Forest Plan Goal 8 and Objectives	Forest Plan Goal 8 and Objectives	1) Acres of even-aged regeneration harvest annually and total for the decade. 2) Acres of even-aged intermediate harvest annually and total for the decade. 3) Acres of uneven aged harvest annually and total for the decade. 4) MMBF volume of sawtimber and non-sawtimber products offered and sold annually and total for the decade.	No change to 2018 question. This question effectively monitors contributions of the management of the plan area toward meeting social, cultural, and economic attributes of Forest Plan desired conditions. Ensures timber harvest does not exceed Forest Plan allowable sale quantity.	Forest Activity Tracking System (FACTS) and Timber Sale Accounting (TSA) reports	Annually	n/a
Vegetation	Both	**Rare or Outstanding Natural Areas:** How well do Forest Plan components protect rare or outstanding biological, ecological, or geological areas?	To what extent are rare and outstanding biological, ecological, or geological features being prtected, maintained, enhanced, or threatened?	Forest Plan Goal 7 and associated Objectives	Forest Plan Goal 6 and Objectives	1) Number of rare or outstanding natural area sites monitored. 2) Number of outstanding natural area sites for which condition was documented.	Revised 2018 question and indicators. Like rare species, rare or outstanding natural communities are vulnerable to loss because the combination of biophysical factors and disturbance history that created or sustain these communities are unusual or rare. Monitoring these areas on a schedule helps to sustain them by identifying potential threats before the system is irreparably harmed.	1) Compile counts from Ecological Site Monitoring Forms - collaborative monitoring between Ecology, Botany, Wildlife, and Wilderness Programs. 2) Compile counts from Ecological Site Monitoring notes and by comparing spatial data.	Every 5 years	VNHI Significant Natural Communities spatial data; Thompson, Sorenson, and Zaino 2019. Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont, Second Edition.
Vegetation	Both	**Stocking Level:** Are harvested lands adequately restocked according to National Forest Management Act requirements?	Are lands adequately restocked within five years of a regeneration harvest or site preparation activities?	The National Forest Management Act (NFMA) requires suitable timberlands are adequately restocked following harvest (16 USC 1604(g)(3)(E)(ii)).	The National Forest Management Act (NFMA) requires suitable timberlands are adequately restocked following harvest (16 USC 1604(g)(3)(E)(ii)).	Acres with percent stocked to minimal standards.	No change to 2018 question. The NFMA requires that suitable timberlands are adequately restocked following harvest. This monitoring item helps to determine if management activities are meeting this requirement.	Forest Activity Tracking System (FACTS), Stocking Surveys	Annually	n/a
Wild & Scenic Rivers	GMNF	**Wild and Scenic Rivers:** To what extent are eligible Wild and Scenic Rivers managed to preserve their outstandingly remarkable values?	Are management activities within the eligible National Wild & Scenic River management area consistent with the Outstandingly Remarkable Values for which each river segment was determined eligible?	Forest Plan Goal 7and associated Objective Forest Plan Eligible Wild, Scenic, and Recreational Rivers Management Area direction	Not applicable	Number of projects or sites reviewed during annual monitoring and evaluation visits that did not maintain outstanding remarkable values (ORVs) and retain eligibility for river segments.	Revised 2018 indicators. Forest Plan management direction requires protection of outstandingly remarkable values for rivers that are eligible for Wild and Scenic River consideration.	Design criteria, mitigation and standards and guidelines applied on the ground will be looked at in conjunction with the overall project implementation to determine if the ORVs were maintained. If not met, what could have been done differently?	Annually	n/a
Wilderness	GMNF	**Wilderness Areas Managed to Standard:** To what extent are management activities meeting the intent of the Wilderness Act?	Are wilderness areas trending to meet the national Wilderness Stewardship Performance?	Forest Plan Goal 13 and Objectives	Not applicable	1) Wilderness stewardship performance (WSP). 2) Increase in the total element score per Wilderness for WSP measures.	Revised 2018 indicators. This is a national measure. This question replaces all previsous wilderness related monitoring questions. The 10-Year Wilderness Stewardhsip Challenge is now complete and obsolete. This question is based on the national wilderness program initiated in 2015 and includes the most recent BASI related to wilderness management.	WSP annual reporting based on Wilderness program of work implementation.	Annually	Wilderness Stewardship Guidebook, Version 2020.1 dated 4/1/2020. Wilderness Character Monitoring Technical Guide, General Technical Report RMRS-GTR-426, October 2020