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Biennial Monitoring Evaluation Report

for the San Bernardino National Forest

Fiscal Year 2018

Forest Service San Bernardino National Forest October 2019

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I am pleased to present the San Bernardino National Forest's annual Monitoring and Evaluation Report for your review. The purpose of the Monitoring and Evaluation Report is to share our determination of the effectiveness of the Land Management Plan and whether changes are necessary to the Plan, or in program or project implementation.

The 2006 Record of Decision for the San Bernardino National Forest Land Management Plan identified the monitoring requirements as the cornerstone of our program emphasis for the future. In 2014, the Forest Plan was amended to incorporate changes to land use zones and Forest Plan Monitoring. This report is completed under the newly revised monitoring strategy; however in 2015, the Forest completed the transition to the new monitoring program as required under the 2012 Planning Rule, and this transition includes new processes for monitoring that will continue to be used in this fiscal year 2018 monitoring report as well as future reports. The lessons we learn from monitoring help improve our programs and projects. We continue to find ways to increase efficiency and effectiveness of our monitoring and evaluation efforts. It is my commitment to keep you informed of the monitoring results by providing this report. If you would like to participate in future monitoring, please contact the Forest.

Your continued interest in the San Bernardino National Forest Land Management Plan is just one way for you to stay current with activities on your public lands. Additional information can be found on our website at **http://www.fs.usda.gov/sbnf/.**

Sincerely,

6/24/2021

TOM HALL
Acting Forest Supervisor
San Bernardino National Forest

Date

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Contents

Summary of Findings and Results 1
Introduction 6
- Purpose 6
- Objectives 9
- How to Use this Report 9
- The Importance of Public Participation 9
- About Our Forest Plan Monitoring Program 10
  - Roles and Responsibilities 10
  - How Our Plan Monitoring Program Works 10

Monitoring Evaluation 11
- Monitoring Activities 11
- Part 1 13
- Part 2 17
- Part 3 47

Conclusion 67
Appendix A – Monitoring Items Not Evaluated in Detail 73
Appendix B: Listing of Supporting Plan Monitoring Program Documents 75
Appendix C: Listing of Stakeholders Who Participated in the Plan Monitoring Program 77
Appendix D: Monitoring Discussions, Findings, and Adaptive Management Findings Work Sheet 78

Summary of Findings and Results

The five-year trends were measured and reported in the fiscal year 2010 San Bernardino National Forest Land Management Plan Monitoring and Evaluation Report. Along with the 10-year trends, these will no longer be reported, as we have transitioned to the new monitoring program under the 2012 Planning Rule.

The following long-term monitoring indicators and trends are a result of the San Bernardino National Forest Land Management Monitoring Plan Guide:

Table 1. Summary of findings (Part 1 Monitoring).

Goals	Monitoring Question	Indicators	Monitoring Action	Do monitoring results demonstrate intended progress or trend toward Plan targets?	Based on the evaluation of monitoring results, may changes be warranted?[1]
1.1	Has the forest made progress in reducing the number of acres that are adjacent to development within Wildland Urban Interface (WUI) defense zones that are classified as high risk? Are wildfires becoming larger, more frequent, or more severe, and is there a seasonal shift in fire activity?	Acres of High Hazard and High Risk in WUI Defense Zone, Total and Mean Fire Size, Ignition Density, Fire Severity, and Monthly Area Burned	Use baseline acres from the 2006 Southern California Land Management Plans analysis; subtracting the areas treated, and areas that are no longer WUI Defense Zone; and adding acres from areas that have reverted to high hazard and risk due to maintenance backlog, and areas that have become WUI Defense Zone due to development	Yes	No
1.2	Has the forest been successful at reducing mortality risk? Is tree mortality increasing across the landscape, and is it distributed evenly across elevations? Are fire frequencies becoming more departed from the natural range of variation?	Mortality Risk Assessment; Forest Health Protection Mortality Surveys; Proportion of Landscape in Departed Fire Frequency	Compare the annual National Insect and Disease Risk Map (NIDRM) data and cross referencing mortality within the reporting period and compare every five years	Yes	No
1.2.1	Is the forest making progress toward increasing the percentage of montane conifer forests in Condition Class 1?	Departure from desired fire regime, acres by Fire Regime I	Use baseline acres of Montane Conifer, Fire Regime I, from the 2006 Southern California Land Management Plans analysis that were in Condition Class 1;	Yes	No

Goals	Monitoring Question	Indicators	Monitoring Action	Do monitoring results demonstrate intended progress or trend toward Plan targets?	Based on the evaluation of monitoring results, may changes be warranted?[1]
			subtracting the areas that have not had mechanical treatment, prescribed under burning, or wildfire within the previous 35 years; and adding the areas that have been mechanically treated, areas that have had prescribed under burning, and areas that have had wildfire over the five year monitoring period		
1.2.2	Is the forest making progress toward maintaining or increasing the percentage of vegetation types that naturally occur in Fire Regime IV in Condition Class 1?	Departure from desired fire regime, acres by Fire Regime IV	Use baseline acres of Chaparral, Coastal Sage Scrub, Gabbro, Serpentine, Closed-cone conifer, and Lower montane vegetation types, Fire Regime IV, from the 2006 Southern California Land Management Plans analysis that were in Condition Class 1; subtracting the areas that have a return interval of disturbance that is less than 35 years over the five year monitoring period through mechanical treatment, prescribed under burning, and wildfire; and adding the areas that have not had mechanical treatment, prescribed under burning, or wildfire within the previous 35 years	Yes	No
1.2.3	Has the forest been successful at maintaining long fire-free intervals in habitats where fire is naturally uncommon?	Departure from desired fire regime, acres by Fire Regime V	Use baseline acres of Alpine and Subalpine, Desert woodlands, forests and scrub, and Bigcone Douglas-fir vegetation types, Fire Regime V, from the 2006 Southern	Yes	No

Goals	Monitoring Question	Indicators	Monitoring Action	Do monitoring results demonstrate intended progress or trend toward Plan targets?	Based on the evaluation of monitoring results, may changes be warranted?[1]
			California Land Management Plans analysis that were in Condition Class 1; subtracting the areas that have a return interval of disturbance that is less than 200 years over the five year monitoring period through mechanical treatment, prescribed under burning, and wildfire; and adding the areas that have not had mechanical treatment, prescribed under burning, or wildfire within the previous 200 years		
2.1	Are the national forests' reported occurrences of invasive plants/animals showing a stable or decreasing trend?	Acres of treatments in reported occurrences	Establish a baseline for the acres of reported occurrences of invasive plant and animal species; subtracting the areas that have been effectively treated; and adding areas where new presence of invasive species has been reported	Yes	No
3.1	Are trends in indicators and visitor satisfaction surveys indicating that the forest has provided quality, sustainable recreation opportunities that result in increased visitor satisfaction?	Visitor Satisfaction (National Visitor Use Monitoring)	Use baseline scores in Visitor Satisfaction from NVUM that occurred around the 2006 Southern California Land Management Plans and comparing the five year NVUM Visitor Satisfaction scores	Yes	No
3.2	Are trends in indicators and visitor satisfaction surveys depicting the forest has provided solitude and challenge in an environment where human influences do not	Wilderness Condition	Use baseline scores in Visitor Satisfaction for Wilderness from NVUM that occurred around the 2006 Southern California Land Management Plans and compare the five year NVUM Visitor Satisfaction scores for	Yes	No

Goals	Monitoring Question	Indicators	Monitoring Action	Do monitoring results demonstrate intended progress or trend toward Plan targets?	Based on the evaluation of monitoring results, may changes be warranted?[1]
	impede the free play of natural forces?		Wilderness; national reporting systems for management actions in wilderness; and accomplishment data related to the National 10-year Wilderness Stewardship Challenge		
4.1a	Has the forest been successful at protecting ecosystem health while providing mineral and energy resources for development?	Number of Mineral and Energy Development Projects Proposed and Approved	Compare the number of mineral and energy development projects proposed with those approved to establish a baseline of impacts to resources	Yes	No
		Minerals and Energy Success at protecting Ecosystem Health	Compare the number of acres of habitat conserved as part of mitigation for mineral and energy development projects	Yes	No
4.1b	Has the forest been successful at protecting ecosystem health while providing renewable resources for development?	Number of Renewable Resource Projects Proposed and Approved	Compare the number of renewable resource projects proposed with those approved to establish a baseline of impacts to resources	Yes	No
		Renewable Resources Success at protecting Ecosystem Health	Compare the number of acres of habitat conserved as part of mitigation for renewable resource projects	Yes	No
5.1	Is the forest making progress toward sustaining Class 1 watershed conditions while reducing the number of Condition Class 2 and 3 watersheds?	Number of Watersheds in each Condition Class; Monthly Streamflows, Timing and Magnitude of Peak Flows, Degree of Variation	Compare baseline number of watersheds in each Condition Class from the 2006 Southern California Land Management Plans analysis with the five year Watershed Condition Assessment	Yes	No
5.2	Is the forest increasing the proper functioning condition of riparian areas? How do	Change in Indicator Score for Aquatic Habitat,	Compare the change in score from the Watershed Condition Assessment	Yes	No

Goals	Monitoring Question	Indicators	Monitoring Action	Do monitoring results demonstrate intended progress or trend toward Plan targets?	Based on the evaluation of monitoring results, may changes be warranted?[1]
	streamflows compare with historical records?	Aquatic Biota and Riparian Vegetation; Monthly Streamflows, Timing and Magnitude of Peak Flows, Degree of Variation	indicators (Coordinate with Goal 5.1)		
6.1	Is forest rangeland management maintaining or improving progress towards sustainable rangelands and ecosystem health?	Percent of key areas in active allotments meeting or moving towards desired conditions	Compare baseline percent of Key Areas in active allotments meeting or moving towards desired conditions from the 2006 Southern California Land Management Plans analysis with five year percent	Yes	No
6.2	Are trends in resource conditions indicating that habitat conditions for fish, wildlife, and rare plants are in a stable or upward trend? Are chaparral and coastal sage scrub vegetation communities type converting to non-native annual grasslands?	Habitat Condition of At-Risk Species; Extent of Non-native Annual Grasses	Use baseline habitat condition from the 2006 Southern California Land Management Plans analysis and compare with the existing habitat condition on the southern California National Forests.	Yes	No
7.1	Is the forest balancing the need for new infrastructure with restoration opportunities or land ownership adjustment to meet the desired conditions? How many of each type of special	Land Ownership Complexity	Calculate the miles of exterior and interior boundary divided by the acres of National Forest System (NFS) lands and compare from the 2006 Southern California Land Management Plans analysis	Yes	No

Goals	Monitoring Question	Indicators	Monitoring Action	Do monitoring results demonstrate intended progress or trend toward Plan targets?	Based on the evaluation of monitoring results, may changes be warranted?[1]
	use authorization, mining permit, and forest product permit are active on the forest?	Authorized and Administrative Infrastructure	Establish a baseline number of authorized and administrative infrastructure from the 2006 Southern California Land Management Plans analysis and comparing the existing authorized and administrative infrastructure on the National Forests	Yes	No
		Miles of Unauthorized Motorized Routes; Number of special use authorizations and permits by type	Establish a baseline for the miles of unauthorized motorized roads and trails reported; subtracting the miles that have been decommissioned; and adding the miles of unauthorized motorized roads and trails that have been reported	Yes	No

[1]See body of the report for more details regarding any specific recommendations/opportunities for change.

At this time there does not appear to be any need for changes in the monitoring plan based on monitoring results. There are several unanticipated reasons that particular monitoring questions were not analyzed and evaluated in depth for this reporting cycle including a decrease in capacity, other priorities and large fires, flooding and other emergency projects.

Introduction

Purpose

The purpose of the biennial monitoring evaluation report is to help the responsible official determine whether a change is needed in forest plan direction, such as plan components or other plan content that guide management of resources in the plan area. The biennial monitoring evaluation report represents one part of the Forest Service's overall monitoring program for this national forest unit. The biennial monitoring evaluation report is not a decision document—it evaluates monitoring questions and indicators presented in the Plan Monitoring Program chapter of the forest plan, in relation to management actions carried out in the plan area.

Monitoring and evaluation identifies the need to adjust desired conditions, goals, objectives, standards, and guidelines, as forest conditions change. It provides a structured process for National Forest

specialists and leadership to learn from what we do, in an effort always to improve. Monitoring and evaluation helps the Forest Service and the public determine how the Land Management Plan is being implemented, whether plan implementation is achieving desired outcomes, and whether assumptions made in the planning process are valid. Monitoring requirements are found in all three parts of the 2006 San Bernardino National Forest Land Management Plan (LMP). Appendix C in Part 3 of the LMP (as amended in 2014) summarizes the monitoring requirements identified in each part of the LMP.

Part 1 monitoring identifies outcome questions that will help evaluate movement towards the desired conditions over the long-term. The outcome evaluation questions are measured through indicators of each goal in which the San Bernardino National Forest (Forest) implements projects that move it toward desired conditions. The baseline conditions that will be used to answer these questions and evaluate progress over time were established within the LMP or have been developed over time.

Part 2 monitoring focuses on program implementation including inventory through accomplishments tracked in Forest Service corporate databases. The annual accomplishment indicators determine if the program areas are implementing the objectives and strategies established in Part 2 of the LMP.

Part 3 monitoring is conducted at the project or activity level in order to evaluate the effectiveness and application of design criteria established in the LMP. The new projects implemented in fiscal year 2018 and ongoing activities and sites were selected for monitoring using the expanded procedure developed under the 2014 Plan Amendment. Selected projects and ongoing activities or sites were then visited by an interdisciplinary monitoring team to review the application and effectiveness of the design criteria. If problems in implementation were detected or if design criteria were determined to be ineffective, the team recommended possible corrective actions. All recommendations are deliberative in nature and do not constitute a management requirement or a commitment of funds. LMP monitoring was combined with Best Management Practice (BMP) monitoring when circumstances allowed. The San Bernardino National Forest Leadership Team (FLT) participated in monitoring on the San Jacinto Ranger District for one day. The FLT participates in LMP Part 3 monitoring and evaluation each year by attending a fieldtrip to the projects, activities, or sites on a Ranger District, which is rotated each year.

The Fiscal Year (FY) 2018 LMP Monitoring and Evaluation Report documents the evaluation of selected projects and programs where activities occurred during October 1, 2017 through September 30, 2018. The primary purpose of this evaluation is to determine the effectiveness of the LMP and whether changes in the LMP or in project or program implementation are necessary.

The Forest Service adopted new planning regulations (planning rule) in April 2012, pursuant to the National Forest Management Act. The planning rule requires that existing monitoring programs be changed to meet 8 specific monitoring criteria (36 CFR 219.12(a)(5)):

(i) The status of select watershed conditions.
(ii) The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.
(iii) The status of focal species to assess the ecological conditions required under § 219.9.
(iv) 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.
(v) The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.

(vi) Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.
(vii) Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.
(viii) 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)).

In May 2015, the San Bernardino National Forest completed an administrative change to the LMP adding new monitoring questions for fire activity, non-native annual grasses, fire regime departure, special uses, and streamflow, adjusting the monitoring question for tree mortality and the indicator for Biological Resource Conditions (Goal 6.2), and adjusting the reporting frequency for all questions and indicators from every 5 years to every 2 years, as mandated by the planning rule. Criterion (viii) applies only to National Forests with timber production programs, which the San Bernardino National Forest does not have. Therefore, no monitoring is needed for this criterion, and it has not been included in the new monitoring framework.

Management indicator species were included in the LMP for monitoring as an indicator of progress towards meeting Goal 6.2. Under the planning rule, focal species replace management indicator species. An interdisciplinary team reviewed potential focal species and selected non-native annual grasses. This decision was also documented using the administrative change process in May 2015. The combined set of seven existing monitoring questions and six of seven new or modified questions, investigate ecological conditions that sustain at-risk species and target better indicators of progress towards Goal 6.2 than the habitat monitoring of management indicator species. Therefore, in conformance to the planning rule, all references to management indicator species will be removed from the San Bernardino National Forest LMP.

The new monitoring requirements are being discussed and summarized in this FY 2018 Monitoring Report. All other components of the existing plan monitoring framework will be retained, including annual monitoring of selected projects and performance indicators (Parts 2 and 3 Monitoring).

The new monitoring framework and documentation of best available science required by the planning rule are available at: http://www.fs.usda.gov/main/sbnf/landmanagement/planning

The full fiscal year 2018 biennial monitoring report for the San Bernardino National Forest is also available at http://www.fs.usda.gov/main/sbnf/landmanagement/planning.

Objectives

There are several objectives for this report, including:

- Assess the current condition (i.e., status) and trend of selected forest resources.
- Document implementation of the Plan monitoring Program including changed conditions or status of key characteristics used to assess accomplishments and progress toward achievement of the selected Land and Resource Management Plan components.
- Evaluate relevant assumptions, changed conditions, management effectiveness, and progress towards achieving the selected desired conditions, objectives, and goals described in the Forest Plan
- Assess the status of previous recommended options for change based on previous monitoring & evaluation reports.
- Document any scheduled monitoring actions that have not been completed and the reasons and rationale why it has not.
- Present any new information not outlined in the current plan monitoring program that is relevant to the evaluation of the selected monitoring questions.
- Incorporate broader scale monitoring information from the Regional Broader Scale Monitoring Strategy that is relevant to the understanding of the selected monitoring question.
- Present recommended change opportunities to the responsible official.

How to Use this Report

This report is a tool and a resource for the Forest Service to assess the condition of forest resources in relation to Forest Plan direction and management actions. It is also a tool and a resource for the public to learn more about how the Forest Service is managing forest resources.

The biennial monitoring evaluation report is designed to help the public, as well as Federal, State, local government, and Tribal entities anticipate key steps in the overall monitoring program. These steps include upcoming opportunities for public participation and how the public will be informed of those opportunities, and how public input will be used as the monitoring program progresses. The biennial monitoring evaluation report is also intended to help people better understand reported results in relation to past monitoring reports, future monitoring reports and the broader-scale monitoring strategy that is issued at the Forest Service Regional level.

The Importance of Public Participation

We informed the public of the availability of the Fiscal Year 2018 biennial monitoring report for the San Bernardino National Forest through posting on the public facing planning website.

In November 2019, the Fiscal Year 2018 San Bernardino National Forest Land Management Plan Monitoring and Evaluation Report is made available to the public on the Forest website, or a printed version upon request.

The intent of sharing this report is to obtain public feedback on what the monitoring information suggests about the effectiveness of the land management plan. Any interested parties willing to provide feedback related to their review of the results should contact the Forest Environmental Coordinator, Jason Collier at 909-454-4728.

About Our Forest Plan Monitoring Program

Roles and Responsibilities

The Forest Plan Monitoring Program requires a coordinated effort of many people, from the people who collect the data, to the people outside the Forest Service who provide feedback and assistance, to the decision maker.

Tom Hall, Acting Forest Supervisor, is the responsible official for the forest plan. This report will be provided to the responsible official for making decisions about any recommended changes to the forest monitoring program. The responsible official will sign the report agreeing to any of the recommendations made as a part of the adaptive management process.

The Environmental Coordinator, Jason Collier, is responsible for coordinating and producing the Plan Monitoring Program for the forest. Any recommendations that are made will be presented to the Forest Supervisor and discussed between the Environmental Coordinator and Forest Supervisor. When considering the recommended options for change, they are analyzed for feasibility and to ensure the recommended actions are within agency jurisdiction and do not violate any law or policy.

It is to be noted that some of the monitoring activity on the San Bernardino National Forest is dependent on the use of volunteers and partners through agreements. We want to thank all of those volunteers and partners who have helped us to meet our monitoring goals and ensure that we are able to implement our projects efficiently and effectively.

How Our Plan Monitoring Program Works

Monitoring and evaluation requirements have been established through the National Forest Management Act (NFMA) at 36 CFR 219. Additional direction is provided by the Forest Service in Chapter 30 – Monitoring – of the Land Management Handbook (FSH 1909.12).

The San Bernardino National Forest monitoring program was updated in May 2015 for consistency with the 2012 planning regulations [36 CFR 219.12 (c)(1)]. The San Bernardino National Forest Plan was administratively changed to include the updated monitoring program. For a copy of the current monitoring program go to the following link:
http://www.fs.usda.gov/main/sbnf/landmanagement/planning

Monitoring questions and indicators were selected to inform the management of resources on the plan area and not every plan component was determined necessary to track [36 CFR 219.12(a)(2)]. See the Plan Monitoring Program at the link above for discussion on how the monitoring questions were selected to be consistent with the 2012 planning regulations 36 CFR 219.12.

The monitoring evaluation implementation guide (monitoring guide) is part of the overall plan monitoring program and provides more specific direction for implementing the more strategic plan monitoring program and details monitoring methods, protocols, and roles and responsibilities. The Monitoring Guide is not part of the plan decision and is subject to change as new science and methods emerge. The San Bernardino National Forest monitoring guide is available by request.

Providing timely, accurate monitoring information to the responsible official and the public is a key requirement of the plan monitoring program. This summary, along with the full [insert year] biennial monitoring evaluation report for the [name of National Forest] is the vehicle for disseminating this information.

In the context of forest planning there are three main monitoring goals:

Are we implementing the Forest Plan properly? Are we meeting our management targets and project guidelines? (implementation monitoring)

Are we achieving our Forest Plan management goals and desired outcomes? (effectiveness monitoring)

Does our hypothesis testing indicate we may need to change the Forest Plan? (validation monitoring)

Implementation monitoring is important for tracking progress and accomplishments. However, it is effectiveness and validation monitoring that drive and support the adaptive management process. Effectiveness monitoring evaluates condition and trend relative to desired conditions. Validation monitoring tests hypotheses and provides information that might necessitate changes to desired conditions in the plan (e.g. is what we think the desired state should be really accurate?

Providing timely, accurate monitoring information to the responsible official and the public is a key requirement of the plan monitoring program. This summary, along with the full Fiscal Year 2018 biennial monitoring evaluation report for the San Bernardino National Forest is the vehicle for disseminating this information.

Monitoring Evaluation

Monitoring Activities

The following sections present the most current information (data and evaluations) for all monitoring questions contained within the San Bernardino National Forest Plan. All of the monitoring questions were updated during the current evaluation period and have had their associated discussions updated in the next section of this report:

This section and all of its subsections describes the details of how monitoring data were collected, reported, and evaluated for the Plan Monitoring Program to support the recommendation options. This section displays the summary of data results compiled for each monitoring item. The organization of this section follows the organization of the monitoring program contained within the Land and Resource Management Plan

Each monitoring item includes 1) a summary of the monitoring question and its indicator(s); 2) an evaluation of the monitoring results; and 3) an adaptive management finding on whether recommendation options could be considered for future changes or not.

Part 1 Monitoring

Monitoring and evaluation provide knowledge and information to keep the forest plan viable. Appropriate selection of indicators and monitoring and evaluation of key results helps the Forest Service determine if the desired conditions identified in the forest plan are being met. Monitoring and evaluation also help the Forest Service determine if there should be changes to goals and objectives or monitoring methods.

Evaluation is more than reporting facts and figures. Forest plan evaluation tells how decisions have been implemented, how effective the implementation has proved to be in accomplishing desired conditions, what was learned along the way, and how valid management assumptions are that led to forest plan

decisions. Monitoring and adaptive management should lead to improved implementation and resource conditions.

Adaptive management is the foundation for planning and management. The planning regulations direct that forest plans be revised at least every 15 years (36 CFR 219.7(a)). Forest plans need to be dynamic to account for changed resource conditions, such as: large-scale wildland fire or listing of additional species under the Endangered Species Act; new information and science such as taking a systems approach; new or modified regulations; and new or modified policies such as the Roads Analysis Policy.

Monitoring and evaluation are critical to adaptive management. Other component parts include inventory, assessment, planning, and implementation. No single component can be isolated from the whole of adaptive management.

Monitoring and evaluation processes begin by identifying key questions Forest Service managers need to answer about forest plan implementation. Understanding the questions helps to identify information needs, data collection designs, and tools needed to turn data into information and knowledge. Managers must also have a clear understanding of baseline conditions (current resource condition at the time of signing the Record of Decision) versus desired conditions and the evaluation strategies that will help determine if movement towards desired conditions is occurring. Appropriate selection of indicators helps assess resource status and trends and progress towards meeting the desired conditions identified in the forest plan.

The aggregated outcome of project level work reflects progress towards achieving the desired conditions of the forest plan and the contribution to agencies' priorities. This emphasizes the importance of using the National Strategic Plan desired conditions, goals and objectives that apply to the planning area in the forest plan and to use common criteria and indicators as appropriate in the forest plan. This approach will enable monitoring and evaluation efficiencies and provide critical information on the national forests' contribution to the agency's mission, goals, and objectives.

In 2014, the Forest Plan was amended to incorporate changes to Forest Plan monitoring and evaluation requirements including adding a question for mortality risk, adding a question for riparian condition, removing the questions for general forest activities, adding an indicator for unauthorized roads and trails and clarifying and updating several indicators to reflect changes in current inventory methodology since the 2006 monitoring and evaluation requirements. These revisions have been made as a result of past monitoring and for the purpose of improving upon land management plan implementation. All revisions are incorporated into Table 1 at the beginning of this document, which provides the Key Monitoring Questions by resource area, the indicator for that question, what monitoring action(s) will occur and the appropriate data to use.

Part 2 Monitoring

Monitoring identified in Part 2 of the LMP is focused on program implementation including inventory activities. The Forest currently uses performance indicators for tracking program accomplishments. The current system tracks performance measures linked to the National Strategic Plan and reports accomplishments through a national reporting system. A monitoring summary of accomplishments can be seen in Table 2.

Table 2: Part 2 Monitoring Summary.

Indicators	FY 2018 Level
Acres of Forest Vegetation Established or Improved	6,540
Heritage Program Managed to Standard	0
Presence of a Heritage Program Plan	1
Acres of Section 110 Inventory of NFS lands	0
Evaluations of National Register Eligibility	0
Heritage Priority Assessments	(8)
Cultural Resource Assets Stewarded	0
Heritage Public or Research Opportunities Provided	5
Heritage Volunteer Hours Contributed	320
Heritage Volunteer Hours Contributed	575
Number of Mineral Operations Administered to Standard	5
Acres of Hazardous Fuel Reduction	3,947
Miles of road decommissioned/ Miles of National Forest System Road decommissioned	8.74
Miles of unauthorized road decommissioned	0
Miles of high clearance system roads improved	15.89
Miles of closed and high clearance system roads receiving maintenance	125.79
Miles of existing high clearance system roads reconstructed	15.89
Miles of new passenger car system roads constructed	0
Miles of passenger car system roads improved / Miles of existing passenger car system roads reconstructed	2.6
Miles of passenger car system roads receiving maintenance	57.13

Part 3 Monitoring

Implementation and effectiveness monitoring for Part 3 of the LMP are conducted at the project level in order to evaluate the effectiveness and application of design criteria established in the LMP. Part 3 of the LMP requires annual implementation monitoring of new projects and ongoing activities and sites. As detailed in the LMP, the Program Emphasis and Objectives describe the activities and programs on the Forests. Activities were organized into six functional areas, which include all areas of business for which the Forest is responsible. The functional areas collectively include 35 programs. National Forest management uses the results to clearly communicate program capability both internally and externally.

The Program Emphasis and Objectives' six functional areas are:

- Management & Administration: National Forest leadership, management and administrative support activities, communications, external affairs, community outreach, planning, human resources, information technology, and financial management.
- Resource Management: Activities related to managing, preserving, and protecting the national forest's cultural and natural resources.
- Public Use & Enjoyment: Activities which provide visitors with safe, enjoyable and educational experiences while on the national forest and accommodate changing trends in visitor use and community participation and outreach.
- Facility Operations & Maintenance: Activities required to manage and operate the National Forest's infrastructure (i.e., roads, facilities, trails, and structures).
- Commodity & Commercial Uses: Grazing management, forest special product development, and activities related to managing non-recreation special-uses such as National Forest access, telecommunications sites, and utility corridors.
- Fire & Aviation Management: Wildland fire prevention through education, hazardous fuels reduction, and proactive preparation. This program also includes on-forest wildland fire suppression, and national or international wildland fire and emergency incident response.

An interdisciplinary review team visited the selected projects and ongoing activities and sites to review the effectiveness of applying LMP design criteria. If problems in implementation were detected, or if the design criteria were determined to be ineffective, then the team recommended corrective actions. Corrective actions may include amendments to the LMP if necessary to improve the effectiveness of the design criteria.

Appendix C of Part 3 in the LMP identifies at least 10 percent of projects and on-going activities will be reviewed annually. The LMP should be amended to randomly select, for the monitoring period, at least five new projects. Ideally, a project will be selected from each functional area, excluding Management & Administration because new projects do not fall in this functional area. If there are a large number of new projects implemented, as timing and funding permit, additional projects will be randomly selected from each applicable sub-category in the functional areas. All ongoing activities and sites will be stratified into the appropriate functional areas. At a minimum, three ongoing activities and/or sites will be randomly selected for the monitoring period. Ideally, an ongoing activity and/or site will be selected from Public Use & Enjoyment, Facility Operations & Maintenance, and Commodity & Commercial Uses functional areas. As timing and funding permit, ongoing activities and/or sites will be randomly selected from each applicable sub-category in the three functional areas.

Table 3. Monitoring collection summary

For All Monitoring Items:	Year
Data was last collected or compiled in:	2018
Next scheduled data collection/compilation:	2019
Results were last evaluated in:	2017
Next scheduled year for evaluation of data in an evaluation report:	2019

New Science or Other Information

While new science or information is always being discovered and considered for project specific analysis, there was no new science or information collected outside of this monitoring program for use in the evaluation of the monitoring questions.

Monitoring Results

The following results reflect updates from data collected in FY 2018. New information collected or compiled from the last evaluation report for FY 2017 has been incorporated where applicable. Due to recent updates to out monitoring plan, if data was not collected or did not correlate with previous data collection methods then the data will not be analyzed in this report. Future reports will include consistent approaches to data collection and analysis.

Part 1 Monitoring

Forest GOAL 1.1 Acres of High Hazard and High Risk in WUI Defense Zone

Data

The Forest accomplished 3,947 acres of hazardous fuels reduction treatments in FY 18. This accomplishment will be used as the annual indicator of progress toward the desired condition and will be represented in current and future trend analysis reports. This contributes to the National Strategic Plan (objectives 1.1 and 1.3).

The wildland/urban interface defense zone is that portion of the wildland/urban interface that is directly adjacent to structures. High hazard fuels are those that have the potential to burn with high intensity. Risk is related to human values or risk of loss. The presence of structures is an indicator of risk.

A protocol was developed to evaluate whether temporal trends are evident for wildfire size, frequency, severity, and seasonality across the Southern California National Forests. In 2016, the first report to address this monitoring question, no trends were identified for any of these variables across the San Bernardino National Forest. The protocol and data are available for public review upon request. The protocols support the answers to the questions that follow.

Results

Has the forest made progress in reducing the number of acres that are adjacent to development within Wildland Urban Interface (WUI) defense zones that are classified as high risk?

Extensive portions of the San Bernardino National Forest Fuels Program are classified as high risk to wildfire as communities and private inholdings are widespread within the Congressional boundary. The Forest is actively engaged in both planning and implementation in Wildland Urban Interface areas across all Districts. In 2017 NEPA analysis was initiated on all three Ranger Districts utilizing categorical exclusions for protection of administrative sites that included communication towers, fire repeater sites and various infrastructure operating under special use permit with the Forest. Additionally the Front Country Ranger District initiated analysis for roadside vegetation management

within the Cajon Pass corridor, an area with extensive fire history that often poses threat to multiple communities, delicate biological habitat, rail networks and power utility lines.

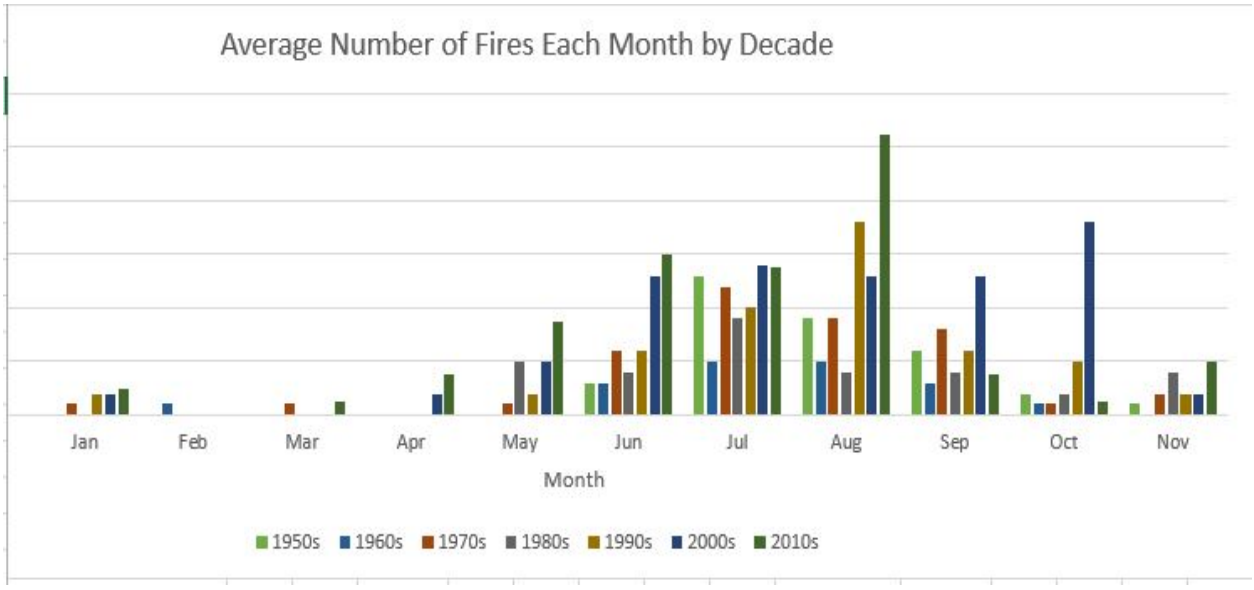
Ongoing NEPA analysis included community protection efforts for Grass Valley and North Big Bear units on the Mountaintop Ranger District, developing future opportunities to increase defensible space surrounding private residences in Lake Arrowhead and Big Bear. Analysis was completed and brought to signature for a fuelbreak network adjacent to the community of Pine Cove on the San Jacinto Ranger District. In addition, the San Jacinto Ranger District is developing an Administrative Defense Zone Project for reducing fuel loading around areas of high value within the forest.

Implementation included prescribed fire and mechanical treatments, utilizing a range of equipment and techniques. Masticator units were run by contractors as well as local Forest Service employees on fuelbreaks and to create defensible space adjacent to communities in Garner Valley on the San Jacinto Ranger District and Big Bear on the Mountaintop Ranger District. Pile burning took place on all Ranger Districts during the winter months, and the Forest has been developing depth in organization and qualification to conduct broadcast burn operations. The Front Country Ranger District was able to implement understory prescribed burning adjacent to the community of Angelus Oaks on the Highway 38 corridor.

Are wildfires becoming larger, more frequent, or more severe, and is there a seasonal shift in fire activity?

Analysis of historic fire data specific to seasonality and fire size does not offer a clear picture to trends in wildfire activity on the San Bernardino National Forest (Fig. X and Y). Fire season begins in earnest by July and runs until winter storms track far enough south to initiate new grass production and increase live fuel moisture. While there are some year over year trends that occasionally show either an increase or decrease in size and month outside of this norm, other variables play more of a factor for the Forest.

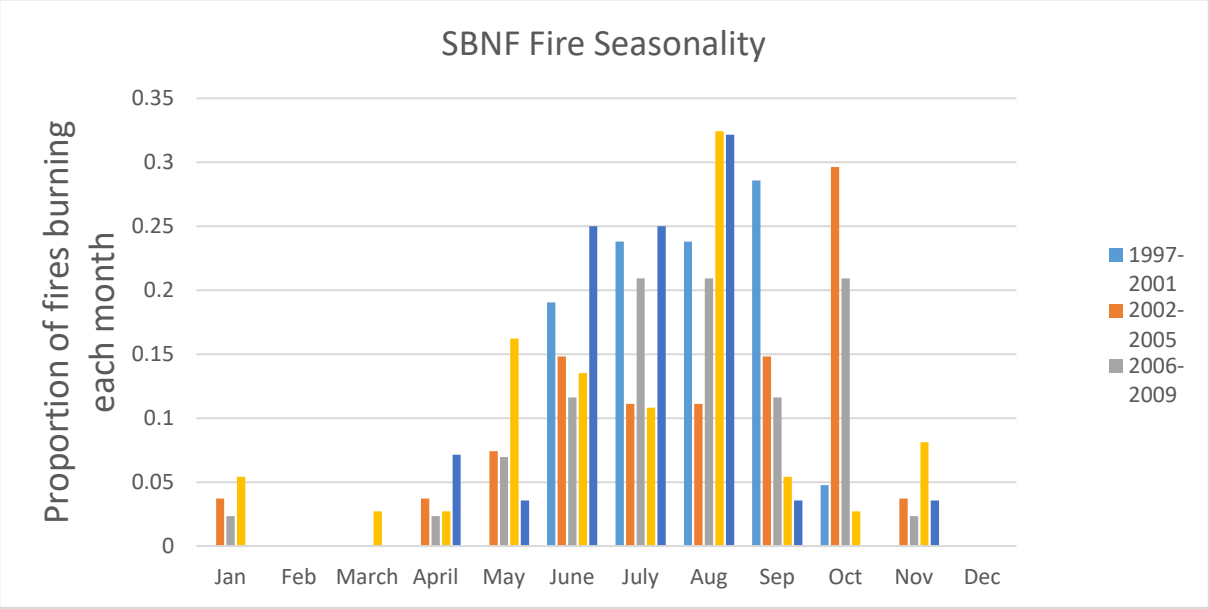
Figure 1. Average Number of Fires By Month by Decade.



The fire perimeter database was used to calculate the proportion of fires in each month since 1997. Fire start date (i.e. alarm date) were not consistently reported before 1997.

The data above is useful for seeing more long term data trends, but due to the lack of 'alarm date' data for the San Bernardino National Forest prior to 1997, the forest has decided to focus on analyzing data for fire seasonality from 1997 forward. The figure below highlights the more recent years.

Figure 2. Fire Seasonality Data from 1997 Forward for the San Bernardino National Forest.



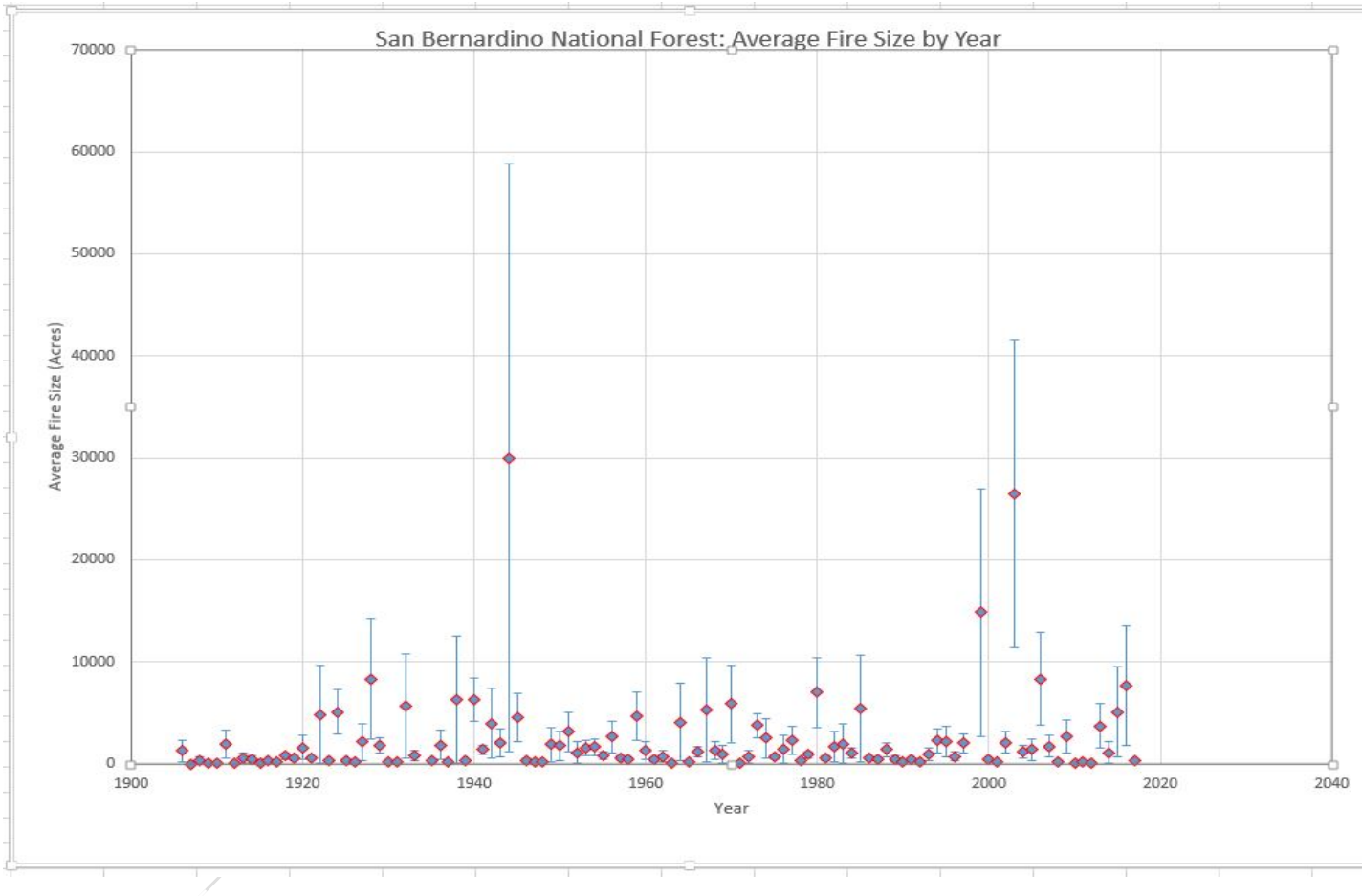
The San Bernardino National Forest is influenced by a Mediterranean climate offering fairly consistent, general weather patterns through the year. Yearly precipitation can be expected starting in December/January, and trails off by early May. The timing and quantity of the delivery of precipitation and summer dry down are highly influential in the length and severity of summer/fall fire season. High water years bring abundant grass crop that will eventually cure and turn to a reliable wick for ignition. Extended rainy seasons decrease exposure time for grass to be in a cured state, and prolong moisture content in chaparral.

The two specific weather events that pose the greatest threat to fire initiation and severity are strong high pressure system events that my last several days, often bringing record heat and low relative humidity values, and Santa Ana wind events caused by high pressure established over the four corners region and a low pressure system off the coast.

Periods of strong surface high pressure begin during the spring and may bring several days of elevated temperatures. These events can rapidly cure winter grass and bring the lower elevation areas of the Forest into fire season for the summer; the Forest sees higher initial attack activity during these heat waves with both accidental and intentional ignition sources. When these events occur in August and September live and dead fuels are at their lowest moisture levels, which correlates with fire ease of initiation, spread and difficulty in containment.

Gradients between the systems generate offshore wind events that may last several days and are highly variable as far as intensity and areas impacted. These stand-alone wind events are typical beginning each fall and may run through the spring, but strong to very strong events do not occur every year. Strong events may bring wind speeds of 30-70 miles per hour, and these events are notorious for both initiating and pushing fires across miles across the landscape. Figure Y shows average fire size through time, and the notable increases in average fire size may correspond to years when fire events align with strong winds.

Figure 3. Average Fire Size by Year.



All fires within a year were averaged to obtain a mean fire size. Data were gathered from the fire perimeter database (http://frap.fire.ca.gov/data/frapgisdata-sw-fireperimeters_download).

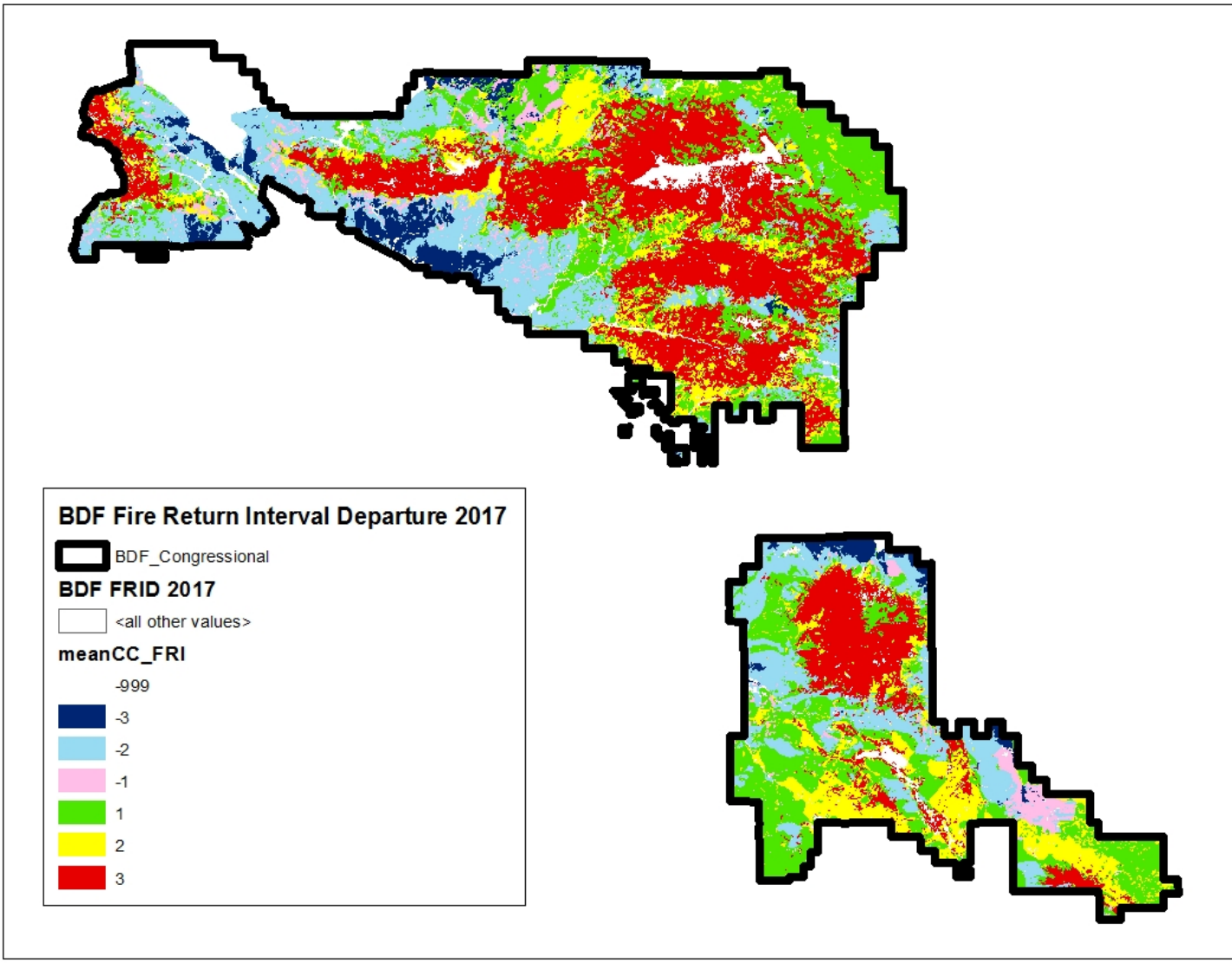
Are fire frequencies becoming more departed from the natural range of variation?

Large portions of the San Bernardino National Forest are highly departed from historic fire regimes. Lower elevation areas adjacent to dense population centers see frequent ignitions and hot daytime temperatures during the spring and summer months. As a result Cajon Pass, San Bernardino foothill communities, and the San Gorgonio Pass have seen departure from historic long interval, high severity chaparral fires to short interval, lower severity grass fires. Shrubland areas with short fire return

intervals may become degraded and experience conversion from native chaparral to non-native annual grasses.

Higher elevation areas have seen an opposite trend due to an era of successful fire suppression. Mixed conifer stands heavily weighted with Jeffrey Pine have transitioned from high frequency, low severity fires to low frequency, high severity incidents. Both of these scenarios are displayed in the following Fire Return Interval Departure Map of the BDF. Negative values represent too frequent fire and potential for type conversion, positive values indicate too little fire and increased risk for higher severity fire.

Figure 4. Fire Return Interval Departure for San Bernardino National Forest.



The San Bernardino National Forest Fuels Management and Fire Prevention Programs strive to enhance the resilience of these systems by reversing these patterns. In 2017 analysis was initiated in the Cajon Pass corridor, the most consistent zone of ignition sources across the Forest. The District worked with cooperators to develop a project area across boundaries, focusing on reducing vegetation

along Interstates 15 and 215 as well as State Highway 138 in strategic locations each spring. These ignition reduction zones were designed to prevent the errant vehicle fire, cigarette, or trailer chains from finding available vegetation that easily promotes fire spread. This project serves as a pilot, with expansion in coverage being considered for State Highways 18, 330, 38, 243, and 74.

Mechanical and prescribed fire operations are ongoing in the higher elevation areas where fire is departed on the too infrequent side of the spectrum. South Big Bear, Baldwin Lake, and Bluff Mesa projects on the Mountaintop District cover extensive areas of fire regime 1, condition class 3 montane forests. The Thomas Mountain project on the San Jacinto District addresses similar concerns and efforts to restore fire to the landscape within Jeffrey Pine ecosystems that are highly departed.

In summary, the San Bernardino NF believes we have achieved progress in meeting Goal 1.1.

Forest Goal 1.2: Restoration of Forest Health

Mortality Risk Assessment; Forest Health Protection Mortality Surveys; Proportion of Landscape in Departed Fire Frequency

Data

Aerial detection surveys for tree mortality on the San Bernardino National Forest are conducted annually. An overview of these surveys, as well as maps may be found at: http://www.fs.usda.gov/detail/r5/forest-grasslandhealth/?cid=fsbdev3_046696

Results

Has the forest been successful at reducing mortality risk? Is tree mortality increasing across the landscape, and is it distributed evenly across elevations?

The protocol for tracking tree mortality and its altitudinal distribution across Southern California National Forests is still being refined.

Widespread oak tree mortality is occurring on federal, state, private, and Native American lands in San Diego and Riverside Counties. Multiple agencies and researchers have discovered that dead and dying oaks were infested with the gold-spotted oak borer (*Agrilus coxalis)*. These agencies and organizations are working together in the research, education, and outreach efforts regarding this pest.

More recently, discovery of GSOB was made on the San Jacinto Ranger District of the San Bernardino National Forest. The approach to dealing with the infestation has included several treatment methods including felling and debarking infested oaks. The bark is then removed and transported to a certified grinding site off of the mountain. We've found that the most successful way to remove the bark is by using a Pulaski to cut a seam down the bole of the tree and to pry the bark off as opposed to using a debarking head for a chainsaw. We are also monitoring for the presence of GSOB in and around administrative sites and campgrounds as well as investigating trees around the district that have characteristics of GSOB infestation. These trees are then cataloged via shapefiles so we can monitor them throughout the year. In future monitoring reports we will discuss and provide an update as to whether the quarantine and management actions have been successful. Information on the gold-spotted oak borer may be found at: http://www.gsob.org.

Forest Goal 1.2.1: Fire Regime I, 0 to 35 years, low severity to Condition Class 1

Is the forest making progress toward increasing the percentage of montane conifer forests in Condition Class 1?

Data

This indicator gauges departure from either the minimum or the maximum fire return interval. In 2006, the fire regime condition class monitoring indicator was updated using new mapping procedures. In the new GIS maps, information is provided on presumed fire return intervals from the period preceding Euroamerican settlement ("presettlement") and for contemporary fire return intervals, and comparisons are made between the two.

The information was compiled from the fire history literature, expert opinion, data collection, and vegetation modeling. The California Department of Forestry and Fire Protection's Fire and Resource Assessment Program fire history database was used to characterize current fire regimes. The vegetation type stratification was based on the 1996 CALVEG map (U.S. Forest Service Remote Sensing Lab) for the four national forests in southern California.

There is currently a paper in review by authors Nicole Molinari et. al. that addressed this question. The paper is to be published next year but the data results are as follows.

Figure 5. Percent area of conifer forest in each assessment area burning 0-7 times since 1908. If burning at the mean FRI predicted for pre-Euro-American settlement mixed conifer and yellow pine forests, most of these areas would have burned 5-9 times during this period.

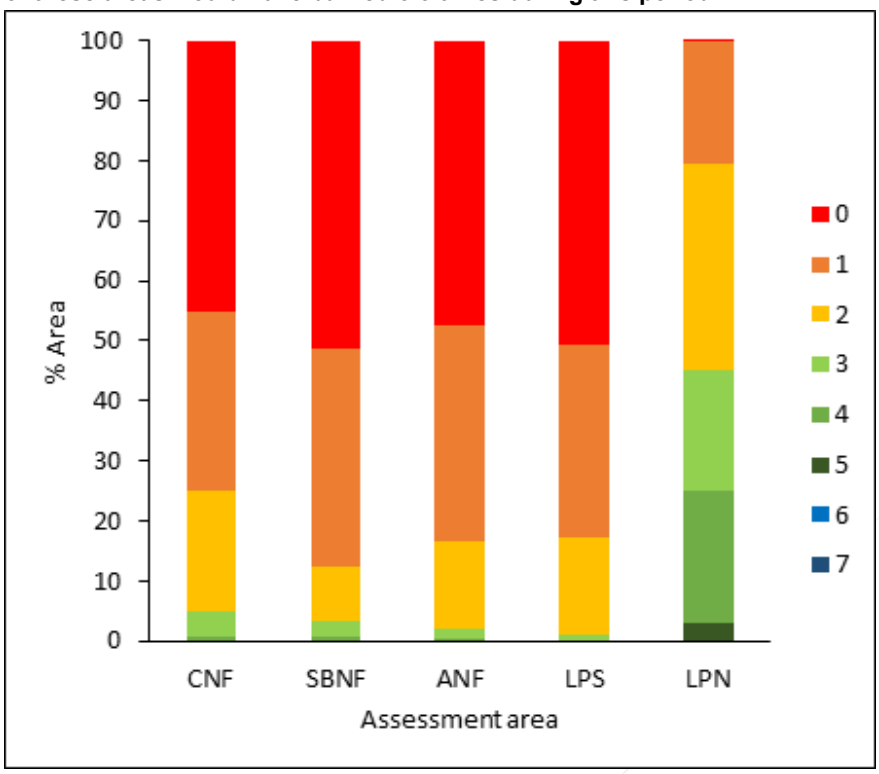


Table 4. Summary statistics on conifer forest area, fire return interval (FRI) and time since last fire (TSLF) for all assessment areas, separately and combined. Conifer forest was considered outside of the natural range of variation (NRV) if the current FRI was greater than the max reference FRI assigned to that forest type.

	CNF	SBNF	ANF	LPS	LPN	All forests
Conifer forest area (ha)	6,902.2	77,140.8	22,619.9	22,804.1	2,538.7	132,005.7
Total area (ha)	227,358.7	325,948.6	285,867.3	662,240.6	134,740.7	1,636,155.9
% conifer forest	3.0	23.7	7.9	3.4	1.9	8.1
Ave. mean ref FRI (yrs)	12.1	12.8	13.1	12.1	11.9	12.7
Ave. current FRI (yrs)	73.9	79.6	76.9	78.7	34.2	77.8
Ave. TSLF (yrs)	65.8	70.7	67.7	66.0	14.0	68.0
% forest in NRV	31.0	28.0	29.9	21.5	79.4	28.3
% forest outside NRV	69.0	72.0	70.1	78.5	20.6	71.7

For data limitations in these datasets, see the CALVEG mapping metadata: http://www.fs.usda.gov/detail/r5/landmanagement/resourcemanagement/?cid=stelprdb5347192 and the California fire history database metadata: http://frap.fire.ca.gov/data/frapgismaps/frap_maps.html

Areas where the current fire return interval is more frequent than expected are represented as negative numbers, while areas that have had longer than expected fire return intervals are represented as

positive numbers. A condition class of either 1 or -1 indicates that fire return intervals are within the expected range of variability around the mean for a given fire regime. Condition classes 2 or -2 indicate a moderate departure from the expected mean, while condition classes 3 or -3 indicate a high departure from the expected mean. Both moderate and high departures may indicate that altered fire regimes pose a risk to the ecological condition of the site. Type conversion from high fire frequencies (Condition Class -3) or deforestation from wide-spread high severity crown fires (Condition Class 3) are more likely as the absolute value of the condition class rating increases.

Results

The Forest is currently building on initial investments of first entry treatments within South Big Bear, Baldwin Lake, and Bluff Mesa projects where mechanical treatments have been followed with pile burning, and fire/fuels personnel are working with resource specialists to maintain condition class 1 areas with prescribed fire application.

The San Bernardino NF believes we have made progress toward increasing the percentage of montane conifer forests in Condition Class 1.

Forest Goal 1.2.2: Maintain or increase percent of chaparral and coastal sage scrub in condition class 1 (Fire Regime IV)

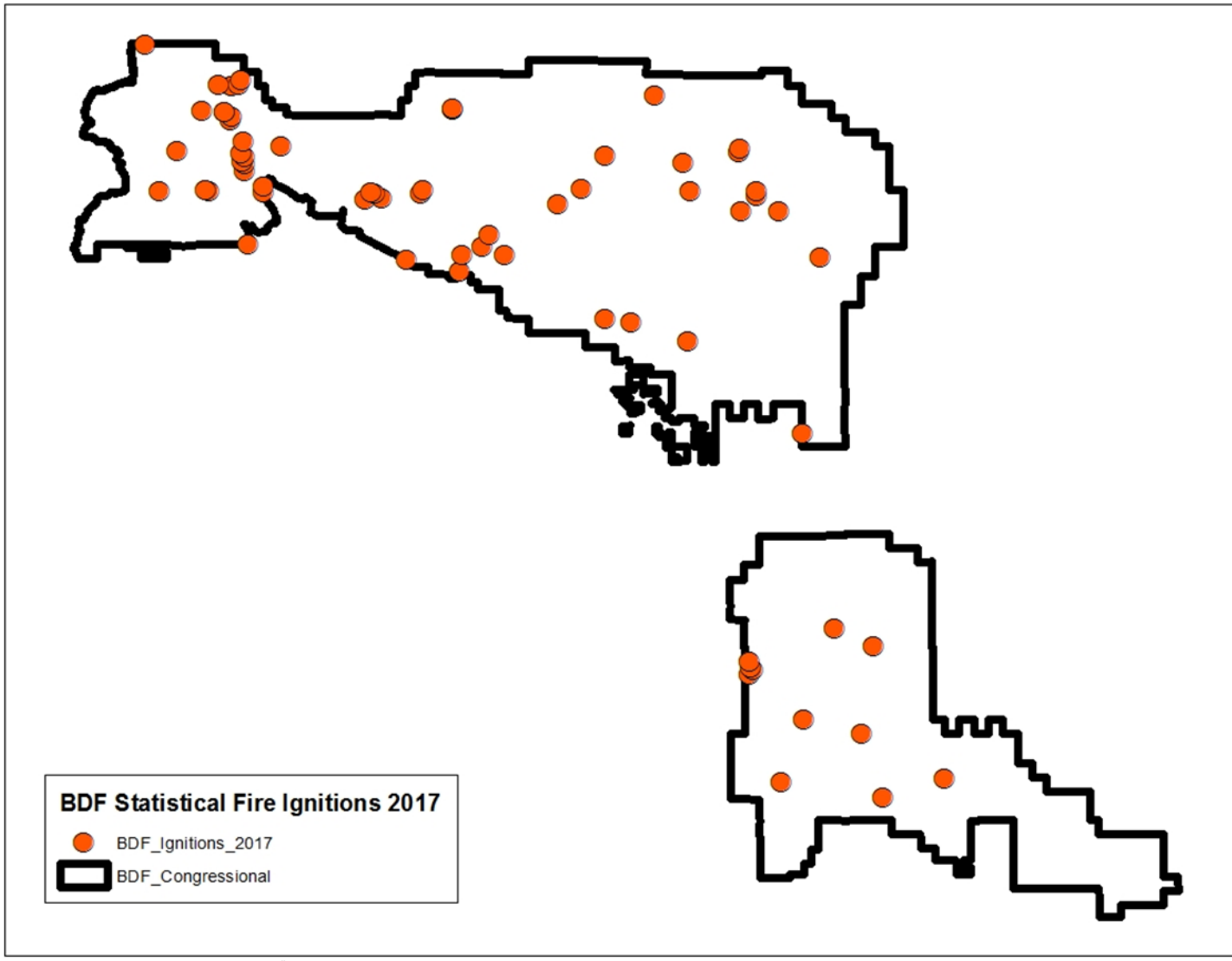
Is the forest making progress toward maintaining or increasing the percentage of vegetation types that naturally occur in Fire Regime IV in Condition Class 1?

See Data in Previous Monitoring Question.

Results

Fire Regime 4 is represented by 35-100+ year frequency and high (stand replacement) severity; chaparral falls into this category on the San Bernardino NF. The Cajon Pass Ignition Reduction project aims to lengthen fire intervals in chaparral to allow for lower probability of type conversion to grass, and in turn more soil stabilization and habitat protection. This project wrapped up analysis in 2017 and implementation is ongoing in 2018 and beyond, with future goals of extending this project to other areas of the forest where fire occurs too frequently. The statistical fire points below identify trends within Cajon Pass, State Highways 18, 330, and 74 as well as the Bee Canyon Shooting area on the San Jacinto Ranger District. All areas have concerns for type conversion from chaparral to non-native grasses.

Figure 6. Fire Ignition Locations for the San Bernardino NF in 2017.



Forest Goal 1.2.3: Long fire-free intervals in Fire Regime V

Has the forest been successful at maintaining long fire-free intervals in habitats where fire is naturally uncommon?

The Forest has limited areas where fire has played a limited role naturally. Exceptions would be on the far eastern portions of the Mountaintop Ranger District where Joshua Trees are on **Forest Vegetation and Health Monitoring**

The Forest Service Remote Sensing Lab provides inventories of vegetation resources in an ecological framework for determining changes, causes, and trends to vegetation structure, health, biomass, volume, growth, mortality, condition, and extent. For details of the vegetation monitoring section, see: http://www.fs.fed.us/r5/rsl/projects/.

their upper reach from National Park Service lands, and the highest elevations within the San Gorgonio Wilderness where Limber Pine stands are present. Both areas see limited management actions due to remote locations and restrictions associated with federal wilderness designation.

Forest Goal 2.1 Invasive Species; Acres or stream miles occupied by invasive species

Are the national forests' reported occurrences of invasive plants/animals showing a stable or decreasing trend?

The Forest does not receive a level of funding sufficient to conduct a comprehensive inventory, and therefore we are unable to identify a trend based on change from total inventoried acres. Survey data is entered into the NRIS corporate database and acres treated are recorded in the FACTS database.

Forest Goal 3.1 Visitor Satisfaction from NVUM (National Visitor Use Monitoring)

Are trends in indicators and visitor satisfaction surveys indicating that the forest has provided quality, sustainable recreation opportunities that result in increased visitor satisfaction?

Annual indicators are recreation facilities managed to standard including natural resource protection as described in Forest Goal 3.1. Meaningful Measures provides a framework for measuring this but the linkage to resource protection is not as clear. Implementation and effectiveness monitoring of resource protection actions required by Standards S34 and S50 (including Appendix D) help to measure the resource protection element of this goal.

Annual indicators are recreation facilities managed to standard including natural resource protection as described in Goal 3.1. Long-term indicators are visitor use trends by activity and overall satisfaction from the National Visitor Use Monitoring ("NVUM") survey. The agency's national target for this measure is 85% and overall nationally 95 percent of visitors were satisfied with their overall experiences during their visits to National Forests and Grasslands as of 2014. The current report summarized data which were collected in 2014 on the San Bernardino National Forest. Approximately 89 percent of respondents were satisfied with developed sites on the San Bernardino NF; 91 percent were satisfied with access; 80 percent were satisfied with services; and 99 percent were satisfied with their perception of safety when they were recreating on the San Bernardino NF. These 2014 values are higher than those determined in 2009 and all meet the national target compared to some of the 2009 ratings that did not meet that target. The 2009 and 2014 reports are available online at: http://www.fs.fed.us/recreation/programs/nvum/.

Results indicate that San Bernardino NF visitation has decreased since 2009, with approximately 2,832 (x1,000) visits in 2009 relative to 2,221 (x1,000) in 2014. Reasons for this decrease in visitation are unknown at this time. The report is available at the above address.

Are trends in indicators and visitor satisfaction surveys depicting the forest has provided solitude and challenge in an environment where human influences do not impede the free play of natural forces?

Wilderness Stewardship Performance is a framework used to measure Forest Service efforts to meet its primary responsibility under the Wilderness Act: to preserve Wilderness character. In 2017 there was no measurable improvement in the overall wilderness area score. This scoring system differs from the

system used in previous monitoring reports and therefore a trend cannot be considered, however visitor satisfaction on the San Bernardino NF and Wilderness condition is improving consistently.

Forest Goals 4.1a and 4.1b: Energy and minerals production

Has the forest been successful at protecting ecosystem health while providing mineral and energy resources for development?

Has the forest been successful at protecting ecosystem health while providing renewable resources for development?

In fiscal year 2018, the Forest monitored the operation of the Omya and Butterfield quarries as well as Mitsubishi cement quarry. The Forest is currently conducting an environmental analysis for the expansion of both the Omya and Mitsubishi quarries.

Based on projects and activities that have been analyzed and authorized via the National Environmental Policy Act process, the San Bernardino NF continues to meet the intent of both these goals.

Forest Goal 5.1 Watershed Condition

Watersheds are integral parts of broader ecosystems that can be viewed and evaluated at a variety of spatial scales.
Watershed condition is the state of the physical and biological characteristics and processes within a watershed that affect soil and hydrologic functions supporting aquatic ecosystems.
The Forest Service Manual (FSM) uses three classes to describe watershed condition (USDA Forest Service 2004a, FSM 2521.1):

- Class 1 watersheds exhibit high geomorphic, hydrologic, and biotic integrity relative to their natural potential condition.
- Class 2 watersheds exhibit moderate geomorphic, hydrologic, and biotic integrity relative to their natural potential condition.
- Class 3 watersheds exhibit low geomorphic, hydrologic, and biotic integrity relative to their natural potential condition.

Using a comprehensive set of 12 indicators that are surrogate variables representing the underlying ecological, hydrological, and geomorphic functions and processes that affect watershed condition, a watershed condition assessment is conducted describing watershed condition in terms of these three discrete classes that reflect the level of watershed health. Primary emphasis is placed on indicators that directly or indirectly impact soil and hydrologic functions and riparian and aquatic ecosystems that Forest Service management activities can influence.

Is the forest making progress toward sustaining Class 1 watershed conditions while reducing the number of Condition Class 2 and 3 watersheds?

Table 5 below indicates an improvement in the watershed condition with the number of watersheds with an increase in the number of watersheds being rated as Class 1 as compared to a decrease in the number or same number of watersheds being rated as Class 2 and Class 3.

Table 5. A comparison of watershed condition classification between FY2011 and FY2018.

Watershed Condition Classification	FY 2011	FY 2016	FY 2017 (Q3)	FY 2018 (Q1)
Class 1 (Functioning Properly)	14	17	15	16
Class 2 (Functioning at Risk)	41	39	43	39
Class 3 (Impaired Function)	13	12	10	13

The protocol for tracking current streamflows relative to historical flows across Southern California National Forests has been conducted for subset of streams outfitted with USGS gauges. The Figure below show the results for Deep Creek, a USGS gaged stream on the San Bernardino NF where the flow from 2017 (black hatched line) can be compared to the historical flows defined as the years 1950 to 1980 water years. The 25th, 75th and mean monthly flow intervals were calculated and graphed for this historical period. Streamflow in the 2017 water year (October to September) at Deep Creek surpassed the 75th percentile of historical flows in mid-December but did not reach the peak flows observed in 1993 for this site (Figure X). Given the previous 5 years of drought, high flows falling at the higher end of the historical condition were welcomed.

Figure 7. Current Rainfall deviations for Deep Creek 2017.

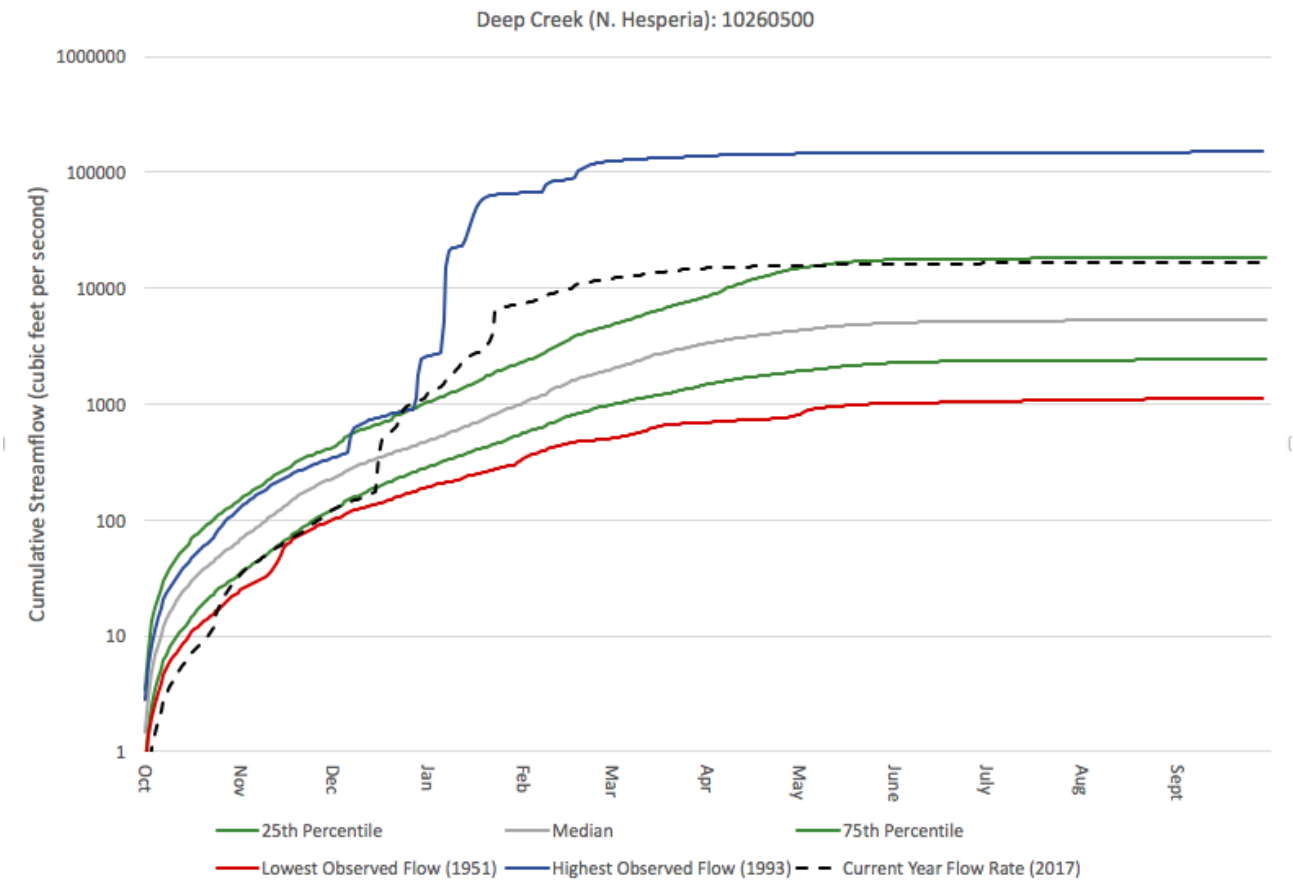


Figure 7 above shows how the current year's rainfall deviated from the past few years with well described drought conditions. The end of the 2016 water year was marked with an incredibly low discharge rate and this continued throughout the beginning of the 2017 water year. However rainfall in 2017 was quite high and boosted the discharge rate within the normal range and it has largely been sustained throughout the duration of the year.

Forest Goal 5.2 Riparian Condition

Is the forest increasing the proper functioning condition of riparian areas? How do streamflows compare with historical records?

As previously discussed, a comprehensive set of 12 indicators representing the underlying ecological, hydrological, and geomorphic functions and processes affecting watershed condition are used to determine watershed health. Primary emphasis is placed on those indicators that directly or indirectly impact soil and hydrologic functions and riparian and aquatic ecosystems that Forest Service management activities can influence. These indicators include water quality, aquatic habitat, aquatic biota, and riparian/wetland vegetation.

Is the forest increasing the proper functioning condition of riparian areas? How do streamflows compare with historical records? Is the forest making progress toward reducing the number of streams with poor water quality or aquatic habitat conditions?

Water quality addresses the expressed alteration of physical, biological, or chemical impacts to water quality and uses both impaired waters (303(d) listed) and water quality problems (not listed) as its key attributes. Table 6 indicates a decrease in the number of Class 1 watersheds but also a decrease in the number of Class 3 watersheds as compared to an increase in the number of Class 2 watersheds from FY2011 to FY2018.

Table 6. Water quality indicator comparison between FY2011 and FY2017.

Water Quality Classification	FY 2011	FY 2016	FY 2016 Quarter 3	FY 2017	FY 2018
Class 1 (Functioning Properly)	23	28	15	16	15
Class 2 (Functioning at Risk)	24	23	43	39	40
Class 3 (Impaired Function)	21	17	10	13	13

Aquatic habitat addresses aquatic habitat condition with respect to habitat fragmentation, large woody debris, and channel shape and function. Key rating attributes include habitat fragmentation (including aquatic organism passage), large woody debris, and channel shape and function.

Table 6 indicates a shift in the number of Class 3 watersheds moving to Class 2 watersheds, at first a positive shift but now a negative shift in the last year. The number of Class 1 watersheds is also decreasing, likely due the more recent wildfires having an initial negative impact on the watershed and moving it into a Class 2 at risk condition. Continuous management and monitoring will help the forest move toward the desired condition of more Class 1 watersheds.

Forest Goal 6.1: Rangeland condition

Is forest rangeland management maintaining or improving progress towards sustainable rangelands and ecosystem health?

Annual compliance monitoring showed allotments were within forage utilization standards. At the forest level, no long term monitoring plots were read in 2017/FY2018. Based on period monitoring, a majority of allotments or pastures remain in good condition.

There are currently two active allotments within the San Jacinto Ranger District of the San Bernardino National Forest. The Rouse allotment is currently inactive. The Wellman and Garner allotments are active. Rattlesnake allotment is shared with BLM and is on the Mountaintop Ranger District and is active. All are currently administered to standard.

Garner allotment is currently undergoing NEPA analysis. A permit for 220 head, year round, was issued in 1984. The permittee and the Forest Service have adjusted the number of cattle as needed depending upon adequate forage production, precipitation rates and personal use.

Public scoping began in 2016. The Rouse Allotment was authorized for 14 head in 2012 and the Wellman Allotment is currently authorized for 50 head. Both Garner and Wellman allotments operate below permitted numbers, as a mutual agreement with the forest, due to current drought conditions.

In 2016, the Santa Ana Regional Water Quality Control Board passed Order R8-2016-0003, which exempted from its provisions Forest Service grazing allotments that meet certain criteria. Data continues to be collected for annual monitoring of these allotments.

Forest Goal 6.2: Biological resource condition

Are trends in resource conditions indicating that habitat conditions for fish, wildlife, and rare plants are in a stable or upward trend?

There are tables from an annual required monitoring report attached for the US Fish and Wildlife Service's (FWS) Biological Opinion FWS-05B0017-05F0009-R002 Programmatic Biological Opinion for the Revised Land Management Plans for the Four Southern California National Forests, California, issued September 30, 2013. A summary of the monitoring results for the San Bernardino National Forest are in that table and they conclude that the habitat conditions for these species are in a stable condition for the Calendar Year 2017 (includes first quarter of FY 2018). The Forest has not yet reported on FY 2018 and is working on updating the report to coincide with fiscal year reporting. Some of this data reported was also reported in the FY 2017 LMP Monitoring Report.

In calendar year 2017, the San Bernardino National Forest reported to U.S. Fish & Wildlife Service (FWS) monitoring items from roughly 8 different LMP Ongoing Activities Biological Opinions (BO) for threatened and endangered (T&E) wildlife species and plant species.

Overview of all on-going activities monitoring:

- No known incidental take for TE species in 2017 from covered LMP on-going activities.

- Garner Grazing Allotment activities did continue in 2017 (FY2018), grazing occurred at lower numbers than historic within Quino checkerspot butterfly habitat.

Reports on individual species:

Quino Checkerspot Butterfly (QCB) – occurs on San Jacinto Ranger District (SJRD) only

SJRD

- Projects and ongoing activities being implemented with potential effects to QCB and QCB habitat include SCE's "emergency" pole replacements and hazard tree removal (under "emergency" Special Use permit that expires June 2018; Emergency Consultation to be conducted at that point).
- No specific management actions in habitat in 2017, except for continued grazing of Garner and Wellman allotments; no change in impacts to Quino.
- The San Jacinto RD continued to remove noxious weeds (bull thistle) in the Johnson Meadow and Garner Valley areas to improve QCB habitat conditions.
- No broadcast burns were conducted in 2017 on the SJRD.
- Impacts to Quino from grazing may have decreased due to a voluntary reduction of head in the Garner allotment from 65 in 2015 to 38 in the 2017 grazing season. Rouse Allotment has not been grazed since 2013 – permittee Leonard Hale died in 2014 and the allotment has been in non-use status from 2014-6.
- *2009 Grazing BO QCB monitoring:* The FS met at the beginning of the 2017 grazing season with Garner and Wellman permittees and notified them of their responsibility to protect threatened and endangered species and to notify the Forest Service before undertaking any maintenance actions or changes in livestock use in the riparian areas. The Rouse allotment was not grazed in 2017 because the permittee died in 2014 and the estate is in probate.
- *Fobes Canyon:* Riparian habitat in the Fobes Canyon area was completely burned over during the Mountain Fire in 2013 and is currently unsuitable for the SWFL. The exclusion fence was severely damaged by both the fire and subsequent storm flood damage and is no longer functional. The Forest conducted a site visit with the Palm Springs Fish and Wildlife Office (PSFWO) to the area in April 2015. The Service agreed to lift the fencing requirement for this habitat imposed by the Biological/Conference Opinions on Four Grazing Allotments on the San Bernardino National Forest, California (FWS-SB-1464.2). Willow browsing by cattle was monitored in Fobes Canyon in 2017. Little browsing activity was observed.
- *Grazing NEPA Status:* NEPA on the Garner Allotment permit was postponed in 2014. In 2015, scoping was started and a NEPA ID Team developed a proposed action and alternatives; with completion of the NEPA document in 2018. NEPA for the Wellman Allotment permit is expected start in FY18 and expected to be completed in 2019.

Santa Ana Sucker (SAS) – Front Country Ranger District (FCRD) only (historic and Critical Habitat but no occupied habitat).

FCRD

- D. Austin and A. Mendoza attended several Upper Santa Ana River HCP meetings and SAS Translocation Plan meetings with USFWS, CDFW, USGS and San Bernardino County Water District. The FS provided input to the draft SAS Translocation Plan and provided information to Kai Palenscar, USFWS, for their NEPA process. They also attended quarterly western Riverside County Aquatics meeting at Riverside Corona Resource Conservation District with CDFW, USFWS, San Bernardino County, and Riverside County.

Unarmored Three-Spined Stickleback (UTS) – occurs on Mountain Top Ranger District (MTRD) only

MTRD

- Monitoring of habitat conditions and habitat protection structures was conducted at known occurrence sites (see attached SBNF Riparian BO Table).
- No species-specific monitoring was done at Juniper Springs or Sugarloaf Pond. During site monitoring/visits, UTS were observed and habitat appeared to be in good shape.
- USFWS and partners cleaned out Shay Pond (on non-federal land).
- Drafting or water extractions from stickleback habitat did not occur for fire suppression in 2017.

Arroyo Toad (ARTO) – occurs on all districts

All Districts

- Examples of projects being implemented with potential effects to ARTO and ARTO habitat (as well as other species) include SCE's "emergency" pole replacements and hazard tree removal (under a temporary "emergency" Special Use permit; Emergency Consultation to be conducted at that point).
- Ongoing activities with potential effects to ARTO are detailed in the SBNF Riparian Consultation BA.
- Monitoring of habitat conditions and habitat protection structures was conducted at known occurrence sites (see attached SBNF Riparian BO Table).

MTRD

- USGS surveyed Deep Creek at the Mojave Forks dam under a contract with ACOE. Arroyo toads were observed during each of the two visits. There are continued issues at that site due to difficulty controlling OHV incursions entering from ACOE lands.
- On the MTRD, OHV trail crossings of Holcomb Creek and Deep Creek in suitable habitat were maintained and hardened in CY 2017.
- The MTRD worked with the BLM to improve OHV management along common boundaries. A pipe and cable fence plan in the upland was approved and construction will begin in November 2017 to restrict off route use into the Warm Springs area of the Deep Creek IRA. The Forest also acquired funding and has hired a full time OHV Forest Protection Officer to improve OHV management of the boundary area. While other actions are needed, these two actions are expected to benefit ARTO and SWWF habitat at Warm Springs.

FRCD

- Forest Service staff, along with a volunteer, conducted focused surveys for ARTO in Little Horsethief Creek on April 5, 2017. Two adult ARTO were observed.

SJRD

- In 2017, Bautista Canyon/Hixon trail HV crossing was maintained and additional rock placed.

Mountain Yellow-Legged Frog (MYLF) – occurs on FCRD and SJRD; Critical Habitat but no known occurrences on MTRD.

All Districts

- Monitoring of habitat conditions and habitat protection structures was conducted at known occurrence sites (see attached SBNF Riparian BO Table).

- Projects being implemented with potential effects to MYLF and MYLF habitat include SCE's "emergency" pole replacements and hazard tree removal (under "emergency" Special Use permit that expires June 2018; Emergency Consultation to be conducted at that point).
- Ongoing activities with potential effects to MYLF are detailed in the SBNF Riparian Consultation BA.D. Austin, A. Bowers, K. Boss, and L. Van Sant attended the annual MYLF Working Group meeting in Carlsbad on November 8, 2016. K. Boss successfully managed four agreements with our partners in the MYLF Working Group, including the execution of one new agreement that facilitates funding for the captive breeding and translocation program.

SJRD

- Forest Service staff participated in the release of captive-bred juvenile frogs into Fuller Mill creek on August 10, 2017.
- California Department of Fish and Wildlife conducted trout removal in Tahquitz Creek, San Jacinto Wilderness, SBNF San Jacinto Ranger District. Sixteen trout were removed from Tahquitz Creek in November and December of 2017. Habitat condition is improving for MYLF due to gradual flushing of sediments caused by the Mountain Fire and subsequent storm event.
- Thirteen dead juvenile MYLF were collected in Dark Canyon on seven separate occasions between August 22nd and September 17th 2017. Each collection was reported to the Service and specimens were sent to the San Diego Institute for Conservation Research for necropsy.
- Closure orders for occupied MYLF sites were issued for 2017: North Fork San Jacinto River, Dark Canyon, and Fuller Mill Creek.
- See attached tables in Appendix B and the separate monitoring report for the 2017 Dark Canyon/Fuller Mill Creek San Jacinto Ranger District Recreation Sites MYLF BO monitoring report.

FCRD

- Closure orders for occupied MYLF sites were issued for 2017: Mainstem City Creek, East Fork City Creek, and Schenk Creek.
- Releases of tadpoles and juveniles occurred in East Fork City Creek on July 5 and September 21, 2017.

California Red-Legged Frog (CRLF) – historic habitat but no extant occurrences on any districts.
All Districts

- Monitoring of habitat conditions and habitat protection structures in suitable habitat that co-occurs with ARTO or MYLF habitat was conducted.

Desert Tortoise (DETO) – occurs on FCRD and MTRD
FCRD and MTRD

- No DETO or their sign were detected during pre-implementation surveys or during implementation of any (whether ongoing or project-related) activities on the SBNF.
- Examples of projects and ongoing activities being implemented with potential effects to DETO and DETO habitat include SCE's "emergency" pole replacements and hazard tree removal (under "emergency" Special Use permit that expires June 2018; Emergency Consultation to be conducted at that point).

MTRD

- No specific monitoring for DETO occurred in 2017 on the MTRD.

- Project-related surveys (Omya and Mitsubishi) in suitable habitat included surveys for DETO. None were observed.
- The June Holcomb Fire and associated activities may have affected a very small amount of some marginally suitable habitat. A possible tortoise burrow (not active) was located near the fire by a dozer line. The area is at the periphery of the distribution and likely not regularly occupied or only sparsely occupied at very low density. A BA was submitted and emergency consultation was conducted for effects to DETO from suppression, suppression repair, and Burned Area Emergency treatments during the Holcomb Fire in June 2017. The Use of Aerial Fire Retardant misapplications reported for the Holcomb Fire in the Wildland Fire Chemicals Misapplication Reporting Database (WFCMRD) (https://www.fs.fed.us/fire/retardant).

FCRD

- Surveys were conducted during implementation activities of the Baldy Mesa OHV trail project. No DETO or their sign were observed. Surveys were conducted in the Blue Cut Fire area for Burned Area Emergency Response activities including installation of pipe and cable fencing to protect potential DETO habitat. No DETO or their sign was observed.

Southwestern Willow Flycatcher (SWWF) – occurs on all districts

All Districts

- Examples of projects and ongoing activities being implemented with potential effects to SWWF and SWWF habitat include SCE's "emergency" pole replacements and hazard tree removal (under "emergency" Special Use permit that expires June 2018; Emergency Consultation to be conducted at that point).
- Monitoring of habitat conditions and habitat protection structures was conducted at known occurrence sites (see attached SBNF Riparian BO Table).

SJRD

- Habitat suitability surveys and two-year protocol surveys were conducted on the San Jacinto Ranger District by Tanner Environmental Services. Suitable habitat was identified in four locations. No SWWF or any other *Empidonax* species were observed during 2017 surveys. Four brown-headed cowbirds were observed on the final visit to the Spillway Canyon area. Surveys were conducted by Jason Berkeley, FWS permitted SWWF surveyor.

FCRD

- In addition to the monitoring of habitat at known breeding territories (see SBNF Riparian BO Table), protocol-level surveys were conducted under contract with the SBNF at the west fork of City Creek and associated tributaries. Surveys were also conducted in Mill Creek for project related NEPA. Surveys were conducted by U.S. Fish and Wildlife Service (USFWS) permitted SWWF surveyors: staff from the San Diego Natural History Museum and Jason Berkeley. No nesting SWWF were observed.

MTRD

- In addition to the monitoring of habitat at known breeding territories (see SBNF Riparian BO Table), protocol-level surveys were conducted at Jenk's Lake under a contract with the SBNF. No SWWF were observed during the protocol visits.
- The MTRD worked with the BLM to improve OHV management along common boundaries. A pipe and cable fence plan in the upland was approved and construction will begin in November 2017 to restrict off route use into the Warm Springs area of the Deep Creek IRA. The Forest also acquired funding and has hired a full time OHV Forest Protection Officer to

improve OHV management of the boundary area. While other actions are needed, these two actions are expected to benefit ARTO and SWWF habitat at Warm Springs.

- The habitat for one breeding territory was completely burned during the Holcomb Fire. A BA was submitted and emergency consultation was conducted for effects to SWWF from suppression, suppression repair, and Burned Area Emergency treatments during the Holcomb Fire in June 2017. The Use of Aerial Fire Retardant misapplications reported for the Holcomb Fire in the Wildland Fire Chemicals Misapplication Reporting Database (WFCMRD) (https://www.fs.fed.us/fire/retardant).

Least Bell's Vireo (LBVI) – suitable habitat on all districts; identified nesting territories on FCRD and SJRD

All Districts

- Examples of projects and ongoing activities being implemented with potential effects to LBVI and LBVI habitat include SCE's "emergency" pole replacements and hazard tree removal (under "emergency" Special Use permit that expires June 2018; Emergency Consultation to be conducted at that point).
- Monitoring of habitat conditions and habitat protection structures was conducted at known occurrence sites (see attached SBNF Riparian BO Table).

FCRD

No protocol level LBVI surveys were conducted in 2017.

California Condor (CACO) – records for MTRD and FCRD; no historic nesting records on SBNF

All Districts

- No observations of CACO reported on the SBNF in 2017.
- Examples of projects and ongoing activities being implemented with potential effects to CACOs and CACO habitat include SCE's "emergency" pole replacements and hazard tree removal (under "emergency" Special Use permit that expires June 2018; Emergency Consultation to be conducted at that point).

MTRD

- Projects under Special Use Permit (*e.g.,* filming, SCE pole replacements, cell tower construction/maintenance, etc.) and ongoing Forest Service management activities that occurred near Paivika Ridge and Keller Peak all contained Design Features (*e.g.,* stop activities, clean up all microtrash, crew education for raptor ID, etc.) to protect CACOs in case of the unlikely event that CACOs were present during project activities.
- Two mine expansion project (Omya and Mitsubishi) BAs include assessments of potential effects to future nesting or foraging should condor populations expand over the lives of those projects. Consultation for Mitsubishi was completed; consultation for Omya will be occurring in 2018.

Coastal California Gnatcatcher (CAGN) – suitable habitat on FCRD and SJRD only

- No injury or mortality of CAGN recorded n the SBNF.
- Projects and see previous being implemented with potential effects to CAGN and CAGN habitat include SCE's "emergency" pole replacements and hazard tree removal (under "emergency" Special Use permit that expires June 2018; Emergency Consultation to be conducted at that point).

Peninsular Bighorn Sheep (PBS) – occurs on SJRD only.

SJRD

- No trail or road maintenance activities conducted in 2017 in PBS habitat; no changes in grazing allotment numbers for Wellman Allotment to affect sheep.
- D. Austin attended the Coachella Valley Conservation Committee and Resource Management Oversight Committee meetings to coordinate with FWS/CDFW/BLM/NPS and CVAG. New Santa Rosa San Jacinto Mountains National Monument Science Plan study being started by Dr. Cameron Burrows/UCR; D. Austin is the FS representative to this group; main question to look at is recreational activities impacts on habitat/species.
- Dunn Road (FS administrative use only) was monitored for unauthorized OHV use by L. Van Sant in 2017. A trail by-passing the locked gate by way of a cut fence is still in need of repair.
- The 4 southern province National Forests are working on a wildlife drinker inventory form and cooperative agreements with various groups to start inventory, monitor, and maintain wildlife drinkers in bighorn sheep habitat across southern California in CY 2017; this will include sites in PBHS habitat.
- Greg Schoer, FS Region 5 Wildlife Program Manager, represented the 4 province forests/USFS at the western Bighorn Sheep Summit on Dec 8, 2017 at the CFDW offices in Ontario. This summit was attended by members of the BLM, CDFW, and Wild Sheep Foundation and Society for the Conservation of Bighorn Sheep. Main topics was surveys conducted by CDFW in 2017 and the need for wildlife drinker maintenance. Greg presented the province wildlife drinker protocol/maintenance information to the group.
- Palm Canyon tamarisk removal, monitoring and re-treatment of re-sprouts if necessary has occurred each Sept/Oct since 2013; removal of mature and seedling tamarisks in 5 to 20 acres of infested areas within the canyon each year is helping to restore desert riparian habitat in sheep essential habitat area; this treatment continued in 2017.

San Bernardino Kangaroo Rat (SBKR) – occurs on FCRD and SJRD

SJRD and FCRD

- Projects and see previous being implemented with potential effects to SBKR and SBKR habitat include SCE's "emergency" pole replacements and hazard tree removal (under "emergency" Special Use permit that expires June 2018; Emergency Consultation to be conducted at that point).
- Monitoring of habitat conditions and habitat protection structures was conducted at known occurrence sites (see attached SBNF Riparian BO Table).
- No focused presence/absence surveys were conducted on the SBNF for SBKR in FY2017.

Slender-Horned Spine-flower (DOLE) – occurs on FCRD and SJRD

SJRD and FCRD

- Monitoring of habitat conditions and habitat protection structures was conducted at known occurrence sites (see attached SBNF Riparian BO Table).
- We have noted in each monitoring report that the Cajon, Bautista Canyon and Cranston populations continue to be increasingly invaded by non-native annual grasses. So far, no treatments have been proposed to address this problem due to the fact that most options would either require NEPA analysis (herbicide treatment), or ground disturbance that would damage the crusts of fragile soils in this habitat. The only remaining relatively un-infested populations are the most recently discovered ones in Baisley and Horse Canyons (tributaries to Bautista Canyon). This is likely due to the remoteness of the sites and little recreational or administrative use of the areas. The Bautista Canyon populations have been impacted by County road crews piling cut brush. They were notified and provided with a map so they can avoid similar impacts in the future.

SJRD

- New localities discovered on the SJRD, extending the known elevation range for the species upward. The Use of Aerial Fire Retardant misapplications reported for the Rouse Fire in the Wildland Fire Chemicals Misapplication Reporting Database (WFCMRD) (https://www.fs.fed.us/fire/retardant); no impacts were expected to DOLE due to the misapplication occurring in the avoidance area buffer away from the occupied habitat along the San Jacinto River.

FCRD

- Impacts from private land occurring due to individual with a bull dozer conducting clearing activities in Cajon and Lytle Creeks have impacted habitat for this species on NFS lands. FS law enforcement has contacted individuals/water districts; USFWS - PSFO notified by FS on several occasions of activities occurring. Notifications were made by Deb Nelson to John Taylor and Geary Hund. No new bulldozer damage was noted in 2017, however, new 2- tracks (made by some sort of 4 wheeled vehicle) were discovered near (but not within) the Cajon Wash population. The fence between the road and the occupied habitat has been cut for several years now.

T/E Meadow Species (San Bernardino bluegrass, slender-pedaled mustard, bird's foot checkerbloom, and California taraxacum); T/E pebble plain species (Bear Valley sandwort, southern mountain buckwheat, ash-gray paintbrush); and, T/E Carbonate Species (Cushenbury milk-vetch, Parish's daisy, Cushenbury buckwheat, Cushenbury oxytheca, San Bernardino Mountains bladderpod)

MTRD and FCRD

- Projects and ongoing activities being implemented with potential effects to the above-listed TE plants and their habitat include SCE's "emergency" pole replacements and hazard tree removal (under "emergency" Special Use permit that expires June 2018; Emergency Consultation to be conducted at that point).

MTRD

- Monitoring of habitat conditions and habitat protection structures was conducted at known occurrence sites. Protective structures (signs, barriers, fences) were maintained/repaired where needed
- No impacts on NFS land were observed in CY2017.
- Mountaintop Plants consultation is still pending (BA submitted in 2012; BO anticipated at unknown date).
- The Holcomb Fire in June affected T/E meadow, pebble plain, and carbonate species and designated Critical Habitat as a result of the fire, fire suppression, aerial fire retardant applications, suppression repair, and BAER treatments. The effects were detailed in the aerial retardant reporting database as well as the Emergency Consultation BA. As a result of drops directly on occupied habitat and in avoidance area buffers, a 3 year post-application monitoring and treatment plan for effects of retardant on NNIS was requested and funded; several monitoring plots were established in August 2017 for monitoring/treatment starting CY 2018.

FCRD (California taraxacum & ash-gray paintbrush)

- No known impacts to individual plants from ongoing Forest management activities. Post-fire restoration work on the Jenks Lake flume affected meadow habitat suitable for taraxacum but no plants were directly affected. In 2017, presence/absence surveys for *Poa atropurpurea*

were conducted by consultants as part of the San Gorgonio FERC license surrender project in the South Fork of the East Fork of Whitewater River. No plants were observed.

Triple-ribbed milkvetch (ASTR) – occurs on FCRD only.
FCRD

- Occurs in Whitewater Canyon in the San Gorgonio Wilderness. No known impacts from ongoing Forest management activities.
- No surveys or site visits were conducted.

Riparian Obligate T/E Species
All Districts

- The Fisheries Resource Volunteer Corps (FRVC) contributed to T/E habitat protection through the education, survey, and habitat improvement efforts. A total of 31 individuals from the Fisheries Resource Volunteer Corps contributed approximately 2,841 hours of labor on the SBNF. Their efforts included:
    - Patrolling Bear Creek, Deep Creek, Lytle Creek, Mill Creek, Mountain Home Creek and Santa Ana River, among others.
    - Habitat improvement - garbage removal, graffiti removal, recreational dam removal and public outreach.
    - Public outreach/contacts to inform visitors about the special status species in the creeks on National Forest and the need for visitors to practice good stream etiquette. Visitors were reminded to properly dispose of all garbage and were encouraged not to construct dams in the stream.
    - Participating in Trout in the Classroom presentations with several inner-city classes.
    - Stream surveys on Bear Creek, Deep Creek and Santa Ana River to evaluate stream habitat conditions for fish and amphibians.
    - Water quality monitoring in Crab Creek, Holcomb Creek, Mill Creek, Mountain Home Creek, East Fork Mountain Home Creek, and the Santa Ana River.

SBNF ESA Listed Plant Species:

Slender-horned spine-flower - New localities discovered on the SJRD, extending the known elevation range for the species upward. No impacts observed from FS on-going activities.

Impacts from private land occurring due to individual with a bull dozer conducting clearing activities in Cajon and Lytle Creeks have impacted habitat for this species on NFS lands. FS law enforcement has contacted individuals/water districts; FWS - PSFO notified by FS on several occasions of activities occurring. Notifications were made by Deb Nelson to John Taylor and Geary Hund. (same site as for SBKR above). No new bulldozer damage was noted in 2017, however, new 2- tracks (made by some sort of 4 wheeled vehicle) were discovered near (but not within) the Cajon Wash population. The fence between the road and the occupied habitat has been cut for several years now.

We have noted in each monitoring report that the Cajon, Bautista Canyon and Cranston populations continue to be increasingly invaded by non-native annual grasses. So far, no treatments have been proposed to address this problem due to the fact that most options would either require NEPA analysis (herbicide treatment), or ground disturbance that would damage the crusts of fragile soils in this habitat. The only remaining relatively un-infested populations are the most recently discovered ones in Baisley and Horse Canyons (tributaries to Bautista Canyon). This is likely due to the remoteness of the sites and little recreational or administrative use of the areas. The Bautista Canyon populations have

been impacted by County road crews piling cut brush. They were notified and provided with a map so they can avoid similar impacts in the future.

T/E Meadow Species (San Bernardino bluegrass, slender-pedaled mustard, bird's foot checkerbloom, and California taraxacum); T/E pebble plain species (Bear Valley sandwort, southern mountain buckwheat, ash-gray paintbrush); and, T/E Carbonate Species (Cushenbury milk-vetch, Parish's daisy, Cushenbury buckwheat, Cushenbury Oxytheca, San Bernardino Mountains bladderpod):
No impacts on NFS land were observed in CY2017. Occupied habitat was routinely monitored during CY2017 with protective structures (signs, barriers, fences) maintained/repaired where needed. Mountaintop Plants consultation is still pending (BA submitted in 2012; BO anticipated at unknown date).

Limited Poa surveys conducted in Johnson Meadow on SJRD to determine habitat suitability.

Are chaparral and coastal sage scrub vegetation communities type converting to non-native annual grasslands?

A protocol was developed to evaluate the extent of type conversion from shrublands to annual grasslands across the Southern California National Forests.

We determined the number of acres of habitat type conversion from shrubland to annual grassland. The Wieslander Vegetation Type Map (VTM) was used as an historic baseline of shrubland vegetation type. This vegetation map was created from data collected in the 1930s. The VTM was spatially compared to a 2011 model of herbaceous ground cover. Any area within the VTM shrubland vegetation type that was greater than 50% herbaceous cover was considered type converted. The herbaceous data used was from 2010 and the fires are masked for 5 years, from 2005 to 2010.

Last year's outputs using Wieslander's VTM showed that there were 305,767 acres of shrubland within the land area owned by the BDF in 2016 and of this, 66,590 acres, or 22%, have been type converted to annual grassland compared to the 2011 model. This appeared to overestimate type conversion. Tgherefore this yeara similar exercise
Comparing the Wieslander map to the 2011 UCR model, excluding 10 years of fire this time, rather than 3 was used but the data still appears to be inaccurate and will need some refinement. The agency will continue to work with our partners and the remote sensing lab to fine tune this protocol.

Forest Goal 7.1
Built Area by Land Use Zone

Is the forest balancing the need for new infrastructure with restoration opportunities or land ownership adjustment to meet the desired conditions? How many of each type of special use authorization, mining permit, and forest product permit are active on the forest?

The Forest has accomplished no acres of land ownership adjusted in FY 18. This accomplishment will be used as the annual indicator of progress toward the desired condition and will be represented in future trend analysis reports.

All other accomplishments and Forest Goals are considered long term indicators for monitoring and will be reported and analyzed as a part of future trend analysis reports.

As of fiscal year 2018, land ownership complexity has been reduced relative to 2006 due to land exchanges and transfers. Between fiscal years 2006 and 2018, the San Bernardino NF conducted NEPA analyses to determine how to implement changes to unauthorized routes. Planning is complete for the decommissioning of unauthorized routes and is being implemented in stages each year. A wide variety of special uses are authorized across the San Bernardino NF.

The most current land ownership layer is currently being updated with previous fiscal year land adjustments for comparing to the baseline map.

There were 1,439 active special use authorizations as of the end of FY 2017 compared to 1,383 as of September 2016. Therefore the forest gained 56 special uses on record. These numbers were reported in the FY 2017 LMP Monitoring Report. New information has not yet been reported for FY 2018 and will be included in the next monitoring trend report.

Table 7. Special Use Authorizations by Type and Code FY 2017.

Number of Authorizations	Special Use Type	Special Use Code
1	boat dock	111
6	club	112
23	Org Camp	113
724	Recreation Residence	123
2	private lodging	131
1	hotel	132
2	resort	133
1	service station	137
1	concession campground	141
9	outfitting and guide service	153
6	winter recreation resort	161
3	target range	171
3	park or playground	172
1	day use facility	176
12	recreation event	181
1	orchard	213
2	apiary	214
1	barn, shed	221
2	fence	222
1	building	231
1	church	322
3	marker	331

Number of Authorizations	Special Use Type	Special Use Code
5	monument	332
1	sign	333
10	liquid waste disposal area	342
13	sewage transmission lines	343
2	transfer station	345
2	residence, privately owned	351
1	school	361
2	service building	362
2	mailbox	365
6	parking lot	366
1	site survey and testing	411
7	resource survey	412
11	experimental & demonstration	421
19	research study	422
3	weather station	423
2	weather modification device	424
1	observatory	425
1	education center	432
2	1906 Act permit	441
2	nondisturbing use	442
6	disturbing use, 1979 Act	443
2	construction camp and residence	511
1	temporary construction activities	512
8	warehouse and storage yard	521
1	stockpile use	522
1	processing plant	531
1	weighing or scaling station	541
2	still photography	551
14	commercial filming	552
1	geological and geophysical exploration	561
1	mineral material sale	562
7	hydro electric FERC	611
1	hydro electric ferc exempt	612
8	oil and gas pipeline	631
4	natural gas pipeline	634
2	powerline, REA financed	641
32	powerline	643
1	other utility improvement	644

Number of Authorizations	Special Use Type	Special Use Code
2	airport, heliport	711
1	airport or airway beacon	714
3	railroad ROW	731
9	dept of transportation easement	741
26	FRTA road easement	751
7	FLPMA road easment	752
106	FLPMA road permit	753
4	amateur radio	801
1	Personal/private receive only	802
5	microwave industrial	804
10	Private mobile radio service	806
2	passive reflector	807
5	cellular and PCS	810
3	Natural resource environmental monitoring	814
2	commercial mobile radio service	815
1	AM FM radio broadcast	816
17	facility manager	818
15	telephone telegraph line, non-REA	821
7	fiber optic cable	823
2	other communication improvement	831
1	navigation equipment	833
8	irrigation water ditch	911
3	irrigation water pipe > 12"	912
48	irrigation water pipe < 12"	913
7	water transmission pipe >12"	914
45	water transmission pipe <12"	915
4	water conveyance system easement act of Oct 27, 1986	916
7	dam, reservoir	922
4	water diversion, weir	923
14	reservoir	924
41	well, spring, windmill	931
4	wildlife water supply	933
30	water storage tank	935
2	stream gauging station	941
1	water treatment plant	951
1439	**TOTAL**	

In addition 74% of admin facilities are maintained to standard on the San Bernardino National Forest, with 118 total administrative facilities maintained to standard and 159 total Forest Service owned administrative buildings.

Monitoring Discussion and Findings

At this time there is not enough information to conclude if change is warranted in the four areas the planning rule directs this evaluation report to indicate: monitoring program, plan components, management activities, and assessment [36 CFR 219.12(d)(2)]. There still needs to be an established protocol for several of the monitoring questions, and a thorough evaluation of the associated data over a period of several years to determine if any trends exist and any appropriate recommendations as a result. This report does include some ideas and potential shifts that could influence the effectiveness of land management on the San Bernardino National Forest.

Adaptive Management Considerations

The forest plan monitoring program is meant to "enable the responsible official to determine if a change in plan components or other plan content that guide management of resources on the plan area may be needed" (36 CFR 219.12).

Part 2 Monitoring

Carbonate Endemic Plant Habitat Management

Outcome Evaluation Question

Is habitat being conserved through implementation of the Carbonate Habitat Management Strategy?

Reference Values

The following actions from the Carbonate Habitat Management Strategy Part IV (Administration) were taken during FY2017. Data for FY 2018 is still being organized and will be included in the next monitoring trend report.

13(a)(iii): The Habitat Reserve was managed for conservation of carbonate Plants and consistent public uses, as provided under section 9(f) of the CHMS. This management included use, maintenance and patrol of the Forest Transportation System, maintenance of fencing and signage, and administration of special use authorizations.

Conclusions

Habitat is being conserved through implementation of the Carbonate Habitat Management Strategy. Management activities associated with carbonate habitat during FY17 made limited gains toward the desired conditions of protecting the habitat reserve, avoiding destruction of critical habitat, recovering listed species, and restoring carbonate habitat.

Recommendations

- Continue ongoing work towards the LMP recommended establishment of the Blackhawk RNA.

- Work on taking title to Mitsubishi Cement Co. (MCC) 17P and 18P via donation by MCC.
- Continue work on requesting mineral withdrawal to establish initial habitat reserve for the Furnace Unit of the Carbonate Habitat Management Area, and implement mitigation measures for Omya and Mitsubishi.

Pebble Plain Plant Habitat Management

Outcome Evaluation Questions

Is habitat being conserved through implementation of conservation strategies?
Are resource conditions indicating a stable or upward trend toward meeting desired conditions?

Reference Values

The following actions from the Pebble Plain Habitat Management Guide were taken during FY2017.

D-1 (5.): Coordination continued with Southern California Edison and Bear Valley Electric Service to avoid and minimize impacts associated with operation and maintenance of their electrical transmission lines through pebble plain habitat.
D-1 (6.): Patrols continued to monitor sensitive areas, record impacts, and maintain fences, signs and gates. Barbed wire continued to be replaced with smooth wire. Additional smooth wire fencing and signage was constructed in strategic locations.
D-1 (9.): The District continued to manage mining-related activities in and around pebble plain habitat. The strategy is to work with claimholders to prepare Notices of Intent that avoid impacts to pebble plain habitat by design.
D-1 (12.): The effort to identify, close and restore unauthorized routes in pebble plain habitat was folded into the OHV Route Designation Project. A final decision on this action was rendered in February 2009 and implementation is ongoing.

Conclusions

Habitat is being conserved through implementation of conservation strategies, and resource conditions indicate a stable trend relative to desired conditions. Management activities associated with pebble plains during FY15 made limited gains toward the desired conditions of conserving habitat, minimizing incompatible uses, restoring habitat, and recovery of listed species.

Recommendations

- Continue collaborative efforts with the Sawmill Pebble Plain Working Group to provide effective management of the Sawmill pebble plain complex in a multi-jurisdictional context.
- Continue ongoing work towards the LMP recommended establishment of the Arrastre and Wildhorse Research Natural Areas (RNAs).
- Look for additional opportunities to improve pebble plain habitat through the integration of functional programs and through partnerships.

- Repair and expand resource fencing and signage in high use areas. Continue to patrol these areas to monitor effectives of protection measures and to detect additional protections needed.

Off-Highway Vehicle (OHV) Program Monitoring

Seven methods of OHV program monitoring were conducted this year. Each program is described separately with conclusions and recommendations for all methods compiled at the end of this section.

1) OHV Green Sticker Route Soil Monitoring

During fiscal year 2018, Forest-wide trail condition surveys were conducted on designated OHV 24-50" trails to assess soil retention and soil loss. Drainage structures such as culverts, waterbars, and rolling dips were inspected to ensure they were functioning properly. Trail maintenance was conducted to repair excessive wash boarding, fill in ruts, to level trail tread surfaces and to narrow portions of trail where tread had widened. A Sweko 480 trail dozer and a Kubota mini excavator, a front end loader and hand tools were used to remove rock and debris, grade trail tread, increase height of rolling dips, and to clean out over-side drains. Trail crews maintained the 24" motorcycle trails, removed fallen trees, other large down woody material and rocks. Several trail crossings were hardened with rock to reduce sedimentation and prevent pooling.

The FY18 monitoring results were based on analysis of detected changes and additional findings. SBNF staff and volunteers utilized the California 2008 Soil Compliance Standards and U.S. Forest Service (USFS) BMPs to assess, monitor, and maintain OHV trails across the SBNF resulting in compliance with both State and Federal standards and guidelines. Soil loss did not exceed restorability and erosion or sedimentation did not significantly affect resource values beyond the facilities.

The mini excavator purchased 2 years ago with OHMVRD funds improved trail maintenance quality as it is used annually to recover sediment and place it back on the trail tread. Installation of trail limiters, at various locations annually, will reduce trail maintenance over time. To improve OHV route maintenance, the Forest was successful in acquiring OHMVRD funds to purchase new equipment in 2019. A SWECO 480 Trail Dozer will assist in trail maintenance, and a new 4X4 ATV and dump bed trailer are being purchased to complete the required rocking of stream crossings.

Additional conclusions were determined from photo point monitoring: Water diversion features and their functionality on OHV trails remained the same. Low-water stream crossings hardened with rock at 2W01 (Devil's Hole) and 2E43 (Hixon-Bautista) prevented pool formation to reduce potential for the endangered arroyo toad to lay eggs in the trail crossing. The rock also dissipated water flow and reduced sediment delivery. Having experienced volunteers and staff was extremely beneficial to accomplishing routine annual operations and maintenance of the OHV roads, trails and facilities. Monitoring along with regular and timely maintenance was key to reducing erosion and sedimentation into local waterways.

Green Sticker Road Maintenance

Road maintenance was completed on Forest Green Sticker roads under contract and through utilization of USFS personnel and equipment. Using over $83,000 of State of California off Highway Motorized Vehicle Recreation Division (OHMVRD) Ground Operations grant funds, road grading and installation of seven over the side drains along 15.0 miles of green sticker route 2N47 on the Front

Country and Mountaintop Ranger Districts was completed. An additional 30 miles of road grading occurred on San Jacinto and Mountaintop District roads 5S07, 5509 and 3N03. To improve safety on Green Sticker route 3N21, a cattle guard was removed and the route was bladed.

Seventy five thousand dollars of State OHMVRD Ground Operations funds was procured in 2019 to repair green sticker routes Forest-wide. Route monitoring will determine priority locations for use of those funds.

2) Habitat Management Plan (HMP) Monitoring

Habitat protection monitoring conducted under the Habitat Management Plan (HMP) is funded in partnership with the State of California Off Highway Motor Vehicle Recreation Division (OHMVRD). HMP monitoring was conducted by Forest field staff four times a year using maps and checklists within threatened, endangered and sensitive wildlife and plant habitat. The purpose of the monitoring was to assess and document effects of OHV green sticker route use on habitats and then to schedule protection measure or maintenance needs.

Under the 2018 HMP, 102 locations of sensitive plant and wildlife habitat that intersect OHV routes were monitored. Of the 102 sites, 31 were monitored for wildlife and 71 were monitored for plants. All sites were monitored except when access was precluded due to excessive snow levels, and/or road and fire closures. The HMP required monitoring along 26 trails, 72 routes, and trail crossings hardened with rock.

The success criteria and management objectives were achieved at 63 sites (no off trail travel occurred within sensitive habitat) of the 102 sites.

Unauthorized OHV use increased over the last year from 32 breached sites in FY17 to 39 breached sites in FY18. During the FY18 monitoring year, 6 new monitoring sites along the new Baldy Mesa Trail were added to the HMP. Of those, 6 new sites, 4 were breached.

Of the 39 sites that were breached, 17 sites had previously noted, mapped unauthorized trails. However, because the level of work required to restrict use on these trails requires NEPA, the illegal trails are still being heavily used and are counted during monitoring. Twenty sites had new unauthorized routes, most of these were slashed immediately (using restoration funds) and showed no further use in the quarterly monitoring that followed. Two of the 39 sites had unauthorized trails that were previously restored but were reopened by hunters. These trails are being monitored. Use was low during hunting season and we are monitoring to see if these routes recover on their own or if additional work will be needed.

As we report annually, not all of these unauthorized routes were necessarily new this year but they exist on the landscape and are in need of management and restoration. Off trail impacts include damage to restoration sites, the creation of new trails and trail networks, hill climbs, trail widening, vegetation damage/mortality, and unauthorized use of motorcycles in the creek.

OHV restoration funds were utilized to immediately repair fences and to slash the affected sites along green sticker routes. Sites needing intensive treatments were identified for future restoration grants.

HMP sites were again negatively affected by activities other than unauthorized OHV use. These activities include wood cutting, target shooting, trash dumping, campfires, stolen t-post fencing, and sign vandalism. These unauthorized activities continue to degrade the Habitat Management Plan sites and the barriers and signage that protect them. The Forest continued to coordinate with other non-OHV patrols and law enforcement staff to monitor HMP locations being degraded by non-OHV use.

Coordination between SBNF OHV staff and OHV law enforcement staff continued to focus efforts in locations with repeated unauthorized use. The Forest continued coordination with the Bureau of Land Management to improve OHV management along their shared boundary on the Mountaintop District. The Forest continued to recruit additional HMP volunteers for monitoring and site maintenance.

HMP monitoring was useful to identify locations where off route use was high or ongoing. Although the HMP monitoring checklist provided immediate short-term solutions to some unauthorized uses, the Forest recognized the need to increase on the ground monitoring staff to educate riders to remain on designated routes.

As a result, in FY19, four, new permanent, full time, OHV technicians will be hired to replace some of the vacant temporary positions. Hiring of this permanent work force will improve the consistency of OHV management. The 2018 work of current temp staff resulted in reducing disturbances to sensitive habitats along routes within and adjacent to the heavily populated southern California urban interface. Monitoring results indicate that a strong USFS and volunteer presence is the most effective method to protect habitat along green sticker routes.

3) OHV Restoration Monitoring and Maintenance

The SBNF and our partner, the Southern California Mountains Foundation (SCMF) continued to monitor and maintain restored sites using California State OHMVRD funds. Substantial restoration site success was noted within special areas and habitats damaged by OHV across the Forest due to the level of this monitoring. Maintenance of existing sites included watering, weeding, caging and fence repair. Monitoring of older sites ensured closures remained intact to promote habitat connectivity and soil and water improvements. Restoration of HMP sites promoted TES species habitat protection along Green Sticker OHV routes. Monitoring and maintenance of restoration sites within and near the new Summit, Miller and Baldy Staging Areas allowed sustainable OHV use to continue while protecting natural and cultural resources.

4) Adopt-A-Trail Program Road/Trail Monitoring and SBNF Volunteer Monitoring

The San Bernardino National Forest Adopt-A-Trail Volunteers contributed 5,755 hours, a value of $158,780.00 conducting Forest-wide OHV trail and road maintenance along green sticker routes during fiscal year 18. Members of the motorized Adopt-A-Trail (AAT) Program maintained 134 miles of Forest roads and trails. The AAT Program had many active clubs with thousands of volunteers that conducted monitoring on three Ranger Districts; Mountaintop, Front Country and San Jacinto. In addition, some volunteers operated our trail dozer, mini excavator, front loader, backhoe, rock rakes, chainsaws, ATV's and motorcycles.

The Adopt-A-Trail clubs monitored thousands of acres of NFS lands along green sticker routes. Every adopted road and trail had an annual written road/trail maintenance plan that identified specific

maintenance and monitoring requirements. Maintenance included road grading, brushing, culvert and drain clearance, off road restoration, maintenance of signs, and facilities. The maintenance plans include monitoring points such as; fence lines, barricades for sensitive habitats, restoration sites, hiking trail interfaces (unauthorized use), private property and wilderness trespass and stream crossing monitoring. OHV employees and OHV volunteers repair any breach of barricades, fence lines, etc. These breach points become future monitoring points for OHV patrols and OHV projects. If an area has been breached by motor vehicles multiple times, analysis determines methods to be completed to deter future damage to the area. Typically, signs are posted, law enforcement increased and any barricades are bolstered until unauthorized motorized use is deterred.

5) Southern California Mountains Foundation-OHV Volunteer Program Monitoring

In fiscal year 2018, the SCMF OHV Volunteer Program had 200 members conducting monitoring on all three Ranger Districts: Mountaintop, Front Country and San Jacinto. There were 17,978 hours of volunteer time contributed to this effort at a value of $495,833.00 on the national forest. These OHV Volunteers are skilled 4 x 4, ATV and motorcycle operators that provide the public one on one OHV education. OHV Volunteers provided written reports summarizing their daily activities monitoring and patrolling the National Forest.

After completion of 80 hours of specified training, the SCMF OHV Volunteers are given the authority to patrol as OHV hosts, making public contacts while monitoring the Forest use patterns. The OHV Volunteers reported forest fires, unauthorized campfires, traffic collisions and other incidents while providing service to our visiting public. While in the field, the OHV Volunteers are trained to monitor sensitive areas such as meadows, wilderness areas, urban interface (excessive sound and trespass), streams, cultural sites and rare plant/wildlife habitats for unauthorized motorized use.

The OHV Volunteers are a vital Forest resource with the expertise to reach the back country of the National Forest to perform duties as described.

6) New OHV Facility and Trail Monitoring

Summit OHV Staging Area Development Project

State of California Summit Staging Area Development Soil Conservation Plan Monitoring
This monitoring was conducted by USFS staff and compared historical conditions to current conditions after staging area construction. A change analysis was based on aerial photography of the staging area between 1995 and 2009. Around 2003, the staging area footprint began to expand after wildfire. In 2006 the site was unofficially authorized by the placement of minimal facilities. The site continued to expand increasing the bare area with increased OHV use. Site specific actions to designate and improve the staging area began in 2015 and were completed in 2018.

Current conditions showed delineation of the staging area footprint using boulders, chunking and pipe/cable fence had prevented site expansion. A 2-unit vault unit was installed and was functioning. Portable toilets were removed. Kiosks displayed regulations. Construction according to the Summit Staging Area Site Layout 2/25/2015 was completed.

Based on the change analysis, the Summit Staging Area Development Project was found to be in compliance with the State of California's 2008 Soil Conservation Plan. Soil loss did not exceed

restorability. Erosion or sedimentation were not significantly affecting resource values beyond the facilities.

USFS Summit Staging Area Development Best Management Practices Monitoring
The Assistant Forest Hydrologist conducted BMP monitoring and trained OHV and biological staff to assist. The 2018 monitoring noted active rilling adjacent to 2 of the 3 over side drains and several rills forming within the interior of the staging area. The hydrologist ensured maintenance was completed by hiring a contractor through our engineering staff. In spring 2018, the contractor added additional rock to inlets/outlets of drains. In summer of 2018, additional cobble was added to the interior of staging area. Vegetative islands not installed during implementation were later graveled to reduce wind and water erosion. Restoration of 1.8 acres of the prior 2.6-acre user created staging area began in 2015; monitoring and maintenance continues. An assessment will be completed in 2020 to determine if restoration has reduced erosion.

Miller OHV Staging Area Development Project

State of California Miller Staging Area Development Soil Conservation Plan Monitoring
This monitoring was completed by USFS staff and compared historical to current conditions after staging area construction. Aerial photography analysis of the user created staging area in 1994 and 2013 revealed that without active management, the amount of bare area would have continued to grow with the demand for OHV recreation. In addition, this user created staging area did not meet Forest Plan standards for riparian areas. The new, designated staging area was relocated to the south side of FS route 2N37, with increased distance between the river and the staging area. The new development put the Forest on a path to reduce water quality issues and improve the condition of the Silverwood Lake – West Fork Mohave River watershed.

Development of the "new staging area" began in 2015 and was completed by the end of June 2018. A two unit vault toilet was installed and was functioning. Portable toilets were removed. Kiosks displayed regulations.

The potential for off-site impacts during routine maintenance of the staging area was minimal. A culvert, culvert/inlet/riser and straw wattles were installed. Water erosion (rills/rutting) at the site was also monitored. Breaches or removal of barriers did not occur due to installation of a pipe rail fence that delineated the staging area footprint. Installation of this strong type of fencing, (instead of using boulders than can be moved) succeeded in preventing site expansion and reduced water and mechanical erosion off site. A short unauthorized trail across the road from the "new development" was monitored and disguised using down vegetation to prevent further use. The planned vegetative island surrounded by boulders for protection was not created due to a need to improve traffic flow from one end of the staging area to the other. Vegetation retained adjacent to and on adjacent slopes remains intact.

Based on the change analysis, the Miller Staging Area Development project was found to be in compliance with the State of California's 2008 Soil Conservation Plan. Soil loss did not exceed restorability. Erosion or sedimentation were not significantly affecting resource values beyond the facilities.

USFS Miller Staging Area Development Best Management Practices Monitoring
At the new development, the Assistant Forest Hydrologist conducted BMP monitoring, recommended actions and directed/conducted many of the actions. Staging area maintenance occurred as needed. It involved filling ruts with material, installing a rolling dip on the road between the upper and lower

staging area, removing berms around culvert inlet/riser and lowering surface grade leading to it to reduce diversion of surface runoff away from the riser, installing a berm at the lower entrance/exit to direct surface runoff into the culvert inlet/riser, reattaching wattles, relocating a self-latching trash can, trash pickup and removal, and clearing over side drains.

The user created staging area along the river was restored using OHV grant restoration funds on 9/30/18. Both riparian and upland areas were effectively closed to vehicles using 3-4 foot boulders and pipe/cable fencing and signage. Upland areas outside of the tree drip zone were ripped, spread with local topsoil, seeded with 47 pounds of locally collected native seed, mulched and horizontally and vertically slashed to promote vegetative growth. Eight user created water crossings were restored along the southern streambank of the East Fork of West Fork Mojave River by planting live willow stakes for streambank protection, applying ground cover to reduce erosion, and installing vegetation barriers to prevent motorized access.

Baldy OHV Staging Area and Trails Development Project

State of California Baldy Staging Area and Trails Development Soil Conservation Plan Monitoring
The majority of this monitoring, was completed under the Storm Water Pollution Prevention Plan (SWPPP) contract. SWPPP contractors were on site during construction activities and also trained USFS Staff. Hydrologists, engineers, biologists, botanists and OHV staff conducted monitoring of various aspects of the project and coordinated when additional work was required.

The staging area was designated and delineated as planned. K-rails installed at the base of the railroad pillars promoted stability and restricted motorcycle use on stabilized soil surrounding the pillars. Additional k-rails were placed to delineate the staging area footprint.

A safe picnic area within the staging area footprint to the N of the railroad trestle provided an island for picnicking with kiosks and map box present. A portion of the gravel donated by the railroad was used to reduce dust and sedimentation in the picnic area.

The new 50 inch wide trail was constructed as planned. New trails were constructed by utilizing some existing user-created trail where possible. The existing ridge trail was constructed to standard reducing it from jeep width in most locations down to a 50 inch wide trail. Trail limiters were installed to retain the trail width specifically for MC and UTV use. Erosion control on the 3W24 Ridge trail incorporated a series of erosion control methods including lead-outs with rock aprons. Wattles were utilized by Trails Unlimited as they restored braided trails to focus use on one sustainable section of trail.

Additionally, the Southern California Mountains Foundation completed restoration on a large number of unauthorized trails in the OHV area improving OHV sustainability of the area. Urban Conservation Corp crews were utilized March 1-July 31, 2018 to monitor use and maintain the newly constructed trails. They trimmed vegetation and placed it along the trail where off route use had occurred. They cleared culverts, lead-outs and drains, and created berms to keep riders on the new trail.

During the Baldy Development Project, the Storm Water Pollution Protection Plan was completed effectively. OHV staff learned additional requirements that will be utilized in future work in the area. Soil loss did not exceed restorability and erosion or sedimentation did not significantly affect resource values beyond the facilities.

Rattlesnake OHV Trails and Trailering Site Development

In FY18, the Forest began work on the Rattlesnake OHV Trials and Trailering Site Development Project on the Mountaintop Ranger District. When completed in 2020, the project will provide a 13 mile loop of green sticker routes. These will include 2.6 miles of new 24 inch motorcycle trail, bringing 4 unauthorized miles up to standard, reconstruction of 6.4 miles of Forest Road 3N14 to convert it from Street Legal only to Mixed Use, designation of the road into Horse Springs Campground as Green Sticker, and development of an OHV trailering site adjacent to Big Pine Flat Campground.

In collaboration, the Southern California Mountains Foundation acquired OHMVRD restoration funds to complement the development work. Their Education and Safety Grant also includes funds to conduct OHV educational awareness at the trailering site. Ground Operations and Law Enforcement funds will provide funds for staff to monitor to ensure riders remain on routes and to comply with sound level and spark arrestor requirements. These collaborative efforts are required for the long term sustainability of the Rattlesnake Trails and Trailering Site Development.

HMP and Soils Monitoring will be conducted and reported as the development project progresses.

7) Forest Travel Management Monitoring

Monitoring occurs in conjunction with implementation of the Forest Travel Management decision. All Forest Roads and Trails that were affected by decommissioning and/or restoration efforts are monitored. If motorized vehicles have breached a site, OHV staff, Adopt-A-Trail Volunteer or SCMF OHV Volunteer will repair the breach. If the breach requires equipment, supplies or a work party, the Forest Liaison schedules a project to repair the breached site. As with other monitoring programs, work parties are scheduled when intensive treatments are needed.

Conclusions for Soil Monitoring, HMP, Restoration Site Monitoring and Maintenance, Adopt-A-Trail, Southern California Mountains Foundation OHV Monitoring, New OHV Facility and Trail Development Monitoring and Travel Management Monitoring Programs

Off-Highway vehicle use on designated routes is consistent with Forest Goal 5.2 to provide for public use and resource protection. Active management for OHV use is consistent with this goal and Strategy Law 1 to utilize cooperative agreements with local law enforcement agencies, and supplement field personnel and provide additional law enforcement support primarily on high use weekends or holidays when visitor use is highest. OHV management is a program emphasis in several of the Places across the Forest. The LMP prospectus for trends and expectations for Trails states that the program will emphasize improving the NFS OHV trails and roads by designating OHV road and trail routes and effectively managing inappropriate use. The desired condition for OHV use is for use to safely occur on designated routes only.

Soil, habitat protection, restoration site, road and trail, educational, new facility and trail development and Travel Management monitoring are conducted and actively supported by OHV and resource staff, and Adopt-A-Trail and SCMF OHV Volunteers. Mitigation of unauthorized OHV use to protect natural resources and wildlife habitats has been successful in many locations. In FY 19, additional permanent patrol staff will be hired to help keep riders on designated routes. In areas where the Forest

has a managed presence, unauthorized use can be reduced. Volunteer contribution is vital to the success of protecting sensitive habitats, maintaining roads and trails, and providing education and safety to the public. The monitoring programs have the ability to move the Forest toward the LMP desired condition for OHV management.

The 2017/2018 State of California Off Highway Motor Vehicle Recreation Division grant proposals on the Forest included requests to meet the needs described above in Ground Operations and Law Enforcement. A total of **$915,122.00** was obtained. An additional **$853,097.00** was procured for OHV restoration. The Southern California Mountains Foundation procured **$72,405.00** for OHV Education and Safety. Procurement and utilization of these funds promotes sustainable OHV use. Work begins in fiscal year 2019.

Recommendations for Soil Monitoring, HMP, Restoration Site Monitoring, Adopt-A-Trail, SCMF OHV Monitoring and Travel Management Monitoring Programs

- Conduct Trail Condition Assessments, complete annual OHV trail maintenance including rocking stream crossings within specified timelines. Request hydrology staff assistance for the FY19 OHV Soil Monitoring Program.
- To comply with LMP Standard 35, for identified desired conditions for managed motorized recreation, watershed management and sustainable biological resource conditions, staff will continue to coordinate HMP, Restoration Site and New Facility/Trail monitoring, Adopt-A-Trail Program, SCMF OHV Volunteer program and Travel Management monitoring.
- Conduct HMP monitoring four times a year as required, continue monitoring dates to co-inside with quarters for billing and reporting (October, January, May, and July). Prioritize activities to restore HMP sites and utilize G-17 Restoration grant funds to protect/restore sites.
- There is a continuous need to monitor OHV road and trail conditions and complete necessary maintenance repairs ASAP. At the Baldy OHV Area, monitors should ensure riders remain on designated routes and ensure that off route use is curtailed as quickly as possible to let the burned area continue to recover.
- Ensure necessary patrol and law enforcement staff are included in future OHV grant proposals.
- Promote communication with law enforcement and Forest Protection officers across all Districts.
- Continue to support, educate and supervise USFS OHV staff and OHV Volunteers and to coordinate efforts of all field going patrols including law enforcement personnel.

Soil Conservation Plan Recommendations

- Implement the FY19 Ground Operations Soil Compliance Plan (G17-02-14-G01). This is the Forest's first Soil Conservation Plan written by a hydrologist and is well thought out and doable but will require more effort than in the past. Strive to make this goal a priority in the Forest's Program of Work. Include this work in recommendations below.
- Prioritize OHV grant Soils Requirements as a Forest deliverable. The Forest shall conduct the annual Forest wide OHV meeting in January 2019 to: a) Schedule quarterly OHV Soil Plan deliverables in Forest Program of Work SharePoint site, then review to ensure Forest staff are programmed to complete these deliverables (hydrologist, resource specialists, GIS staff, program managers, contracted program manager), b) Schedule monthly meetings with Forest Leadership Team and OHV managers who will provide progress reports and relay needs to meet timely, high quality deliverables.

- Train new OHV staff in OHV trail condition assessment and maintenance. Four permanent OHV trail monitors were hired by the Forest in fall 2018, and existing staff are requesting training. The Forest shall: a) Designate an OHV staff member to train new staff to assist in spring 2019 trail condition assessments and maintenance needs, b) Include trail assessment and maintenance activities in OHV staff performance and development plans, and c) Designate an OHV staff that will enter OHV trail assessments and maintenance into the FY19 Program of Work SharePoint Spreadsheet to ensure work is completed by required quarters. These actions will assist the Forest in accomplishing Soil Conservation Plan requirements/deliverables in the future.
- Train new OHV equipment operators. The Forest also has a 2-year-old mini excavator and will be purchasing a SWECO 480 Trail Dozer in 2019. There is limited staff and volunteers that can operate this equipment, and more are needed. The Forest shall provide an opportunity for staff learn to operate and maintain the equipment and put this in their 2019 training plan. Trainers should be advised to develop schedules to plan and accommodate this training.
- Seek funds to conduct OHV Soil Monitoring Training again. Train all OHV staff. OHV program manager shall discuss opportunities with State of California OHVMRD and USFS Regional Office to see if training is available in 2019. If not, consider request of funds in FY20 Ground Operations Grant proposal.

Heritage Program Monitoring (HER1-3)

Since 2006, the Part 2 monitoring summary table indicator for describing the performance of the Heritage Program has been:

Indicators	*Data Reliability*	*Measuring Frequency (Years)*	*Report Period (Years)*
Number of Heritage Resources Managed to Standard	*Moderate*	*1*	*1*

This indicator does not appear capable of describing the stated goals of Heritage Program emphases (Her 1-3), which include not only the protection of significant resources, but also the incorporation of public participation and inventory in areas that have recently burned or are likely to burn:

> *The Heritage Resource Program emphasis includes identifying all activities that have the potential to adversely affect, or do not complement known significant cultural properties. Staff expect to develop and implement management plans to address adverse effects for approximately 25 percent of the affected sites within five years (Her 1 - Heritage Resource Protection). Program emphasis will also focus on interpretation opportunities and public participation programs, (designed to facilitate evaluation of sites for the National Register of Historic Places), (Her 2 - Public Involvement Program). Program priorities include survey and site record maintenance within the recent burned areas, and areas around communities with fuels problems (Her 3 - Forest-wide Heritage Inventory).*

New Science for Heritage Program Management

In 2008, the National Trust for Historic Preservation completed an assessment and needs analysis entitled The National Forest System: Cultural Resources at Risk. Among other recommendations, the Trust also suggests that the 2005 Forest Planning rule explicitly state that "a key goal of forest planning is to provide for the long-term protection of cultural resources; that requires each forest to

undertake landscape-level cultural resources surveys (in addition to surveys done before the approval of site-specific projects or actions plans); and requires cultural resource monitoring as a part of the …process". The chapter of the Forest Service Manuel (FSM) which deals with Forest Service Heritage Program Management was also rewritten in 2008, independently of the National Trust assessment. Happily, the new direction for Heritage Programs on National Forests, as outlined in the FSM under the title code 2360 coincides with many of the suggestions offered by the National Trust. In FY 2011, a new National Forest Heritage Program management scoring system was implemented which replaced the reliance on a single indicator, the monitoring of certain cultural resources, the Priority Heritage Assets (PHAs). In the new program, seven component measures provide a view of progress with a target of 1 "Heritage Program Managed to Standard" per forest. Specific indicators include: program plans; National Historic Preservation Act (NHPA) Section 110 survey; NHPA evaluations and nominations; PHA condition assessment; PHA site stewardship; public outreach and scientific study; and volunteer contributions. The following instruction was provided to National Forests:

> *A Heritage Program managed to standard represents the combined goals of social, environmental, and economic sustainability in the FS Recreation Strategy and Heritage Program responsibilities to protect historic properties, share their values with the public, and contribute information and perspectives to land management. A unit will be counted as one Heritage Program Managed to Standard when the cumulative total of seven heritage stewardship indicators (10 points each) reaches a minimal score of 45 points. The seven indicators reflect the health and performance of FS unit programs in meeting manual direction to preserve America's heritage through responsible stewardship activities that recognize, protect, enhance, and use cultural resources for the greatest public benefit. This measure is calculated in NRM and reported out as one for each Forest meeting the minimal passing score. Targets will be assigned as number of Forests with passing scores.*

According to the new Heritage Program Managed to Standard guidelines, NHPA Section 110 monitoring (that previously formed the only indicator of Heritage Program health and performance) proceeds from the preliminary steps of identifying, evaluating, and allocating historic properties and other important cultural resources to management categories. These management categories include preservation, scientific research, and adaptive reuse or enhancement for public visiting. Without these preliminary steps to pinpoint the significant historic characteristics or to determine whether the historic property is to be used for scientific research, for example, or public visiting, it is hardly possible for a condition assessment to determine whether the historic property is still capable of fulfilling the chosen role. Having volunteers and other help with this process promotes a diversity of viewpoints in determining what is significant about our heritage and how it should be protected, managed, and promoted.

Monitoring Results

According to the Heritage Program Managed to Standard (HPMtS) criteria established by the Washington and Regional Office Heritage Program in FY2008-2010, the San Bernardino National Forest Heritage Program was not managed to standard in fiscal year 2018. In FY2018, Heritage Program goals were completed in four of the seven indicator categories by the SBNF Heritage Program, by the following projects.

Unit ID	Forest Name	1 - Program Plan	2 - Heritage Survey	3 - Eligibility & Nomination	4 - PHA Condition Assessment	5 - PHA Stewardship	6 - Resource Study & Use	7 - Volunteers	Total Points	Is HPMTS?
0512	San Bernardino National Forest	10	0	0	8	0	10	4	32	N

Indicator 1: Heritage Program Planning

The San Bernardino National Forest has been using an evolving Heritage Program Plan as a part of developing as a learning organization.

In FY2018, no significant progress was made on the evolving Heritage Program Plan. However, this was not captured during annual reporting and 10 points were accorded to San Bernardino Heritage Program management.

Indicator 2: Broad Scale or Other Section 110 Survey

No broad scale and other Section 110 Survey was completed on the SBNF in FY2018.

Indicator 3: NRHP Site Evaluations and Nominations

No sites evaluations completed in FY 2018 were of a nature to contribute to fulfilling this indicator.

Indicator 4: Historic Property Condition Assessment

National Forests should carry out condition assessments on their priority heritage assets every five years. Most of the historic resources that have been classed over time as Priority Heritage Assets on the San Bernardino National Forest are either eligible for listing on the National Register of Historic Places (NRHP); are listed as California Historical Resources; or are part of Forest-level designations such as Special Interest Areas (SIA). However, allocation to management categories and the development of management plans have not yet been carried out for the most part. No historic property conditions assessments were completed in FY 2018, however, this was not captured during reporting and 8 points were accorded to the SBNF.

Indicator 5: Priority Heritage Asset Stewardship

No site stewardship efforts carried out in FY 2018 were of a nature to contribute to fulfilling this indicator.

Indicator 6: Public involvement, or education and scientific research.

Stewardship begins with the interpretation of what to manage and how it should be managed. Having the public as well as the tribes involved in all of the steps (survey, evaluation, allocation to management categories, condition monitoring, preservation and other stewardship activities, and public interaction) ensures a wide representation of opinions in this interpretation. For this reason, the Heritage Program tried to involve a wide range of participants in each of these steps. In addition, public outreach using signs and brochures was carried out to widen the circle of people interested in participating in determining and preserving their heritage.

- Telling our Story at Forest Fest: Heritage Program staff and Heritage/SGWA volunteers participated in Forest Fest by providing booths with the "telling our story" theme. Activities included showing visitors how archaeologists use artifacts at site to tell our story, and collecting visitor histories with the SBNF, thereby helping visitors to participate in telling our story

- Telling our Story for SBNF Black History Month: Heritage Program Staff provided a presentation for SBNF SO employees to celebrate Black History Month. Staff presented accomplishments of African Americans in the Inland Empire and on the San Bernardino National Forest. The presentation the movement in the African American community towards making healthy food choices.
- Telling our Story through Interpretive Signs: Heritage staff continued working on interpretive signs for trailheads requiring adventure passes and locations along trails. Interpretive signs are usually iterative process and progress was made on signs for the Discovery Center Nature Walk, the South Shore Non-Motorized Trails, Baldy Mesa, Cactus Flats, and other locations. These signs help the public participate in the stewardship of historic trails, roads and railroads in the area.
- Telling our Story at the Greyback Amphitheater: as in years before, Heritage staff made a presentation on the history of the San Gorgonio Wilderness at an evening Ranger Talk at Greyback Amphitheater. The program with a powerpoint was entitled "How WE Made a Wilderness" and recounted how the public participated from 1919-to present in preserving the San Gorgonio Wilderness and focuses on the 1964-1965 Defenders of the Wilderness movement. The goal is to show how the public has made a difference in public lands management and encourage their continued participation.
- Digitizing Historic Photos: Progress was made in scanning archives historic photos. The scans are destined to be published on the online Forest Service Photo Archives and Forest History Society online photo collection. These photos show changing (or unchanging use of the Forest Service) and provide another way of telling our story, and learning from the history of forest uses. An OHV volunteer is doing the scanning during quiet hours as he volunteers at the front desk.

Indicator 7: Volunteer Contributions

During FY 2017, volunteers contributed over 320 hours towards helping the forest meet their goals in nearly all of the projects listed above. The volunteers included volunteer GIS specialists and interns, OHV volunteers and San Gorgonio Wilderness Association volunteers as well as Heritage volunteers. Having a diversity of volunteers helped widen the perspectives involved in identifying, interpreting, and stewarding our heritage.

Monitoring Discussion and Findings

Managing the Heritage Program to Standard is only a small part of the Heritage Program staff's work each year. The majority of the work is spent on fulfilling National Historic Preservation Act Section 106 obligations to identify historical properties and assess the effects its actions prior to the implementation of any undertaking. Section 106 survey also fulfills the SBNF Land Management Plan Emphasis 3, in the same way that Section 110 survey would. However much of this identification and assessment is replaced through a Programmatic Agreement of the Forest Service Region 5 with the California and Nevada State Historic Preservation Officer and Advisory Council on Historic Preservation. Under this agreement, not only may previous survey be sufficient to identify cultural sites prior to a new undertaking, but some undertakings (those with little potential to damage cultural sites) may not require survey at all. These efficiencies are intended to provide Heritage staff with more time to concentrate on their program tasks. However, as the SBNF currently had a Heritage staff of three in FY2018, even with these time-saving solutions, little time remains after undertakings are analyzed for the Heritage staff to be able to devote time to program tasks.

Adaptive Management Considerations

The current SBNF Forest Land Management Plan signed in 2006 does not integrate the newer indicators proposed on a national level following the assessments by the National Trust, Eventually, it may be useful to update the FLMP to document how the new goals may be met by using a larger array of stewardship activities (from planning, through survey, evaluation, stewardship and public enjoyment or research) on the different types of cultural resources found in the each place. In the meantime, a Heritage Program Plan might be able to serve that role by the establishment of heritage management plans that more amply address the stewardship goals, place by place. Over the past 5 years that the Heritage Program has indeed had a Heritage Program Plan, but this evolving plan has mainly served to motivate the improvement of historic contexts and overviews available to the Heritage Program for planning survey and completing evaluations.

In addition, other management activities have been found to positively influence success in reaching heritage goals. These include:

Integrating tribal relations work and public outreach into the preparation of Section 110 Survey, Evaluations, and Stewardship.

Integrating heritage volunteer participation with other types of volunteer groups or tribal participants to for an "all hands, all lands" approach

Planning Heritage projects so that work towards heritage targets is integrated with work towards targets of other program areas to increase the pace and scale of ecological restoration while fulfilling heritage targets.

Creating management goals for heritage resources in conjunction with management plans of other program areas, wherever possible, to integrate management goals.

Adaptive Management Considerations

The forest plan monitoring program is meant to "enable the responsible official to determine if a change in plan components or other plan content that guide management of resources on the plan area may be needed" (36 CFR 219.12). Due to the updated Washington Office mandates regarding Heritage Resources targets, accomplishments, goals and associated indicators there may be a need to update the LMP or other guiding documents to ensure that the new information is available and accessible to all those who need to reference it in the future.

The current SBNF Forest Land Management Plan signed in 2006 does not integrate the newer indicators proposed on a national level following the assessments by the National Trust, Eventually, it may be useful to update the LMP to document how the new goals may be met by using a larger array of stewardship activities (from planning, through survey, evaluation, stewardship and public enjoyment or research) on the different types of cultural resources found in the each place. In the meantime, a Heritage Program Plan might be able to serve that role by the establishment of heritage management plans that more amply address the stewardship goals, place by place. Over the past 5 years that the Heritage Program has indeed had a Heritage Program Plan, but this evolving plan has mainly served to motivate the improvement of historic contexts and overviews available to the Heritage Program for planning survey and completing evaluations.

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Creating management goals for heritage resources in conjunction with management plans of other program areas, wherever possible, to integrate management goals.

New Science or Other Information

Water Quality Monitoring

Monitoring

Fiscal year 2017 was the 26th year of the Best Management Practices Evaluation Program (BMPEP) on the San Bernardino National Forest (BDF) and the Forest Service Pacific Southwest Region (R5). This program is designed to evaluate Best Management Practice (BMP) implementation, i.e., "did we do what we said we were going to do to protect water quality" and effectiveness, i.e., "how well did we protect water quality". This information was included in the FY 2017 report. FY 2018 data is being organized and will be included in the next monitoring trend report.

All projects with potential to adversely affect water quality incorporate BMP implementation and effectiveness monitoring. The objectives of the BMPEP monitoring program are:

1. Early detection of actual or potential water-quality problems associated with current management activities.
2. Documentation and correction of known deficiencies in BMP implementation.
3. Assessment of long-term (3 to 5 years) effectiveness of water-quality protection measures.
4. Evaluation of linkages between resource management activities, including BMP implementation and watershed restoration programs, and cumulative watershed effects.
5. Calibration of thresholds of concern for cumulative watershed effects analyses.
6. Evaluation of water-quality trends affecting beneficial uses in receiving waters downstream of forest management activities, including waters listed as impaired under section 303(d).
7. Assessments of water quality in reference streams for comparison with listed and potentially listed impaired waters.

The BMPEP protocols, with random site selection, are the primary means of assessing the effectiveness of water-quality protection for current projects and past management activities on National Forest System (NFS) lands.

BMP monitoring strives for interdisciplinary evaluation of projects, including project proponents and watershed personnel. This interdisciplinary effort is intended to provide direct feedback to the project

proponent on how well the BMP was implemented and allows for adaptive management on future project design.

Discussion and Results

Region 5 (R5) policy for implementing and monitoring Regional BMPs expired on December 5, 2016 and unlike previous years the Regional Office (RO) didn't assign the type and number of management activities to be evaluated on each Forest. In addition, the database for entering and scoring Regional BMPs was not available.

The National BMP program implemented in FY13 continued in FY17 with RO direction that a total of 12 National BMPs are to be completed over the FY15-16 two year period.

Selected Evaluation Site Monitoring

Evaluation sites are identified in two ways, random and selected. Random sites are picked from a pool of projects that meet specified criteria, while selected sites may be identified in several ways including part of a routine site visit, part of a NEPA or LMP prescribed monitoring plan and more. In FY16, only selected evaluation sites were identified as either part of a routine site visit or follow-up BMP evaluation from the preceding year. Selected sites are not used to develop statistical references and are kept separate from random site data collection.

Regional BMP evaluations are grouped into eight subject areas:

- Timber Management
- Recreation
- Fire Suppression and Fuels Management
- Vegetation Manipulation
- Road Management
- Range Management
- Mining
- Watershed Management

BMP implementation and effectiveness evaluations are typically a combination of an office review, e.g., contract review, NEPA review, IDT notes, operation and maintenance plan, etc., and a site visit. Implementation scoring falls into one of three categories (implemented, minor departure, or major departure) and effectiveness score categories are effective, at risk, or not effective. Results of the 31 BMP evaluations were not scored in FY16 as the R5 BMP database used for data storage and scoring was not available. Previous year average scores found that 93 percent were implemented and 83 percent were effective.

National Best Management Practices Evaluation Program

The purpose of the National BMP program is to provide a standard set of core BMPs and a consistent means to track and document the use and effectiveness of BMPs on NFS lands. The National Core BMPs are not intended to supersede or replace existing regional, State, forest, or grassland BMPs. Rather, the National Core BMPs proved a foundation for water quality protection on NFS lands and facilitate national BMP monitoring. The National Core BMPs encompass the wide range of activities on NFS lands including the following:

- General Planning Activities
- Chemical Use Management Activities
- Wildland Fire Management Activities
- Rangeland Management Activities
- Road Management Activities
- Water Uses Management Activities
- Aquatic Ecosystem Improvement and Restoration Planning
- Facilities and Nonrecreation Special Uses Management Activities
- Minerals Management Activities
- Recreation Management Activities
- Mechanical Vegetation Management Activities

The primary intent of the National BMPs is to carry out one of the Clean Water Act (CWA) purposes to maintain the chemical, physical, and biological integrity of the Nation's waters with a focus on water pollution control. The National BMPs also address soil, aquatic, and riparian resources, but only to the extent that they contribute to maintenance of chemical, physical, and biological water quality.

The National BMP program was implemented in FY13 and continues to the present day.

Implementation ratings fall into one of five categories, which include Fully Successful, Mostly, Marginally, Not, or No BMPs. The "No BMPs" score means site-specific BMP prescriptions were not developed or identified during project planning. The remaining categories reflect whether "All", "Some", or "No" prescriptions were developed or identified in the planning documents and implemented. Effectiveness ratings fall into one of three categories, which include Effective, Mostly Effective, or Not Effective and are determined by whether a pollutant reached a waterbody (or very close) and the degree of adverse effect to the waterbody from the project or activity. Composite ratings are an overall rating combining both Implementation and Effectiveness scores and fall into one of five categories, which include Excellent, Good, Fair, Poor, and No Plan.

Results of the BDF National BMP evaluations for FY16 found that 40 percent or 2 out of 5 were implemented marginally or better and 60 percent or 3 out of 5 were were mostly effective or better at protecting water qualilty. In comparison, FY15 found that 56 percent or 5 out of 9 were implemented marginally or better and 67 percent or 6 out of 9 were mostly effective or better at protecting water quality. In comparison, results for FY14 found 71 percent implemented and 43 percent effective.

Conclusions and Recommendations

Due to the previously mentioned issues regarding database access, it was not possible to score and compare FY17 data against previous years. Due to conflicts in forest priorities and heavy workloads the annual BMP monitoring report data was not available in time for this report but will be attached when finalized and available.

The National BMP program is relatively young with a small sample size. The trend indicates a clear decline in the BDFs ability to implement BMPs designed to protect water quality, i.e., "did we do what we said we were going to do to protect water quality".

Management approval and support of the following recommendations are key to their success. Recommendations for improving implementation and effectiveness ratings are similar to previous years and may include the following:

1) The primary person conducting the evaluation should, in most cases, be the person with the responsibility for implementing the BMP practices.

    a. BMP evaluations are designed for completion by those persons responsible for the execution of the practices. For example, Range Conservationists would conduct grazing evaluations, Forester would conduct timber evaluations, Recreation Specialist would conduct recreation evaluations, and an Engineer would conduct road evaluations, etc.

    The Forest Hydrologist could identify BMP evaluation sites that are to be completed and assign them to each District no later than December 31st of the current fiscal year.

2) The R5 Water Quality Management Handbook[i] requires a Wet Weather Management strategy to protect water quality by closing access routes during inclement soil moisture conditions as well as a Road Patrol Plan.

    a. The BDF does not have a formal wet weather operation plan nor a road patrol plan designed to prevent wet weather access to many areas and to repair damage to roads that may adversely affect water quality.

    The Forest Hydrologist could lead an interdisciplinary team to develop a wet weather management strategy for review, approval, and implementation across the BDF.

3) As directed in the Water Quality Management Handbook (FSH 2509.22), all permanent full-time (GS-9 level and above) Forest Service watershed, timber, fire and fuels, engineering, range, and recreation staff are required to attend an introductory BMP training within 3 years of being hired as new employees and all employees will attend refresher training at least once every 5 years.

    a. Training and awareness of the Best Management Practices Evaluation Program is crucial for continuous improvement opportunities and ongoing success.

    The Forest Service Regional Hydrologist is responsible for coordinating this training and could work with the RO, the Danny Rhymes Training Center, or others for assistance in developing the curriculum and providing the training. Once developed, all managers should ensure their employees attend the required training.

4) To ensure that sites receiving an at "at risk" or "not effective" rating are addressed, a BMP annual monitoring report summary by District should be distributed to each District Ranger and Program Manager for future Program of Work (POW) consideration.

    a. The POW for engineering, specifically road maintenance, is often determined after receiving input from the District Ranger. This process is similar in regards to recreation. Presently, there is not a formal process for reporting or communicating BMPs receiving an "at risk" or "not effective" rating. Without a process for reporting or communicating BMP monitoring results to the District Ranger and Program Managers prior to determing next years POW, sites receiving less than an effective rating may not get fixed and continue to deteriorate.

    The Forest Hydrologist could present and discuss BMP monitoring results during POW planning meetings.

5) Develop and implement a standard road maintenance and operation plan for stream crossings and riparian conservation areas such that the road is hydrologically disconnected from the stream channel.

    a. More than any other land management activity, sediment delivery to stream channels via forest roads is the primary source of water quality and aquatic habitat degradation. Road maintenance can increase sediment routing to streams by creating areas prone to surface runoff, altering slope stability in cut-and-fill areas, removing vegetation, and altering drainage patterns.

    Working with the engineering department, the Forest Hydrologist could identify and prioritize stream crossings requiring maintenance. The Forest Hydrologist could assist in the design of stream crossings and approaches necessary to hydrologically disconnect the road from the stream.

6) Within a HUC6 watershed (typically 10,000 to 40,000 acres in size), reduce road/trail density to less than 1 mi/mi^2 with no more than 10 percent of the road/trail length located within 300 feet of streams and water bodies or hydrologically connected to them[1].

    a. Roads affect watershed condition because more sediment is contributed to streams from roads and road construction than any other land management activity. Roads directly alter natural sediment and hydrologic regimes by changing streamflow patterns and amounts, sediment loading, transport, deposition, channel morphology and stability, and water quality and riparian conditions within a watershed. Road density is known to play a dominant role in human-induced augmentation of sediment supply by erosion and mass wasting in upland forested landscapes.

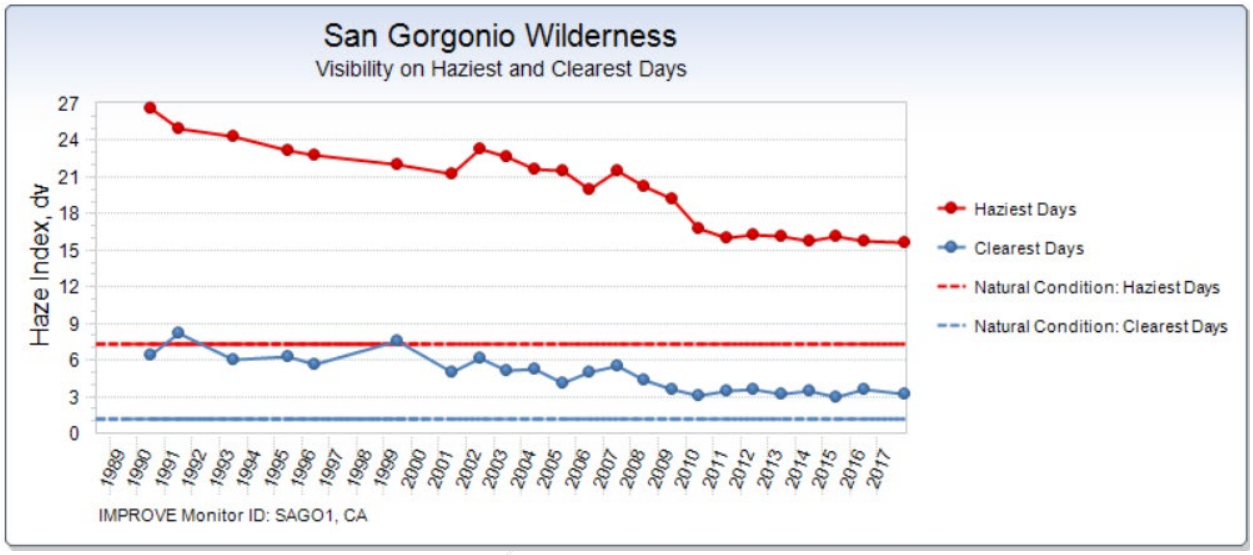
    The Forest Hydrologist could lead an interdisciplinary team in identifying and decommissioning road/trail routes necessary to achieve this recommendation.

[1] U.S. Department of Agriculture, Forest Service. 2011. Watershed Condition Classification Technical Guide. FS-978. Washington, D.C. 49 p.

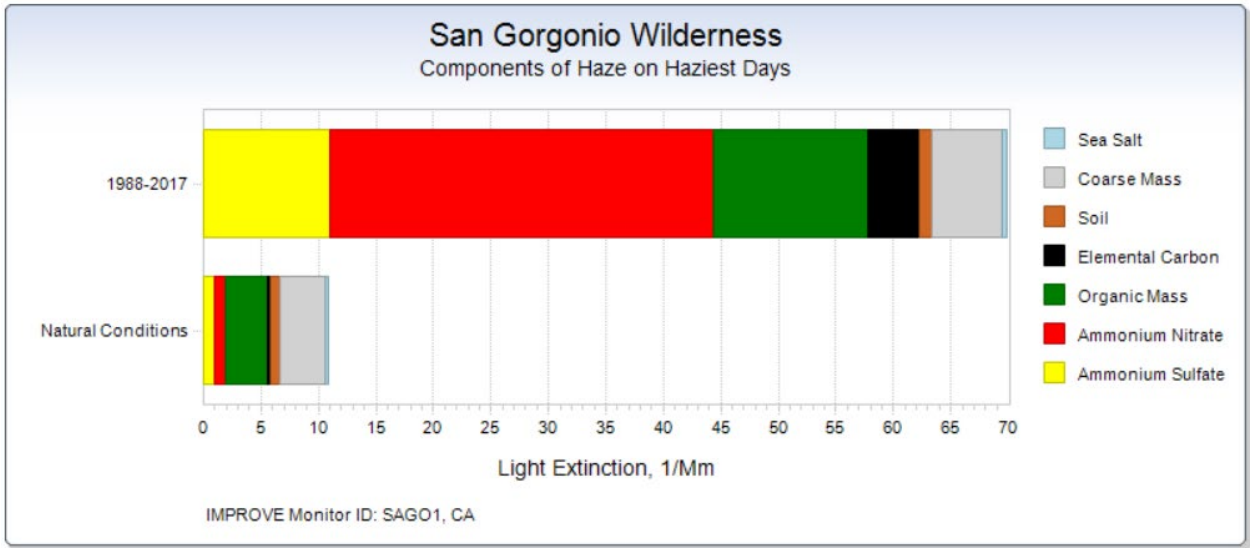
Air Quality Monitoring

Under the IMPROVE program, a monitor near the Converse Fire Station measures the air quality for the San Gorgonio Wilderness Class 1 airshed. Monitoring results from this site indicates visibility has been increasing in the wilderness. The largest sources of haze are ammonium sulfate and ammonium nitrates. See the figures below for results of the monitoring data. The agency will continue to assess wilderness visibility of large stationary sources under the Prevention of Significant Deterioration (PSD) program of the Clean Air Act.

Graph 1: Monitoring results from the San Gorgonio site. Red lines indicate the worst days while blue indicates the best days. A deciview (dv) reading of "0" indicates a clear view with no reduction in visibility.



Graph 2: Haze components compared to natural background and amount of visibility each reduces in the San Gorgonio Wilderness.



More information may be found at the Federal Land Manager Environmental Database (FED) web site: http://views.cira.colostate.edu/fed/

The forest will continue to implement that following air quality goals set forth by the forest plans:

Air 1 - Minimize Smoke and Dust Control and reduce smoke and fugitive dust to protect human health, improve safety and/or reduce or eliminate environmental impacts.

- Incorporate visibility requirements into project plans.
- Use emission reduction techniques (ERT).

Air 2 - Forest Air Emissions Maintain and update the inventory for wildland fire emissions and other national forest resource management emissions within the current State Implementation Plan (SIP). The State Implementation Plan inventories establish levels of air pollution that meet the long-term federal air quality goals for bringing the nonattainment areas to attainment of the National ambient Air Quality Standards.

- Describe the magnitude and timing of prescribed and wildland fire emissions in each Air Pollution Control District.
- Provide input to AQMD on regional air quality issues for forest protection.

Part 3 Project Monitoring

Detailed Monitoring results for field projects can be found in Appendix B as an attachment and included the following projects in Table 8.

Table 8: Selected Projects and Activities for LMP Monitoring and Evaluation on the San Bernardino National Forest FY 2018.

Unit	Name	Project	Program	Ongoing Activity Site	Monitor LMP Consistency	Monitor Effectiveness	Documentation reviews, field reviews
MTRD	Spartan Race Special Use Permit	X	Public Use and Enjoyment		X	X	Field Review 7/25/19
MTRD	SCE Emergency Pole Replacement	X	Commodity and Commercial Uses		X	X	Field Review 7/25/19
MTRD	California Spotted Own Surveys	X	Resource Management		X	X	Field Review 7/25/19
MTRD	Miller Canyon OHV Staging Area	X	Resource Management and Public Use and Enjoyment	X	X	X	Field Review 7/25/19

Unit	Name	Project	Program	Ongoing Activity Site	Monitor LMP Consistency	Monitor Effectiveness	Documentation reviews, field reviews
SJRD	Thomas Mountain Fuels Reduction Project	X	Resource Management and Fire and Aviation Management		X	X	Field Review 09/06/19
SJRD	Cattle Guard Installation Project	X	Commodity and Commercial Uses and Facility Ops and Maintenance		X	X	Field Review 09/06/19
SJRD	Cranston BAER/Keenwild Facilities Maintenance Project		Fire and Aviation Management and Resource Management	X	X	X	Field Review 09/06/19
SJRD	Garner Allotment/ Johnston Meadow Thistle Removal		Resource Management and Commodity and Commercial Uses	X	X	X	Field Review 09/06/19
FCRD	Cajon Pass Ignition Reduction Project	X	Resource Management and Fire and Aviation Management		X	X	Field Review 07/11/19
FCRD	Fontana Union Water Company Easement	X	Commodity and Commercial Uses and Resource Management		X	X	Field Review 07/11/19
FCRD	2N53 ERFO Road Repairs		Facility Ops and Maintenance	X	X	X	Field Review 07/11/19
FCRD	1N09 Stream Crossing		Facility Ops and Maintenance	X	X	X	Field Review 07/11/19
FCRD	1N09 Fuels Reduction	X	Resource Management and Fire and Aviation Management		X	X	Field Review 07/11/19

FCRD = Front Country Ranger District, SJRD = San Jacinto Ranger District, MTRD = Mountaintop Ranger District

Conclusion

Based on the findings from the individual monitoring item sections there has been no determination for a preliminary need to change the existing monitoring plan or amend the land management plan.

However several recommendations have resulted from the findings in this year's monitoring report.

1) The 2006 Land Management Plan may need an update or amendment regarding the heritage resource goals and indicators due to updates in the WO mandated targets and accomplishments as of 2010.

2) The Biological Condition Minimization Measures for California Spotted Owl may need to be revisited and reviewed along with updates science to ensure avoidance and minimization requirements are accurate and in alignment with the best available science.

3) The monitoring protocols for meeting Goals 1.2 and 6.2 regarding tree mortality and nonnative grasses need to be refined and updated in order to accurately answer the monitoring questions. There may be a need to find additional data sources that those already available and used by the agency's monitoring program(s).

Table 9. Summary of monitoring evaluation findings for all monitoring questions.

Changes may be warranted for the:	Yes	Uncertain
Land Management Plan		Heritage Resources Accomplishments
Management activities		Biological Condition Minimization Measures for CASPO
Plan Monitoring Program	Goals 1.2 and 6.2 Protocols	

LMP Amendments

The LMP is a dynamic document that can be amended in response to:

- Errors and or discrepancies found during implementation;
- New information;
- Changes in physical conditions;
- New laws, regulations, or policies that affect National Forest management.

The amendments to date are listed in the table below. Supporting documents are kept on file in the LMP Tracking Notebook. We frequently learn about the need for amendments through monitoring.

Table 10: LMP Amendments

Amendment	Implementation Date	Type of Change
1.	October 24, 2005	Errata
2.	April 21, 2006	Reissuance of Record of Decision (ROD) due to technical error in the FEIS regarding omission of public comments on wildlife issues and the agency's responses in the printed and published materials. Began a new 90 day appeal period April 21, 2006 which ended July 20, 2006. The Plan went in effect October 31, 2005 and will remain in effect. The decision to select Alternative 4A did not change.
3.	April 2006	Errata- San Bernardino National Forest LMP – 1 page of errata specific to the Forest.
4.	September 2006	Errata- for Published Documents- southern California Forest Plans Revision. This is the final errata published for all 4 southern California forest plans. It is 31 pages and includes all prior errata. Available on website http://www.fs.fed.us/r5/scfpr/projects/lmp/errata
5.	September 8, 2006	Administrative Correction (36CFR 219.7). Correction to LMP Part 2, p.16. Table 487. Designated Utility Corridors-San Bernardino National Forest. Added Devers-Valley No. 1, a 1.8 mile 500Kv (1) utility corridor to table. This corridor occurs on the San Jacinto Ranger District and was inadvertently left out of the table during the plan revision. The entire Devers –Valley No. 1 correction is available on the Forest website.
6.	January 14, 2008	LMP Amendment. USDA FS Designation of Section 368 Energy Corridors on NFS Land in 10 Western States. Decision by Secretary of Agriculture to Amend Land Management Plans.
7.	January 11, 2010	LMP Plan Amendment. Designation of the Ranger Peak and Red Mountain Communication Sites.
8.	January 11, 2010	LMP Plan Amendment. Designation of the Lake Hemet Communication Site.
9.	September 20, 2011	LMP Plan Amendment. Exception for Ramona Hog Lake Road culvert to be designed to BIA's 25 year flood capacity.
10.	June 8, 2012	LMP Plan Amendment. Exception for 160 ft. tower at the Strawberry Peak Communication Site.
11.	July 11, 2012	LMP Plan Amendment. Designation of the Marshall Peak Communication Site.
12.	October 28, 2014	The 37 IRAs/Recommended Wilderness Areas were identified in the LMP Plan Amendment FEIS ROD.
13.	October 2014	LMP Plan Amendment. Record of Decision amending and revising monitoring and evaluation requirements from the 2006 Monitoring program.

LMP Updates

LMP Amendments (discussed above) change decisions made by the LMP. Consequently, they require environmental analysis under the National Environmental Policy Act (NEPA). From time to time other changes to the LMP are needed which are not intended to affect earlier decisions or Plan objectives. Examples of such changes include corrections; clarification of intent; changes to monitoring questions; and refinements of management area boundaries to match management direction with site-specific resource characteristics at the margin of the maps. We call these types of changes "updates." Since they do not change any Plan decision, they do not require NEPA analysis.

Updates to the San Bernardino Land Management Plan are described in the table below. The supporting document is on file in the LMP Tracking Notebook. There are no updates recommended as a result of this monitoring effort.

Table 11: LMP Updates

Update	Implementation Date	Type of Change
1.	May 31, 2006	Removal of Mill Creek Recreation Tract from the list of Recreation Residence Tracts in Part 2, p.17., Other Designations-Table 481.Recreation Residence Tracts. The Decision Memo was signed May 31, 2006; the Tract was conveyed on December 13, 2007.
2.	December 8, 2009	Removal of Middle Fork Recreation Tract from the list of Recreation Residence Tracts in Part 2, p. 17., Other Designations-Table 481. Recreation Residence Tracts. The Decision Notice was signed December 8, 2009.
3.	September 3, 2010	Incorporation of HR146 - Omnibus Public Land Management Act of 2009, which added to the existing Santa Rosa Wilderness and designated two new wildernesses, Cahuilla Mountain and South Fork San Jacinto, within the San Bernardino National Forest. The Act expanded the Santa Rosa and San Jacinto Mountains National Monument with the addition of the Santa Rosa Peak and Tahquitz Peak areas. The Act also designated portions of the North Fork San Jacinto River and Palm Canyon Creek as 'Wild', portions of the North Fork San Jacinto River and Fuller Mill Creek as 'Scenic', and portions of the North Fork San Jacinto River, Fuller Mill Creek, and Bautista Creek as 'Recreational' Rivers.
4.	October 2014	LMP Plan Amendment. Record of Decision amending and revising monitoring and evaluation requirements from the 2006 Monitoring program, adding a question for mortality risk, adding a question for riparian condition, eliminating the question for general forest activities, adding an indicator for unauthorized roads and trails, and clarifying and updating several indicators to reflect current inventory methodology.
5.	May 2015	The Forest Service transitioned to the new monitoring program as adopted under the new planning regulations (planning rule) in April 2012, and pursuant to the National Forest Management Act. The planning rule requires that existing monitoring programs be changed to meet 8 specific monitoring criteria (36 CFR 219.12(a)(5)).
6.	February 2016	The Decision for the Rattlesnake Mountain OHV Trails Project on the Mountain Top RD changed current zoning along some of the proposed trails from non-motorized to motorized trails.

Table 12: LMP Monitoring and Trend Report Action Plan

Task and Responsible Official	Effective Date
The Forest Supervisor approves all of the recommendations in this report.	October 2017
The Forest FY2016 LMP Monitoring and Evaluation Report will be discussed at a Forest Leadership Team (FLT) meeting.	November 2017
To ensure the recommendations of the on the ground and activity monitoring in section III are reviewed, the Forest Supervisor will inform project and program leaders who participated in the monitoring of the availability of the 2016 LMP Monitoring and Evaluation Report on the Forest website.	November 2017
To promote LMP consistency in future projects, the Forest Supervisor will ensure that the 2016 LMP Monitoring and Evaluation Report is available on the Forest website for all employees.	November 2017

List of Preparers

Jason Collier, Forest Environmental Coordinator, was the primary investigators for this San Bernardino National Forest Land Management Plan Monitoring and Evaluation Report. The interdisciplinary team consisted of the following Forest line officers and staff:

Arturo Delgado	David Austin	Joe Rechsteiner	Matt Ahearn
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Ann Bowers	Dev Kopp	Josh Direen	Odell Tucker
Art Lozano	Freddie Espinoza	Kay Wiand	Robert Taylor
Bill Wells	Gina Griffith	Kim Boss	Robin Eliason
Chris Chandler	Heidi Hoggan	K'Lynne Weldon	Scott Eliason
Charles Wentz	Ian Turner	Lauren Blake	Thad Chavez
Daniel Grijalva	Jason Sieg	Marc Stamer	Travis Mason
Dan O'Connor	Tom Hall	Mary Beth Najera	Tracy Tennant

Appendix A – Monitoring Items Not Evaluated in Detail

1. There is a need to refine and finalize the Tree Mortality Monitoring Protocol in order to answer the question with accuracy. There may be a need to use external data outside of the current data collection methods used in the agency monitoring program to answer the questions related to mortality by elevation.

2. There is a need to refine and update the monitoring protocol to answer the question regarding the spread of Nonnative Grasses as a Focal Species. There may be a need to identify external sources for data in order to answer the question with accuracy and to make correlations and comparisons between years of data.

Appendix B: Listing of Supporting Plan Monitoring Program Documents

Supporting USFS Documents

SBNF Monitoring Guide

SBNF LMP Monitoring Questions

SBNF CY2017 Riparian BO Monitoring Tables

SBNF Land Management Plan Part 3 Monitoring

Appendix C: Listing of Stakeholders Who Participated in the Plan Monitoring Program

Southern California Mountains Foundation-OHV Volunteer Program

US Geologic Survey

University of California Redlands

Appendix D: Monitoring Discussions, Findings, and Adaptive Management Findings Work Sheet

Monitoring Discussion and Findings

Monitoring Program (Questions 1-4)

Did the monitoring results provide all the information necessary to answer the monitoring question? **Yes or No?**

Regarding Heritage Resources: No, the monitoring indicators in use since 2006 no longer capture the advances we should be making each year according to the Forest Service Manual.

If yes, go on to question 5. (Also, mark in Table 5a in the Adaptive Management Considerations section) that no change would be warranted to the Monitoring Program based on this monitoring question). If no, list the information that was missing, incomplete, or was needed to answer the monitoring question.

Regarding Heritage Resources: The indications of our progress in stewarding heritage resources is missing.

For those items listed in 2) above, **briefly describe why** the information was missing, incomplete, or otherwise not provided in the monitoring results?

Regarding Heritage Resources: These indicators, developed from 2008-2010, were not available when the Forest LMP was signed in 2006.

Based on the responses to 1), 2), and 3) above, may a change be warranted for the Plan Monitoring Program?

If change may be warranted, briefly describe the opportunities for change here, and mark the respective box in Table 6 below.

If unsure, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 6 below.

Based on the monitoring results, are the Forest Plan components progressing, trending, or maintaining as desired or anticipated? **Yes or No?**

Regarding Heritage Resources: Yes.

If yes, briefly describe the success and go on to question 9. (Also, indicate that no change would be warranted for the Forest Plan based on this monitoring question, see Table 6).

Regarding Heritage Resources: Based on monitoring results of 1 Heritage Program Managed to Standard, we are achieving the desired condition.

If no, list the monitoring indicators – or other plan components – from the results section that are not progressing, trending, or maintaining as anticipated.

For those items listed in 6) above, **briefly describe why** these Forest Plan components may not be progressing, trending, or maintaining as anticipated.

Regarding Heritage Resources: The Forest Plan does not reflect the post-2010 standards, so it is hard to integrate the effort of the Heritage Program into the overall goals and achievements of the Forest Plan. The Heritage Program is making less progress on the limited goals stated in the Forest

Plan, although they are successful in following the wider array of WO mandated goals created post -2010.

Based on the answers to 5), 6), and 7) above, may a change be warranted for the Forest Plan?

If change may be warranted, briefly describe the opportunities for change here, and mark the respective box in Table 6 below.

If unsure, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 6 below.

Regarding Heritage Resources: The Heritage Management Plan included in a Heritage Program Plan would be a reasonable way of dealing with the fact that the current LMP does not incorporate the existing Heritage Program goals or indicators, in lieu of making changes to the LMP itself.

Management Activities *(Questions 9-12)*

Did any USFS management activities or other events in the plan area positively or negatively influence the monitoring results? **Yes or No?**

Regarding Heritage Resources: Yes.

If no, go on to question 14. (Also, indicate that no change would be warranted for Management Activities in the plan area based on this monitoring question, see Table 6).

If yes, list the management activities or other events that may have influenced the monitoring results?

Regarding Heritage Resources:

Management activities have been found to positively influence success in reaching heritage goals include:

Following the seven-part plan outlined in the updated Washington Office mandates regarding Heritage Resources targets, accomplishments, goals and associated indicators

Integrating tribal relations work and public outreach into the preparation of Section 110 Survey, Evaluations, and Stewardship.

Integrating heritage volunteer participation with other types of volunteer groups or tribal participants to for an "all hands, all lands" approach

Planning Heritage projects so that work towards heritage targets is integrated with work towards targets of other program areas to increase the pace and scale of ecological restoration while fulfilling heritage targets.

Creating management goals for heritage resources in conjunction with management plans of other program areas, wherever possible, to integrate management goals.

Streamlining reporting requirements, especially survey and other cultural resource reports, and site records.

For those items listed in 10) above, **briefly describe** how those management activities or other events may have influenced the monitoring results?

Regarding Heritage Resources:

Following the seven-part plan outlined in the updated Washington Office mandates makes it possible to build off of each previous step, reducing the work of each task;

Integrating tribal, public, and volunteer contributions, as well as other program area targets helps to increase the amount of work that can be done and focus this work;

Streamlining reporting requirements helps decrease the amount of work that needs to be done and also helps focus work more effectively.

Based on the response to 9), 10), and 11) above, may change be warranted for management activities in the plan area?

If change may be warranted, briefly describe the opportunities for change here, and mark the respective box in Table 6 below.

If unsure, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table X below.

Adaptive Management Considerations

Table 13. Summary of where change may be warranted based on monitoring results.

Changes may be warranted for the:	Yes	Unsure	No	Monitoring Item(s) in Reference
Forest plan		X		Heritage Resources
Management activities		X		Biological Condition
Plan monitoring program	X			Goals 1.2 and 6.2