CFLR Project (Name/Number): Grandfather Restoration, 019

National Forest(s): National Forests in North Carolina, Pisgah National Forest

1. Match and Leveraged Funds:

a. FY18 Matching Funds Documentation

Fund Source – (CFLN/CFLR Funds Expended)	Total Funds Expended in Fiscal Year 2018
CFLN18	$501,259
CFLN17	$19,165
Total	**$520,424**

This amount should match the amount of CFLR/CFLN dollars obligated in the FMMI CFLRP expenditure report. Include prior year CFLN dollars expended in this Fiscal Year.

Fund Source – (FS Matching Funds (please include a new row for each BLI)	Total Funds Expended in Fiscal Year 2018
CMTL	$51,201
CWKV	$129,571
NFTM	$101,810
NFVW	$63,449
NFWF	$10,772
RTRT	$88,879
SPFH	$2,276
Total	**$447,958**

This amount should match the amount of matching funds obligated in the FMMI CFLRP expenditure report, minus the Washington Office funds listed in the box above and any partner funds contributed through agreements (such as NFEX, SPEX, WFEX, CMEX, and CWFS) listed in the box below.

Fund Source – (Funds contributed through agreements)	Total Funds Expended in Fiscal Year 2018
CWFS	$7,400

Please document any partner contributions to implementation and monitoring of the CFLR project through an income funds agreement (**this should include partner funds captured through the FMMI CFLRP reports such as NFEX, SPEX, WFEX, CMEX, and CWFS**). Please list the partner organizations involved in the agreement. Partner contributions for Fish, Wildlife, Watershed work can be found in WIT database.

Fund Source – (Partner In-Kind Contributions)	Total Funds Expended in Fiscal Year 2018
Wild South	$247,690
American Conservation Experience	$81,241
Friends of the Mountains to Sea Trail	$64,416
North Carolina Wildlife Resources Commission	$41,582
Southern Appalachian Wilderness Stewards	$14,615
The Nature Conservancy	$11,320
North Carolina Forest Service	$10,000
Trout Unlimited	$9,128
Northwest NC Mountain Bike Alliance	$8,975
National Park Service	$3,500

Fund Source – (Partner In-Kind Contributions)	Total Funds Expended in Fiscal Year 2018
Western Carolina University	$2,238
Mountain True	$1,222
Total	**$495,927**

Total partner in-kind contributions for implementation and monitoring of a CFLR project on NFS lands. Please list the partner organizations that provided in-kind contributions.

b. Please fill in the table describing leveraged funds in your landscape in FY2018. Leveraged funds refer to funds or in-kind services that help the project achieve proposed objectives but do not meet match qualifications.

Description of item	Where activity/item is located or impacted area	Estimated total amount	Forest Service or Partner Funds?	Source of funds
Fuel reduction thinning for wildfire protection	6.58 acres of private land within CFLR landscape	$86,895	Partner Funds	North Carolina Forest Service
Mechanical treatment for fuel breaks	3,816 feet of private land within CFLR landscape	$8,044	Partner Funds	North Carolina Forest Service
Hazard Reduction Prescribed Burning	59 acres of state land within CFLR landscape	$11,770	Partner Funds	NC Forest Service & NC State Parks

2. **Please tell us about the CFLR project's progress to date in restoring a more fire-adapted ecosystem as described in the project proposal**, and **how it has contributed to the wildland fire goals in the *10-Year Comprehensive Strategy Implementation Plan***.

FY2018 was an extremely wet year in Western North Carolina, and the CFLR landscape saw significantly less wildfire activity than average. There were 9 wildfires within the project area for a total of 171 acres. The FY2018 wildfire season had approximately 50% of the average number of fire starts and 20% of the average fire acres. The average fire size was 19 acres, and no fires escaped initial attack. Despite the incredibly wet year, the project nearly met their prescribed fire accomplishments, burning over 5,000 across 2 landscape-scale burn units.

To date, the project has made significant progress in restoring fire-adapted ecosystems. Since 2012, over 15,000 unique acres on the landscape have been treated with prescribed fire. Monitoring results show a significant change in understory composition as a result of those burns. While the FY2018 fire season was nearly rained out, the Grandfather Restoration Project fuel treatments have been key in restoring more fire-adapted ecosystems and allowing for the appropriate fire management response to wildfires, leading to more fires being managed for resource benefits while

allowing for public and firefighter safety over the life of the project. Fuel treatments along with management of natural ignition wildfires have moved the vegetation closer towards the desired condition of fire resilient landscapes. The Grandfather Restoration Project is reducing risk and helping to create fire adapted communities through FS and partner support of McDowell County's Community Mitigation Assistance Team across all lands in the county.

FY2018 Overview

FY18 Activity Description (Agency performance measures)	**Acres**
Number of acres treated by prescribed fire	5,117
Number of acres treated by mechanical thinning	350
Number of acres of natural ignitions that are allowed to burn under strategies that result in desired conditions	0
Number of acres treated to restore fire-adapted ecosystems which are maintained in desired condition	0
Number of acres mitigated to reduce fire risk	5,467

Please provide a narrative overview of treatments completed in FY18, including data on whether your project has expanded the pace and/or scale of treatments over time, and if so, how you've accomplished that – what were the key enabling factors?

- **How was this area prioritized for treatment?** What kinds of information, input, and/or analyses were used to prioritize? Please provide a summary or links to any quantitative analyses completed.
- **Please tell us whether these treatments were in "high or very high wildfire hazard area** from the "wildfire hazard potential map" (Link)
  - Were the treatments in **proximity to a highly valued resource** like a community, a WUI area, communications site, campground, etc.?
- **What have you learned** about the interaction between treatment prioritization, scale, and cost reduction? What didn't work? Please provide data and further context here.

Roses Mountain prescribed burn (approximately 3,100 acres) was first burned in spring of 2016. That implementation taught us a lot about the topography, access, fuels, and containment lines to adjust for our next entry. Re-entry after two years was designed in coordination with fire and land managers to have a greater impact on fuels structure and species composition. This prescribed burn unit is rated predominately low and moderate with a small amount in high as defined in the "wildfire hazard potential map." More relevant to Region 8, the Southern Area Wildfire Risk Assessment displays this area with significantly higher risk of fire intensity. That said, this area was prioritized for treatment as a part of the collaboratively developed burn prioritization ecological mapping exercise conducted across the Pisgah National Forest. This model is knowingly weighted toward fire adapted and fire dependent species as opposed to communities at risk. Table mountain pine is abundant in the unit as well as other southern yellow pines of interest.

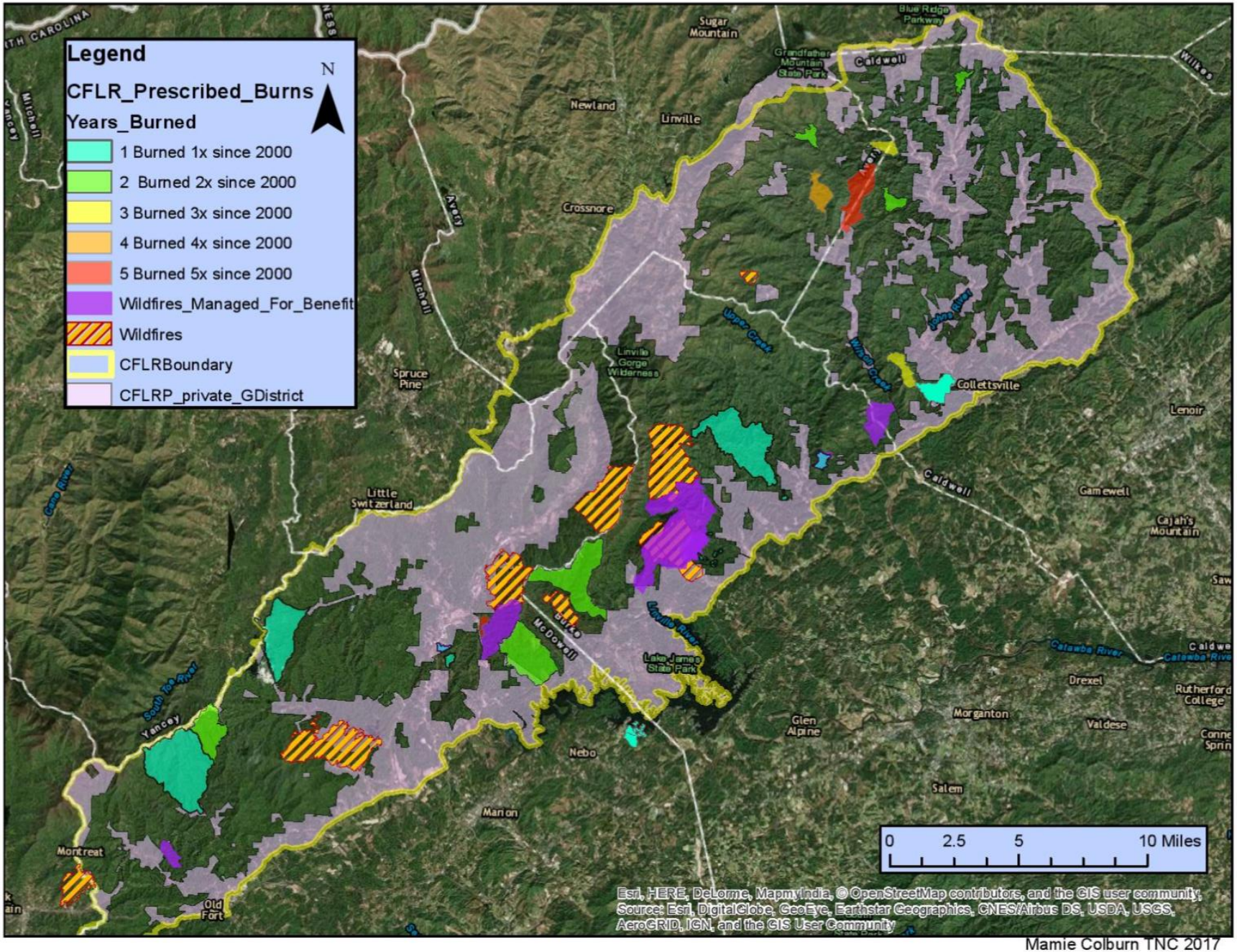
The spring of 2018 was very wet with few windows for implementing a prescribed burn. A one day window materialized and we jumped on it for the Roses Mountain burn, receiving variances for wind speed and relative humidity from the Region. Aviation assets were not available so we hand lit the main ridge, which effectively blacklined one third of the unit. The remainder of the unit would be burned with minimal resources as aviation resources became available and conditions were met. The following month we had the conditions and secured an aircraft to ignite the remainder of the unit. A total of 6 personnel assisted the second day of burning. The staffing consisted of a burn boss on the ground and a firing boss in the helicopter to fire the remaining 2/3s of the unit. One type 6 engine was assigned to monitor the burn until it was declared out.

The following day we were able to start the Singecat prescribed burn (approximately 2,200 acres). Similarly, the Singecat prescribed burn unit is rated predominately low and moderate with a small amount in high as defined in the "wildfire hazard potential map." Conversely, the Southern Area Wildfire Risk Assessment displays much lower risk of fire intensity. This is a high priority burn due to the threatened and endangered plant *Hudsonia montana* that is fire dependent. This is also at the edge of the Buck Creek community in the WUI, and adjacent to a cold-water trout hatchery. The burn crosses multiple jurisdictional boundaries, and agreements are in place to burn National Park Service (Blue Ridge Parkway) lands and North Carolina Wildlife Resource Commission Game lands during the implementation. This was the second entry into this unit and again the experience gained from firing it the first time greatly saved flight time, exposure to employees and we were able to share the helicopter with a neighboring District so they could implement a landscape level burn on the same day. We finished the burn on the second day ahead of the next cycle of rain storms. Three days of consecutive burning on National Forest totaling 4,500 acres is and impressive task and only possible with help from the National Park Service, NC Wildlife Resources Commission, The Nature Conservancy, and our neighboring Districts.

The common thread is that the second entry of prescribed fire is easier not just as a result of reduced fuels and changes of fuels structure, but equally also because our land managers have better understandings of the resources needed to manage a fire in the specific location, the values at risk and the strengths of the partners that are able to assist. This latter value is one of our greatest assets when an unplanned ignition occurs in or near a planned prescribed burn. We restricted our number of acres burned each day based on the NC smoke management guidelines. We stayed within the allowable tonnage emitted per day and did not impact smoke sensitive targets. Fuel conditions and ground weather parameters would have allowed for further burning on our third day of operations. However, atmospheric weather and smoke management guidelines were a limiting factor. With strong community support for prescribed burning, staying within guidelines and not risking impacting communities with unwanted or unhealthy smoke levels is something we take very seriously. It was important for the unit to accomplish these high priority burns but also to remain a good neighbor and maintain the support and assistance of our communities and partners.

Please provide visuals if available, including maps of the landscape and hazardous fuels treatments completed, before and after photos, and/or graphics from fire regime restoration analysis completed locally. You may copy and paste these below or provide a link to a website with these visuals.

Grandfather CFLR Prescribed Burns



Mamie Colburn TNC 2017

Expenditures

Category	**$**
FY2018 Wildfire Preparedness[1]	$242,922
FY2018 Wildfire Suppression[2]	$128,250
The cost of managing fires for resource benefit if appropriate (i.e. full suppression versus managing)	n/a
FY2018 Hazardous Fuels Treatment Costs (CFLN)	$38,420
FY2018 Hazardous Fuels Treatment Costs (other BLIs)	$30,441

How may the treatments that were implemented contribute to reducing fire costs? If you have seen a reduction in fire suppression costs over time, please include that here?

While there has been no formal review of suppression costs, specifically, in prescribed burned versus unburned areas within the Grandfather CFLR landscape, fire managers have demonstrated that the active management as well as the ability to manage unplanned ignitions for resource benefit are both reducing both the costs and risks associated with fire suppression. These concepts are locally described in 2015 Bald Knob Wildfire Briefing and Fuels Effectiveness Report as well as the Fall 2016 Fire Season Briefing.

The Singecat and Roses Mountain prescribed burn units both contain high densities of fire adapted pine, pine/oak or other fire dependent plant communities. While Roses Mountain area does have a high occurrence of lightning, predicting ignitions is difficult. Our focus is restoring fire to its role as a natural and native disturbance function in our environment and reducing risk to private and natural values. So, we work to reduce risk in and around our communities at risk as well as to re-introduce fire to fire dependent forests so as to reduce the risk of losing these forest systems and the ecosystems services they provide. Considering that, in 2016 we did have an unplanned ignition occur within the Singecat prescribed burn area. As the Fall 2016 Fire Season Briefing describes this fire was able to be managed at a small eight acres, while across Western North Carolina fuel conditions were dire many fires were growing into campaign incidents. Our fire fighters were able to respond quickly and fight this fire aggressively. That is in part because of the prescribed burning. We were successful, not only because of the reduction of fuels and re-arrangement of fuel structure, but because we knew the area, we knew exactly where the existing fire lines were, we knew the resources and values at risk (supporting sound decisions) and we know the supporting agencies from the first entry of prescribed burning.

Have there been any assessments or reports conducted within your CFLRP landscape that provide information on cost reduction, cost avoidance, and/or other cost related data as it relates to fuels treatment and fires? If so, please summarize or provide links here:

The Bald Knob Fuel Effectiveness Report, Bald Knob Fire Briefing, and Fall 2016 Wildfire Season Briefing do not explicitly assess cost, but do reference and reflect on wildfire suppression efficiencies gained in a landscape with an active prescribed fire program.

[1] Include base salaries, training, and resource costs borne by the unit(s) that sponsors the CFLRP project. If costs are directly applicable to the project landscape, describe full costs. If costs are borne at the unit level(s), describe what proportions of the costs apply to the project landscape. This may be as simple as Total Costs X (Landscape Acres/Unit Acres).

[2] Include emergency fire suppression and BAER within the project landscape. Describe acres of fires contained and not contained by initial attack. Describe acres of resource benefits achieved by unplanned ignitions within the landscape. Where existing fuel treatments within the landscape are tested by wildfire, summary and reference the fuel treatment effectiveness report.

Bald Knob Fuel Effectiveness Report: Link

Bald Knob Fire Briefing: Link

When a wildfire interacts with a previously treated area within the CFLR boundary:
No significant wildfires occurred within the CFLN boundary in FY2018, and no additional assessments have been completed since the FY2017 CFLRP annual report on fires within the CFLRP area.

3. **What assumptions were used in generating the numbers and/or percentages you plugged into the TREAT tool**? Information about Treatment for Restoration Economic Analysis Tool inputs and assumptions available here.

FY 2018 Jobs Supported/Maintained (FY18 CFLR/CFLN/ WO carryover funding):

FY 2018 Jobs Supported/Maintained	Jobs (Full and Part-Time) (Direct)	Jobs (Full and Part-Time) (Total)	Labor Income (Direct)	Labor Income (Total)
Timber harvesting component	3	4	149,184	204,281
Forest and watershed restoration component	5	5	44,914	73,405
Mill processing component	5	16	316,424	896,892
Implementation and monitoring	3	4	132,937	154,923
Other Project Activities	0	0	0	0
TOTALS:	15	29	643,460	1,329,502

FY 2018 Jobs Supported/Maintained (FY18 CFLR/CFLN/ WO carryover and matching funding):

FY 2018 Jobs Supported/Maintained	Jobs (Full and Part-Time) (Direct)	Jobs (Full and Part-Time) (Total)	Labor Income (Direct)	Labor Income (Total)
Timber harvesting component	3	4	149,184	204,281
Forest and watershed restoration component	6	7	79,179	121,131
Mill processing component	5	16	316,424	896,892
Implementation and monitoring	9	11	326,404	380,387
Other Project Activities	0	0	0	0
TOTALS:	23	38	871,192	1,602,691

4. **Describe other community benefits achieved and the methods used to gather information about these benefits**. **How has CFLR and related activities benefitted your community from a social and/or economic standpoint?** (Please limit answer to two pages).

Indicator	Brief Description of Impacts, Successes, and Challenges	Links to reports or other published materials (if available)
Contributions to the local recreation/tourism economy	Recreation is the leading driver of the economy in Western North Carolina, and visitor use monitoring surveys show that nearly 75% of visitors to the Forest are visiting to use the trail system. Recreation accomplishment under the CFLR focus around trial restoration. With the	Outdoor Alliance: Nantahala and Pisgah National Forest Economic Reports – Link "Researchers from Eastern Kentucky University found that outdoor recreation in the

Indicator	Brief Description of Impacts, Successes, and Challenges	Links to reports or other published materials (if available)
	extra support from the CFLR, trail accomplishments have steadily increased over the years. In FY18, the district maintained over 200 miles of trails for the first time in decades. This work was accomplished by both FS employees, but also collaborative partners working under partnership and challenge cost-share agreements and volunteer agreements. This improved trail system supports growth in the recreation/tourism economy by providing a better experience sustainably for more visitors.	Nantahala and Pisgah National Forests generates $115 million in annual spending on paddling, climbing, and mountain biking — while also supporting local jobs and attracting both businesses and residents to Western North Carolina."
Volunteer Participation	Collaboration under CFLR has created a climate where the agency, partners, volunteers are working together, with steady increases in the number of hours of volunteer work on trail sustainability (nearly 16,900 hours in FY18) and number of volunteers engaged (over 500 in FY18). Normally, volunteerism is limited to recreation, but in FY18 volunteers reported an additional 1,000+ hours on invasive plant removal projects. Challenges remain with how to best support and empower the large number of volunteers interested in projects with limited USFS recreation staff.	Linville Gorge Community Trail Work blog: Link
Job training opportunities	Job training programs were utilized for veterans and youth in FY18 to support CFLR accomplishments. A VetsWork intern was sponsored through the Mt. Adams institute. The integrated fire and recreation internship program through the Student Conservation Association brought on two student trainees to assist with prescribed fire implementation and trail restoration. A youth crew from American Conservation Experience (ACE) was used for invasive species treatments. Three additional seasonal recreation technicians assisted with various CFLR-related projects from timber marking, to trail maintenance, to prescribed fire implementation. Two of these seasonal employees were recruited from partner organizations involved in the CFLR collaborative. The CFLR project provides a unique job training opportunity for new employees to get experience in collaboration and an integrated program of work. Interns and seasonal employees were exposed to both agency and partner work.	

Indicator	Brief Description of Impacts, Successes, and Challenges	Links to reports or other published materials (if available)
Community support for relevant initiatives	Community support for management within the CFLR landscape has increased drastically since the inception of the CFLR. This can be seen in community support of implementation of prescribed burns as well as in planning for timber projects. In FY2018, when signing the Crawley Branch Project CE, public meetings were held to engage the local public and the project was well supported by both the public and partners. The community support also extends to other areas beyond the CFLR. The District has seen a higher level of engagement and understanding of restoration objectives in the upcoming Forest Plan revision due to the groundwork laid under the CFLR and the successful public outreach around restoration success stories.	

5. **Based on your project monitoring plan, describe the multiparty monitoring process.**
   - **What parties (who) are involved in monitoring, and how?**
   - **What is being monitored? Please briefly share key broad monitoring results and how results received to date are informing subsequent management activities (e.g. adaptive management), if at all.** What are the major positive and negative ecological, social and economic shifts observed through monitoring? Any modifications of subsequent treatment prescriptions and methods in response to these shifts?
   - **What are the current weaknesses or shortcomings of the monitoring process?** (Please limit answer to one page. Include a link to your monitoring plan if it is available).
   - **Please provide a link to your most up-to-date multi-party monitoring plan and any available monitoring results from FY18.**
   -

The Grandfather Restoration Project Collaborative has a monitoring committee that is open to all participants in the collaborative. The collaborative at large has prioritized monitoring efforts to include forest restoration (focusing on restoration of fire regimes), invasive species treatments, fish and wildlife habitat, watershed, roads, trails, and social and economic impacts. The collaborative continues to follow the monitoring plan enacted in April 2014 when planning monitoring activities. The implementation of monitoring under the Grandfather CFLR focuses on determining the effectiveness of 2 key priorities – (1) prescribed fire treatments and (2) NNIS treatments. Monitoring in these areas is key to adaptive management under the CFLR.

The following monitoring efforts are in place through FY2020:

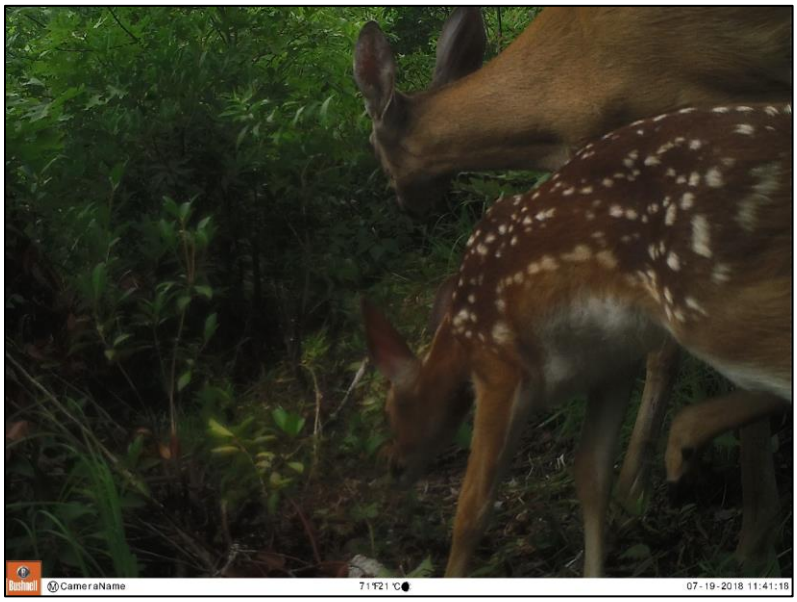
(1) In FY2015, an agreement was established with Western Carolina University to monitor fire effects on vegetation. This agreement will use the vegetation monitoring methodology developed by the Southern Blue Ridge Fire Learning Network (SBRFLN) to monitor fire effects on vegetation. This methodology consists of installing .1 acre permanent plots that record all woody vegetation over 4" dbh, measuring sapling density in a nested sapling plot, recording percent cover of shrubs and herbs, and measuring fuels along three transects. The agreement will also provide analysis of data to allow for adaptive management in prescribed fire implementation.

Additional progress was made on fire effects monitoring in FY2018, but results are still being analyzed. Fire effects monitoring over the past 2 years has focused on characterizing target conditions for restoring fire adapted ecosystems. A question that often arises in adaptive management is "how many times must we burn on a frequent interval before we reach maintenance phase?" This year's monitoring looked deeper into that question. The Wilson Creek Burn unit is one of 2 units that has undergone 5 prescribed burns within the CFLR landscape. Due to the frequent burns, portions of this site are closer to a restored condition than any other site on the Grandfather.

There is an ongoing agreement with Western North Carolina University for post-fire vegetation monitoring at this site, consistent with the protocols established for the Fire Learning Network. The goal of the monitoring is to characterize a "restored" site and monitor regrowth over time. Of primary concern is the regrowth of Kalmia (Mountain Laurel) and Rhododendron in the shrub layer. Once analyzed, the results will give insight into re-growth rates of target species to determine if the number of burns affected sprouting vigor. Plots were established in FY2017. Working with botanists to identify forest types that may be in a restored state, plots were located in select areas throughout the burn unit.

In 2018 Western Carolina University collected additional data to better understand herbaceous condition and wildlife use. Based on field investigations in 2017, partners identified 3 classes of stand openness:
1. *Open Canopy.* This occurs where nearly the entire overstory has been removed except for a few remnant trees. This condition is most prominent in the southern portion of the burn unit. We note that this condition may reflect varying disturbances, including prescribed burning, logging, and/or pine beetle infestation.
2. *Canopy gaps.* Gaps that exist within an otherwise continuous matrix of relatively closed canopy. Gaps typically range in size from about 0.1 ac to 0.3 ac. This condition is most prominent in the central portion of the burn unit, and we suspect gaps were likely caused by prescribed burning.
3. *Closed canopy.* This condition is characterized by a relatively intact overstory, though there is evidence of a degrading overstory that suggests the canopy will continue to become more open in the coming years. This condition is most prominent in the northern most portion of the burn unit. We suspect prescribed burning is the primary factor contributing to the overstory mortality that is occurring.

Herbaceous sampling: Partners performed detailed botanical inventories in 5 plots representing each canopy class. A complete botanical census war performed for a 10m x 10m square within each plot using protocols adapted from the Carolina Vegetation Survey.



Wildlife activity: Partners surveyed wildlife activity using paired cameras at 2 points within each canopy class and an additional 2 points located outside of the burn unit. The camera trap survey was conducted during July, August, and Sept. 2018.

(2) In FY2015, an agreement was established with MountainTrue, a local non-profit organization, to monitor invasive plant species occurrence and treatment effectiveness. The agreement will focus on high priority areas identified as part of the CFLR. This agreement will provide survey assistance in identifying new treatment areas as well as look at the effectiveness of existing treatments. Monitoring efforts will allow specialists to test a variety of treatment methods to determine the most effective way to treat invasive plant species.

MountainTrue monitors invasive species in high priority areas across the district. One key target species to monitor is Japanese knotweed, which can be particularly aggressive along stream corridors within the Southern Appalachians. Within the Grandfather CFLR, chemical treatments have been implemented along a 3-mile stretch of the Wilson Creek Wild and Scenic River. Previous annual or semiannual treatment have been marginally successful. For the past two years, more frequent treatments as well as including a mix of herbicides versus only triclopyr 3A have been implemented. In comparing percent cover across 250 monitoring plots, in FY2018 there was a 51% reduction from 2017. In addition, there was a 25% increase in the number of plots with no Japanese knotweed stems. This switch in herbicide, resulting in more effective treatments, is a great example of successful adaptive management under the CFLR monitoring program.

Plot monitoring was also completed in FY2018 for 13 different species invading a montane alluvial forest along the Catawba River. The Catawba River area is a priority area for invasive species treatments because it is a rare example of a protected alluvial forest under Forest Service ownership. Data collected in 2018 indicate a 150% reduction in aerial extent of autumn olive, a 40% reduction in aerial extent of oriental bittersweet, a 93% reduction in the extent of multiflora rose, a 33% reduction in the aerial extent of kudzu, a 100% reduction in tree-of-heaven, and a 200% reduction in the number of mimosa stems. While most of the monitoring indicated a positive reduction, it also indicated two species as being problematic with minimal control, privet and periwinkle.

6. FY 2018 Agency performance measure accomplishments:

Performance Measure	Unit of measure	Total Units Accomplished	Total Treatment Cost ($) *(Contract Costs)*
Acres of forest vegetation established FOR-VEG-EST	Acres	6	
Acres of forest vegetation improved FOR-VEG-IMP	Acres	505.3	$129,570
Manage noxious weeds and invasive plants INVPLT-NXWD-FED-AC	Acre	1,244.7	$65,730
Acres of terrestrial habitat restored or enhanced HBT-ENH-TERR	Acres	4,831	7400+10771
Miles of system trail maintained to standard TL-MAINT-STD	Miles	204.87	$71,200
Volume of timber sold TMBR-VOL-SLD	CCF	3,584.66	$101,810
Acres of wildland/urban interface (WUI) high priority hazardous fuels treated to reduce the risk of catastrophic wildland fire FP-FUELS-WUI	Acres	5467	$157,740
Please also include the acres of prescribed fire accomplished	Acres	5117	$68,860

Units accomplished should match the accomplishments recorded in the Databases of Record.

Performance measures not showing in PAS

Miles of property line marked/maintained to standard LND-BL-MRK-MAINT	Miles	11.08	$16,590
Highest priority acres treated for invasive terrestrial and aquatic species on NFS lands INVSPE-TERR-FED-AC	Acres	64.6	$2,280

7**. FY 2018 accomplishment narrative** – Summarize key accomplishments and evaluate project progress *not already described elsewhere* in this report. (Please limit answer to three pages.)

Habitat Restoration: 4,831 acres of terrestrial habitat enhanced

- Terrestrial habitat was restored through a variety of management, including maintenance of wildlife openings, prescribed burning, and vegetation improvement projects.
- The North Carolina Wildlife Resources Commission supported wildlife activities across the district including mowing of 250 acres of wildlife openings, planting 35 acres of wildlife openings, and habitat surveys.

Invasive Species Treatments: 1,244.7 acres of nonnative invasive plant treatments, 64.6 acres of hemlock wooly adelgid treatments

- Invasive species were treated with herbicide in the White Creek Fire area (BAER), in the Catawba River Floodplain, and along Wilson Creek.
- Hemlock wooly adelgid (HWA) treatments were continued for Carolina and eastern hemlock across the district.
- Wild South, American Conservation Experience, and Southern Appalachian Wilderness Stewards surveyed and treated invasive species.

Trail Restoration: 204.87 miles of trails maintained

- Through USFS labor, contracts, and volunteers, over 204 miles of trails were maintained. This included work completed through agreements with Wild South, Northwest NC Mountain Bike Alliance, and the Southern Area Wilderness Stewards.
- Wild South and its volunteers worked over 10,000 hours on trail maintenance and mapping in Linville Gorge and Wilson Creek watershed.
- The Friends of the Mountain to Sea Trail volunteers worked over 2,600 hours on trail maintenance for the Mountain to Sea Trail.
- The Southern Area Wilderness Stewards worked over 400 hours on trail maintenance within Harpers Creek Wilderness Study Area and Linville Gorge Wilderness.

Fire Management: 5,467 acres of fuels treated

- Prescribed burns were conducted across 5,117 acres in 2 burn units at Roses Mountain and Singecat.
- Mechanical fuel treatments were conducted through thinning and timber stand improvement on 350 acres.
- The Nature Conservancy, The North Carolina Forest Service, and the North Carolina Wildlife Resource Commission provided support for prescribed fire implementation.

Timber and Silviculture: 6 acres of forest vegetation established, 503.3 acres of forest vegetation improved, 3,584.66 CCF of timber sold

- Silviculture treatments for timber stand improvement, release treatments, and vine removal over 503 acres were completed a Roses Creek, Armstrong, and Mulberry-Globe sale areas.
- 6 acres of vegetation was established through natural regeneration following the sale of one unit on the Armstrong project area.
- The Crawley Branch timber sale, and shortleaf pine restoration project, was sold for 3,584.66 CCF.
- Partners, including MountainTrue, Southern Environmental Law Center, and The Nature Conservancy, provided support for identification of future project sites to be implemented under the new Farm Bill CE authority for Southern Pine Beetle recovery.

Accomplishment Spotlight – Crawley Branch Shortleaf Pine Restoration

It's well understood that throughout much of the Southern Appalachians burning alone will not be enough to meet restoration goals that our partners and public expect. Likewise, harvesting timber, without a repeated burning cycle, will also not fully meet our restoration goals. With the Crawley Branch Southern Yellow Pine Restoration Project we have lined up our landscape level prescribed burning and community wildfire reductions efforts with timber harvest to restore departed systems and improve resiliency to a range of disturbances.

Work began in the Crawley branch area in 2015 with its inclusion in an Environmental Assessment addressing wildfire severity, wildlife habitat and restoration of fire adapted ecosystems. That year our State partners began working with private land owners adjacent to the planned prescribed burn to develop a Community Protection Plan. The Bluffs community received grant funding along with federal, state and NGO support to construct a fuel break along the eastern edge of the burn. In 2016, this fuel break paired with additional burning on private lands, allowed for a seamless joint prescribed burn with US Forest Service, NC Forest Service and Nature Conservancy fire fighters all working together.

In 2015, the Grandfather CFLR Collaborative also began looking at the Crawley Branch area as an opportunity to use the 2014 Farm Bill, insect and disease CE. This particular area has some of the District's most intact shortleaf pine and pine/oak forest types. Across Southern Appalachia these southern yellow pines have been severely impacted by southern pine beetles. Species composition and forest structure have drastically changed. Remnant individuals and stands are again at risk and without prescribed burning, thinning and planting, species like shortleaf pine will simply not be able to play their keystone role in our forests.

To plan the Crawley Branch Southern Yellow Pine Restoration CE, the partners from the collaborative came together to select the area, develop generalized proposed actions, and purpose and need. Partners again assisted with Forest

inventory, NNIS surveys, rare plant surveys, herpetology monitoring, and fuels monitoring to inform the decision. The decision was signed in FY2017, regenerating 212 acres, commercially thinning 69 acres, non-commercially thinning 77 acres and prescribed burning an additional 384 acres. From scoping to a decision this vegetation management project was completed in about four months. In late FY2018 the timber sale was laid out, marked, appraised and awarded. Timber operations are expected to begin in December 2018. Three years from inception to an awarded timber sale would not be possible without not only strong support from partners, but active engagement in the planning and stewardship of these lands. This project is a shining example of demonstrating efficiencies of planning with a transparent and collaborative approach as well as the efficiencies of working together in a single landscape.

Accomplishment Spotlight – White Creek Invasive Species Inventory and Treatments

In response to the March 2017 White Creek Fire on Shortoff Mountain in Linville Gorge Wilderness, a natural-ignition fire managed for resource benefit, the US Forest Service and collaborative partner Wild South entered into a partnership agreement to include NNIS inventory and mechanical treatment work covering target zones within the wilderness portion of the burn area. Within the White Creek wildfire the greatest risk of new nonnative plant species invasions was found to be in high fire intensity areas with total or partial canopy loss and moderate intensity areas that also occur in the open areas that resulted from a previous wildfire. Without treatment, these infestations would spread within the surrounding burned areas. If NNIS increased post burn, the critical values at risk would be the untrammeled nature of the native plant communities within Linville Gorge Wilderness and impacts to the two federally listed plant species, mountain golden heather and Heller's blazing star.

Focus species were princess tree (*Paulownia tomentosa*), Chinese silvergrass (*Miscanthus sinensis*), Japanese spirea (*Spiraea japonica*), and mullein (*Verbascum thapsus*). Specified target polygons based on an analysis of burn intensity and canopy cover totaled approximately 320 acres, but by enlisting contractors and volunteers familiar with this challenging terrain, while also carefully managing commute routes to remote sites, this project was able to cover over 1,200 acres in winter and spring of FY2018.

Due to disperse NNIS distribution and extreme navigation challenge in this rugged and dangerous terrain, it was often more effective and safe to collect point data for individual plants rather than attempt polygon construction in the field. Approximately 2,900 individual occurrences were inventoried and treated - 738 *Miscanthus*, 1,949 *Paulownia*, and 207 *Verbascum*. No *Spirea* was observed.

Treatment with herbicide is not currently authorized in the wilderness, so contractors and volunteers, armed with hand tools, mechanically removed each NNIS occurrence as they encountered it. This project supported Wild South staff and community volunteers in accessing remote and rarely visited sites in this wilderness area. This added significantly to the understanding of NNIS presence on the landscape, and as a side benefit led to discovery of a new sub-population of mountain golden heather.

8. **The WO (EDW) will use spatial data provided in the databases of record to estimate a treatment footprint for your review and verification**.

- **If the estimate is consistent and accurate**, please confirm that below and skip this question.
- **If the gPAS spatial information does NOT appear accurate**, describe the total acres treated in the course of the CFLR project below (cumulative footprint acres; not a cumulative total of performance accomplishments). What was the total number of acres treated?

Fiscal Year	Footprint of Acres Treated (without counting an acre of treatment on the land in more than one treatment category)
FY 2018	7,114
Estimated Cumulative Footprint of Acres (2010 or 2012 through 2018)	Estimated Cumulative Footprint of Acres (2012 through 2018) Total: 50,181 *Total is cumulative and includes re-entry acres across years FY12 – 5,622 FY13 – 6,528 FY14 – 5,947 FY15 – 9,837 FY16 – 6,131 FY17 – 9,002 FY18 - 7,114

If you did not use the EDW estimate, please briefly describe how you arrived at the total number of footprint acres: what approach did you use to calculate the footprint?

The accomplishment for the EDW estimate (4,277 acres) was not accurate for the project accomplishments. The fuels accomplishments alone totaled over 5,400 acres. Also, it does not consider accomplishments recorded as miles (which do not require spatial extents in the database of record). The following calculations were used.

Fuels treatment accomplishments: 5,467 unique acres
Invasive species accomplishments: 1,244 unique acres
Forest vegetation established accomplishments: 6 unique acres
Accomplishments recorded in units other than acres were converted to acres using the following methodology:

- Trail maintenance (TL-MAINT-STD) and improvement (TL-IMP-STD) takes place within a 16ft corridor. Total trail accomplishments were 204.87 miles, for an equivalent of 397 acres.

Forest vegetation improved and terrestrial habitat enhanced accomplishments were not counted due to spatial overlap with other areas.

There was no way to determine re-entry acres over the life of the project with the information currently available. An in-depth analysis of spatial data from 2012-present would have to be conducted to determine areas of re-entry vs. new treatment. This analysis is planned as part of the project-end reporting for the FY2019 report.

9. Describe any reasons that the FY 2018 annual report does not reflect your project proposal, previously reported planned accomplishments, or work plan. Did you face any unexpected challenges this year that caused you to change what was outlined in your proposal? (Please limit answer to two pages).

Accomplishments for FY2018 should match closely. Adjustments are made throughout the life of the project as priorities change and new areas of focus emerge. This often produces a change in accomplishments for the project as planned. One accomplishment in particular that was planned but not accomplished in FY 18 was related to watershed restoration and stream miles restored. Delays in NEPA analysis and decisions meant that although some work was planned in FY2018, it will not be accomplished until FY2019.

10. **Planned FY 2019 Accomplishments**

Performance Measure Code	Unit of measure	Work Plan 2019	Planned Accomplishment For 2019	Amount ($)
Manage noxious weeds and invasive plants INVPLT-NXWD-FED-AC	Acre		250	$50,000
Miles of stream habitat restored or enhanced HBT-ENH-STRM	Miles		2.5	$90,000
Acres of terrestrial habitat restored or enhanced HBT-ENH-TERR	Acres		6,000	$150,000
Miles of road decommissioned RD-DECOM	Miles		3	$20,000
Miles of passenger car system roads improved RD-PC-IMP	Miles		25	$50,000 (with HC imp)
Miles of high clearance system road improved RD-HC-IMP	Miles		5	$50,000 (with PC imp)

Performance Measure Code	Unit of measure	Work Plan 2019	Planned Accomplishment For 2019	Amount ($)
Acres of wildland/urban interface (WUI) high priority hazardous fuels treated to reduce the risk of catastrophic wildland fire FP-FUELS-WUI	Acres		5,000	$100,000

Please include all relevant planned accomplishments, assuming that funding specified in the CFLRP project proposal for FY 2019 is available. Use actual planned funding if quantity is less than specified in CFLRP project work plan.

11. **Planned accomplishment narrative and justification if planned FY 2019 accomplishments and/or funding differs from CFLRP project work plan** (no more than 1 page): If do want to compare lifetime goals to date, link here.

Accomplishments and funding amounts for Fy2019 changed only for watershed accomplishments. Delays in NEPA delayed implementation of work planned for FY2018, so that work will be accomplished in FY2019, increasing the miles of streams expected for restoration.

12. **Please include an up to date list of the members of your collaborative if it has changed from previous years**. If the information is available online, you can simply include the hyperlink here. If you have engaged new collaborative members this year, please provide a brief description of their engagement.

CFLRP Partner Organizations *denotes new member for FY2018

Partner Organizations	Partner Organizations
Appalachian Designs	NC Wildlife Resources Commission
Defenders of Wildlife	North Carolina State University
Fish and Wildlife Service	Quality Deer Management
Foothills Land Conservancy	Southern Appalachian Wilderness Stewards
Forest Stewards	Southern Blue Ridge Fire Learning Network
Carolina Climbers Coalition	Southern Research Station
Land of Sky Regional Council	The Nature Conservancy
MountainTrue	The Wilderness Society
National Forest Foundation	Trout Unlimited
National Park Service	Western Carolina University
National Wild Turkey Foundation	Wild South
NC Forest Service	Friends of the Mountains to Sea Trail
NC State Parks	American Conservation Experience
Northwest North Carolina Mountain Bike Alliance*	Access Fund

The Northwest North Carolina Mountain Bike alliance was engaged around trail restoration. The Alliance is a non-profit volunteer group that focuses on mountain bike access and improving trail conditions. The group has been working on the Grandfather for several years, but was formally engaged in FY2018 through a challenge cost share agreement that funded a collaborative trail restoration project in the Wilson Creek Wild and Scenic River Watershed.

13. **Media recap**. Please share with us any hyperlinks to videos, newspaper articles, press releases, scholarly works, and photos of your project in the media that you have available. You are welcome to include links or to copy/paste.

Thriving after fire – rare plants and the biologists who search for them, *Grandfather Restoration Project blog, December 21, 2017* - Link

"Our goal was simple: use the maps created previous years to visit the areas on Shortoff Mountain known to have the golden heather, count the patches of plants using a size-class system and help estimate their current numbers. But why do this now, on a hot September day when summer seems never ending? Because the plants were burned earlier this year by wildfires and biologists charged with protecting this federally listed species need to know the impacts of the fire."

Communicating Amidst Controversy: The Fire Learning Trail [An Interview with Jenifer Bunty], *Fire Adapted Communities Learning Network (Online), November 2, 2017* - Link

"We established the hashtag #goodfire, which has been an effective way to track these conversations and watch them evolve. One of the best things I saw was when an outspoken opponent posted something about how the Forest Service was "in it for the money," and people began to reply with facts and lines that came directly from the signs and the podcasts. Since they had posted before using #goodfire, we could attribute their attitudes to our work. It was really cool to see that all of our work had empowered these people with information that they could use."

JFSP's Appalachian Fire Science Exchange Presents: The Fire Learning Trail, A Fiery Past & Present, *Firescience.gov Friday Flash eNews, December 15, 2017*

"The Fire Learning Trail is an enhanced interpretive trail in Pisgah National Forest near the Linville Gorge Wilderness Area. The trail introduces visitors to the role of fire in this area as well as wildland firefighters and local history. The trail includes educational signs and a podcast-style audio tour that is available on free CDs at the Linville Gorge Information Cabin or it can be downloaded from this page or iTunes."

US Forest Service plans prescribed burns in Pisgah National Forest, *Asheville Citizen Times (Newspaper), April 11, 2018* - Link

"The Forest Service is conducting the burns as part of the Grandfather Restoration Project, a 10-year project focused around restoring fire resilient ecosystems while providing for community protection. The objective of the burns is to restore fire-adapted vegetation as well as reduce fuels to prevent catastrophic wildfire. Singecat Ridge is home to the endangered golden mountain heather, a small shrub that needs fire to survive. The burn will help to increase the population numbers of this plant, which is found in only one other location in the world."

Signatures:

Recommended by (Project Coordinator):

Approved by (Forest Supervisor):