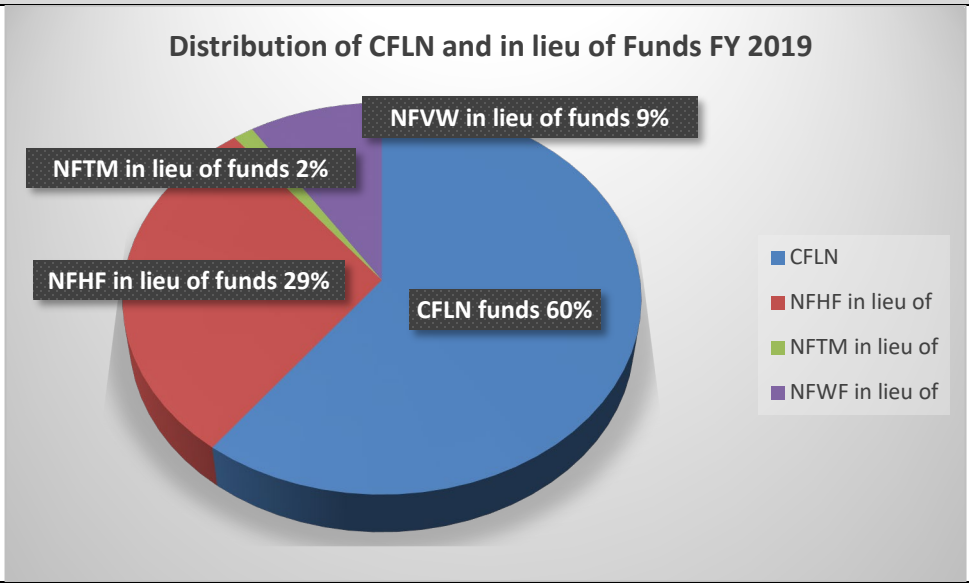
CFLR Project (Name/Number): Four Forest Restoration Initiative CFLR005

National Forest(s): Apache-Sitgreaves, Coconino, Kaibab, and Tonto National Forests

1. Match and Leveraged Funds:

a. FY19 Matching Funds Documentation

Fund Source – (CFLN/CFLR Funds Expended)	Total Funds Expended in Fiscal Year 2019 $2,348,063
	CFLN19 $2,348,063

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 – (Funds expended from Washington Office funds (in addition to CFLR/CFLN) (please include a new row for each BLI))	Total Funds Expended in Fiscal Year 2019 $1,542,026
NFHF19	$1,132,519[1]
NFTM19	$54,270[2]
NFWF19	$355,237[3]

This value (aka "core funds" "in lieu of funds") should reflect the amount expended of the allocated funds as indicated in the program direction but does not necessarily need to be in the same BLIs or budget fiscal year as indicated in the program direction.

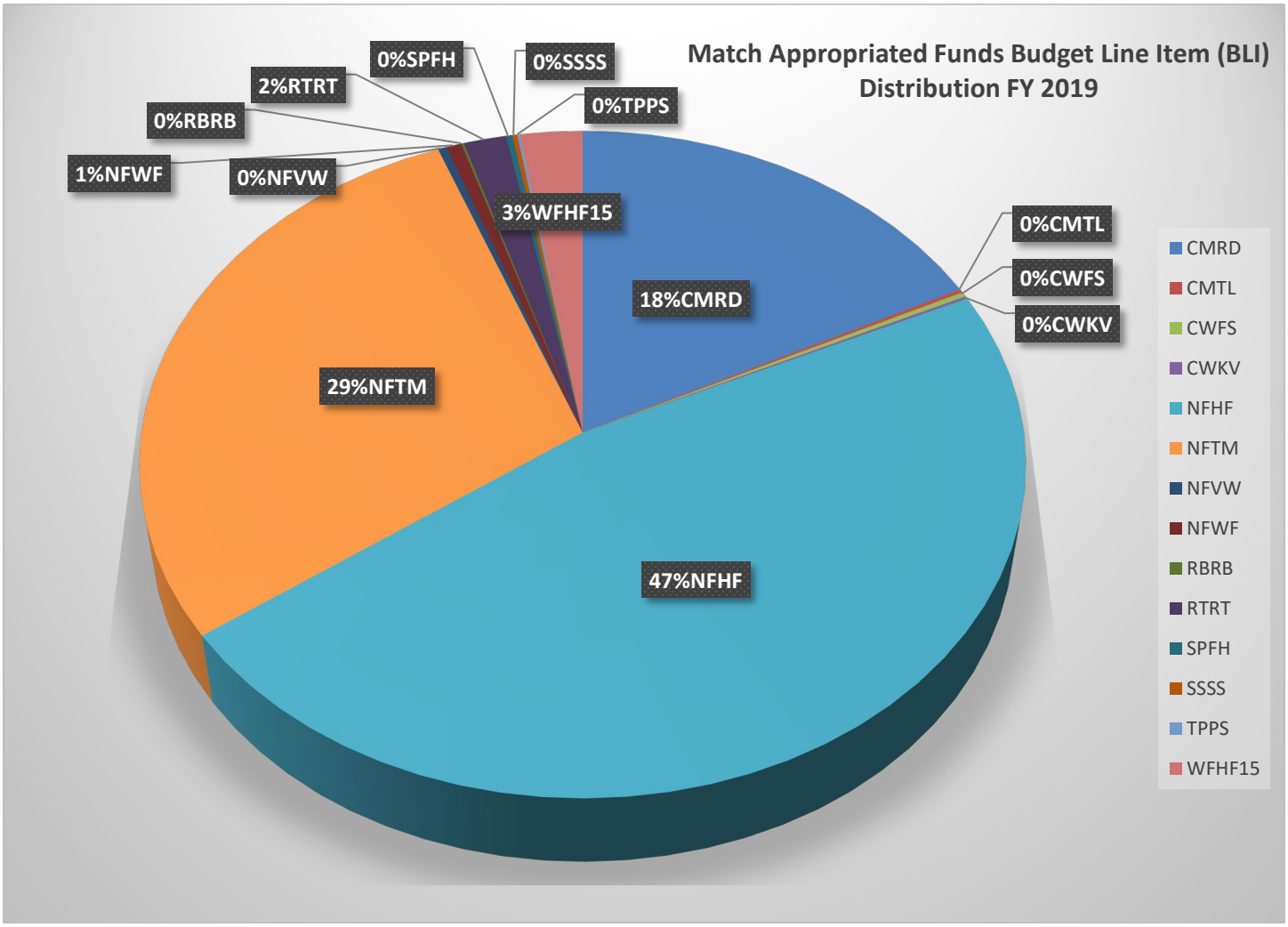
Fund Source – (FS Matching Funds (please include a new row for each BLI)	Total Funds Expended in Fiscal Year 2019 $28,490,919
CMRD19	$4,980,712
CMTL19	$49,368
CWKV	$35,567

[1] The total amount in the gPAS report of $14,498,719 is this figure plus the $13,366,200 that is displayed in the appropriated funds section below.

[2] The total amount in the gPAS report of $8,298,802 is this figure plus the $8,244,532 that is displayed in the appropriated funds section below.

[3] The total amount in the gPAS report of $528,973 is this figure plus the $173,736 that is displayed in the appropriated funds section below.

Fund Source – (FS Matching Funds (please include a new row for each BLI)	Total Funds Expended in Fiscal Year 2019 $28,490,919
NFHF19	$13,366,200
NFTM19	$8,244,532
NFVW19	$100,641
NFWF19	$173,736
RBRB	$26,878
RTRT	$485,207
SPFH	$71,665
SSSS	$55,991
TPPS	$30,390
WFHF15	$708,000



This amount should match the amount of matching funds 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 2019 $228,191
NFXN	$162,034
CWFS	$66,157

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 the WIT database.

Fund Source – (Partner In-Kind Contributions)	Total Funds Expended in Fiscal Year 2019 $4,965,623
City of Flagstaff	$2,700,000
Coconino County	$993,000
The Nature Conservancy	$506,200
Bureau of Indian Affairs	$435,456
Ecological Restoration Institute	$98,500
Friends of Northern Arizona Forests	$73,467
Grand Canyon Trust	$58,591
TRACKS	$34,513
Arizona Game and Fish Department	$24,625
Trout Unlimited	$12,560
Greater Flagstaff Forest Partnership and Mottek Consulting	$27,711

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.

Service work accomplishment through goods-for services funding within a stewardship contract (for contracts awarded in FY19)	Totals $10,914,614
Total revised non-monetary credit limit for contracts awarded in FY19	$10,914,614

Forest	Sale	Revised Non-Monetary Credit Limit
Apache-Sitgreaves	St Joe	$231,804.00
Apache-Sitgreaves	Palomino	$14,486.00
Coconino	General Springs	$1,998,519.23
Coconino	Pinegrove TO	$100,580.90
Coconino	Newman Park TO	$187,441.00
Kaibab	GA Parks West	$8,381,783.00

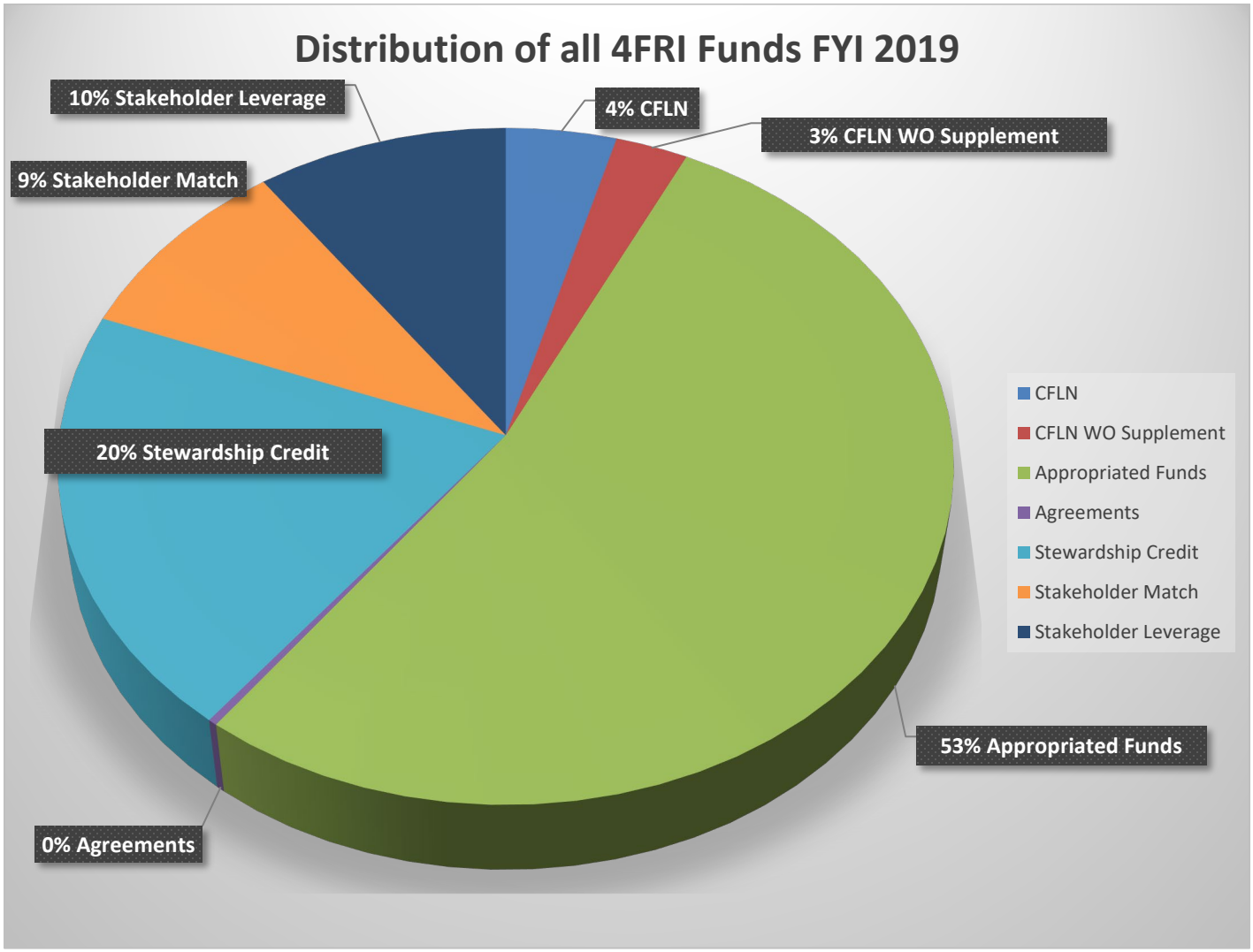
Revised non-monetary credit limits should be the amount in contract's "Progress Report for Stewardship Credits, Integrated Resources Contracts or Agreements" in cell J46, the "Revised Non-Monetary Credit Limit," as of September 30. Additional information on the Progress Reports is available in CFLR Annual Report Instructions document. Information for contracts awarded prior to FY19 were captured in previous annual reports.

b. Please fill in the table describing leveraged funds in your landscape in FY2019. Leveraged funds refer to funds or in-kind services that help the project achieve proposed objectives but do not meet match qualifications. Leverage funds total for FY 2019 are $5,344,675.

Description of item	Where activity/item is located or impacted area	total estimated amount	Forest Service or Partner Funds	source of funds (organization name)
Advocacy	1,230 hours of Advocacy(Legislative, Biomass, Stakeholder meetings, Misc meetings, DEIS, NRGW, MPMB) across the entire 4FRI landscape	$30,172	in kind	Trout Unlimited
Park Unit Fuels	AZ State Trust 200 acres	$50,000	AZ State Forestry	AZ State
Yellow Unit Ecosystem/Fuels	AZ State Trust 640 acres	$160,000	AZ State Forestry	AZ State
NAD South	AZ State Trust 900 Acres	$270,000	AZ State Forestry	AZ State
Log Cabin	AZ State Trust 250 Acres	$37,500	AZ State Forestry	AZ State
Railroad Piles	AZ State Trust 300 ac	$12,000	AZ State Forestry	AZ State
Black Pass Piles	AZ State Trust 250 ac	$12,500	AZ State Forestry	AZ State
Bobs Piles	AZ State Trust 600 ac	$30,000	AZ State Forestry	AZ State
Central Tornado Piles	AZ State Trust 400 ac	$16,000	AZ State Forestry	AZ State
Mill Piles	AZ State Trust 500 ac	$20,000	AZ State Forestry	AZ State
Repair and maintenance Novo Power biomass plant	Novo Power biomass plant, Snowflake, AZ	$1,489,528	partner	Novo Power
Capital improvements Novo Power biomass plant	Novo Power biomass plant, Snowflake, AZ	$2,008,000	partner	Novo Power
Rim Country EIS planning	4FRI wide	$24,000	grants, donations	Grand Canyon Trust
NEPA planning - Coconino NF extended team	4FRI Rim Country EIS- Coconino, Tonto, A-S NF's	$82,002	FS appropriated	USFS NFHF
NEPA planning -4FRI Core team	4FRI Rim Country EIS- Coconino, Tonto, A-S NF's	$689,795	FS appropriated	NFHF USFS
NEPA planning - Tonto NF extended team	4FRI Rim Country EIS- Coconino, Tonto, A-S NF's	$48,066	FS appropriated	NFTM USFS
NEPA planning -A-S NF extended team	4FRI Rim Country EIS- Coconino, Tonto, A-S NF's	$160,393	FS appropriated	NFHF USFS
NEPA Black River Restoration Project	Alpine RD, Apache-Sitgreaves NF	$204,719	FS appropriated	NFTM USFS

DISTRIBUTION OF ALL FUNDS FOUR FOREST RESTORATION INITIATIVE

FUND SOURCE	AMOUNT	% of funds
CFLN	$2,348,063	4%
CFLN WO Supplement	$1,542,026	3%
Appropriated Funds	$28,490,919	53%
Agreements	$228,191	0%
Stewardship Credit	$10,914,614	20%
Stakeholder Match	$4,965,623	9%
Stakeholder Leverage	$5,344,675	10%
TOTAL	**$53,834,111**	**100%**



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***.

FY2019 Overview

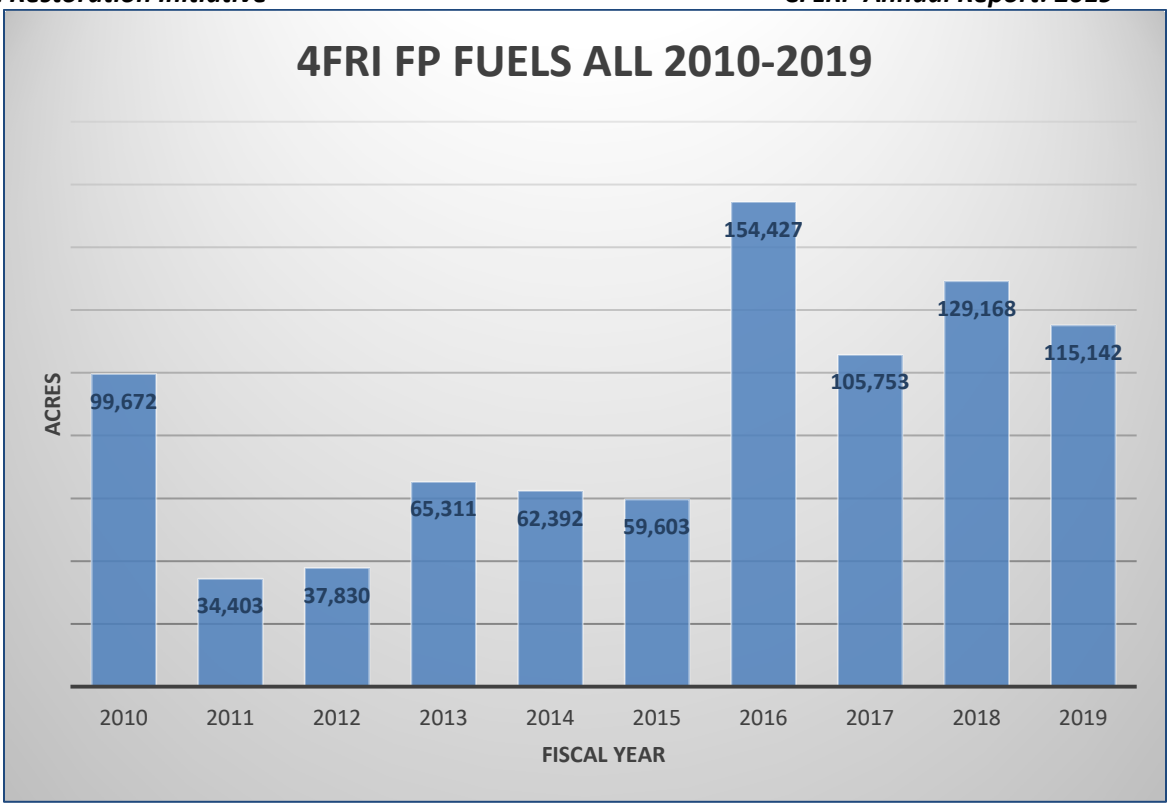
FY19 Activity Description (Agency performance measures)	**Acres**
Number of acres treated by prescribed fire	88, 862[4]
Number of acres treated by mechanical thinning	8,192[5]
Number of acres of natural ignitions that are allowed to burn under strategies that result in desired conditions	10,581[6]
Number of acres treated to restore fire-adapted ecosystems which are maintained in desired condition	40,153[7]
Number of acres mitigated to reduce fire risk	25,904[8]

The 4FRI project has prioritized mechanical and fuels treatments across the landscape utilizing 5 year plans that have used the following criteria for implementation: 1) areas within the wildland urban interface, areas of high crown fire potential, and watersheds of concern. These priorities were a combination of candidate areas outlined by the 4FRI stakeholders group in the 2010 Landscape Restoration Strategy and refined by the 4FRI Forest Supervisors in 2012. Because a vast majority of the ponderosa pine type within the 4FRI landscape is within the very high or high fire hazard type as defined by the Firelab classified data, most all treatments will be in areas where treatments will reduce fire hazard by reducing fuels---either through mechanical harvest removal, or fuels reduction and change in crown base height through fire activities. Please see the maps below for locations of treatments within the project area in relation to Fire Hazard Potential.

For FY 19, 91% of both the fire fuels treatments (Rx burn, wildfire, non-commercial thinning, piling of material, chipping—59% in very high and 32% in high hazard areas) and commercial mechanical harvest (58% in very high and 32% in high fire hazard) were accomplished in areas that had either very high or high fire hazard potential. Sixty-one percent of the fuels treatments were within the Wildland Urban interface. The bulk of the treatments were prescribed fire (FACTS Activity Code 1111) and planned treatment burned in wildfire (FACTS activity code 1119).

The amount of fire treatments slightly decreased in FY 2019 over 2018, however, was still the third most acres accomplished in the 10 year period. There was one causal factor for this. The reason for the decreased acres from FY 2018 accomplishments was the fall burn season in FY 2019 was basically washed out due to moisture conditions. However, the wet fall and winter did allow for more wildfires in the summer to be managed that resulted in desired conditions.

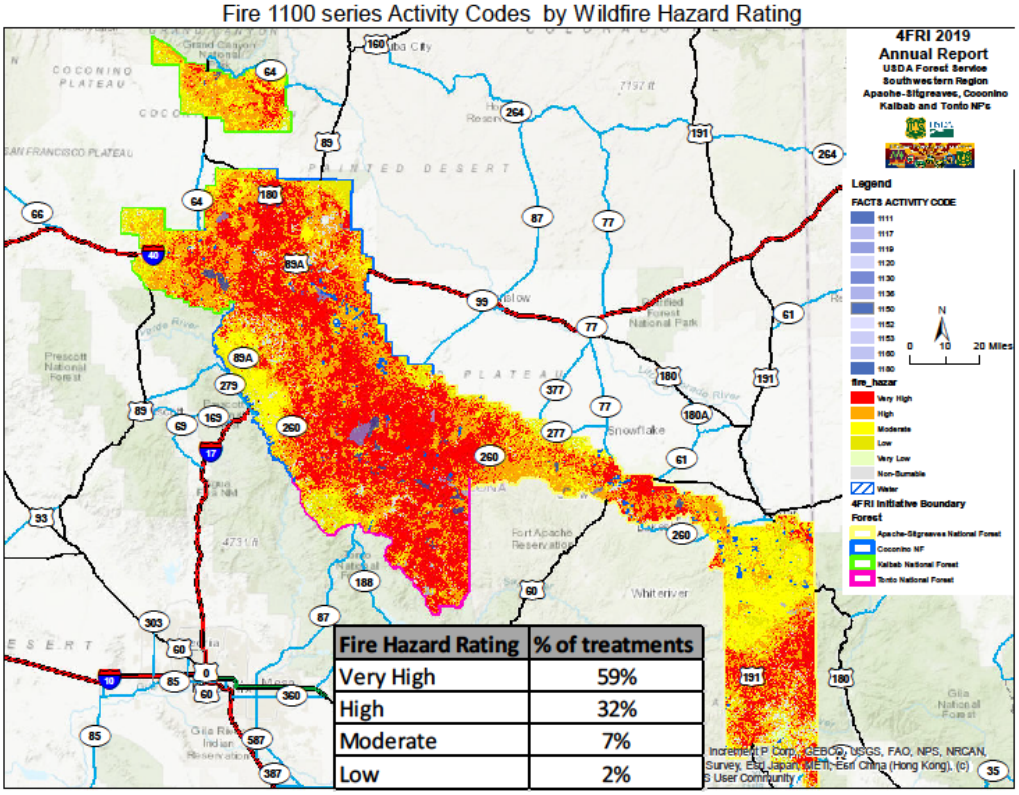
[4] From FACTS FP-FUELS-WUI and FP-FUELS-NON-WUI report ran November 15, 2019 for activity codes 1111, 1112, 1119 and 1130
[5] From gPAS TMBR-SALE_TRT_AC
[6] From FP-FUELS-NON-WUI report ran November 15, 2019 for activity codes 1117. FACTS FP-FUELS-WUI was queried on November 15, 2019 and there are no 1117 codes in FACTS FP-FUELS-WUI for FY 2019.
[7] From FY 19 footprint acres that were previously treated- 134,407 acres treated in total and the actual footprint acres for the year are 94,254---40,153 acres that are a maintenance treatment.
[8] From FACTS FP-FUELS_ALL_MIT report in CDW ran November15, 2019.



Overall, 4FRI has been able to increase fuels treatments on several fronts from 2010 to the present. One, the Forests are burning larger burn blocks and utilizing more aerial ignition than in previous years. Second, over the last four years, there has been extensive use of shared resources across forests. In addition, State and local fire department resources have also been utilized to increase the workforce to be able to accomplish prescribed burns whenever burn windows are available.

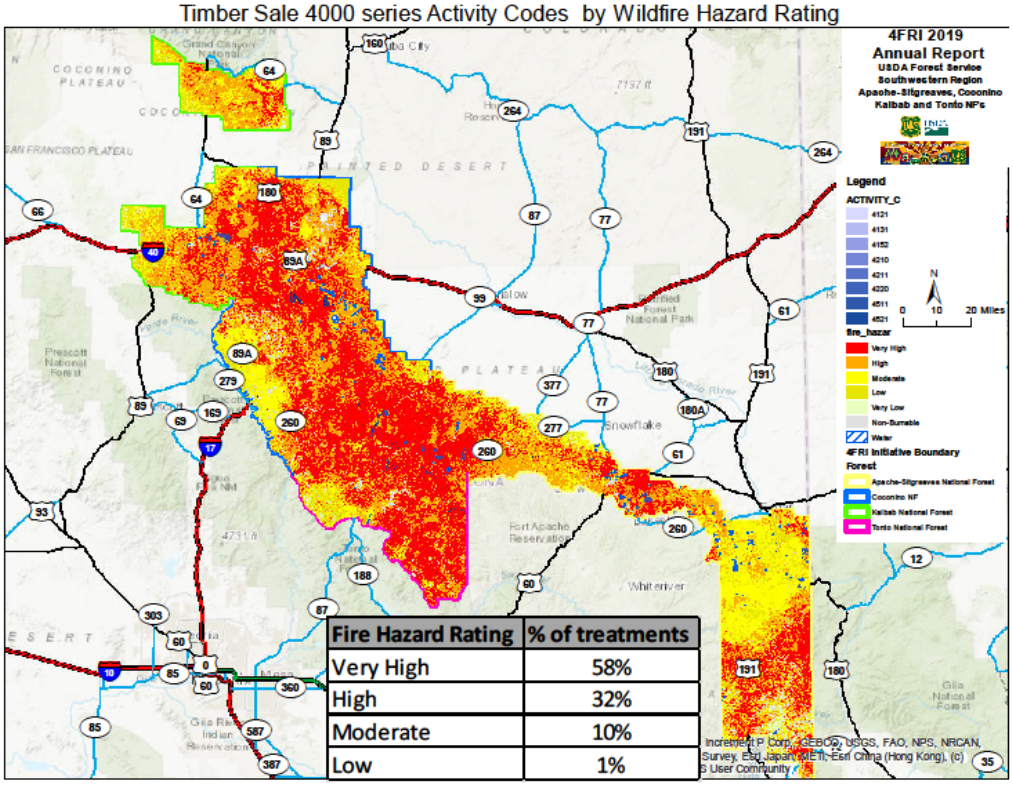
4FRI has been very successful in managing wildfires that attain desired conditions, especially from 2016 to the present. Third, additional funding from the Washington Office enabled extension of tours for fire fighters that were able to take advantage of the fall prescribe fire burn season when the windows occurred, as well as complete pre-fire resource survey requirements. Fourth, large scale completed NEPA acreage exists across much of the 4FRI project area. One advantage to having large scale NEPA completed has been that burn plans have been increased in size to match the scope of the desired conditions specified at the landscape scale. Fifth, the number of acres offered for mechanical treatments has increased as well as forest product modernization measures such as utilizing Designation by Prescription, to increase timber accomplished acres. All of these actions have created the ability to accelerate the pace and scale of fuels reduction treatments across the landscape.

Fire 1100 series Activity Codes by Wildfire Hazard Rating



Data from USDA Forest Service geospatial data and Open street map base layer. All line are approximate and subject to change.
rd
November 16 ,2019

Timber Sale 4000 series Activity Codes by Wildfire Hazard Rating



Data from USDA Forest Service geospatial data and Open street map base layer. All line are approximate and subject to change.
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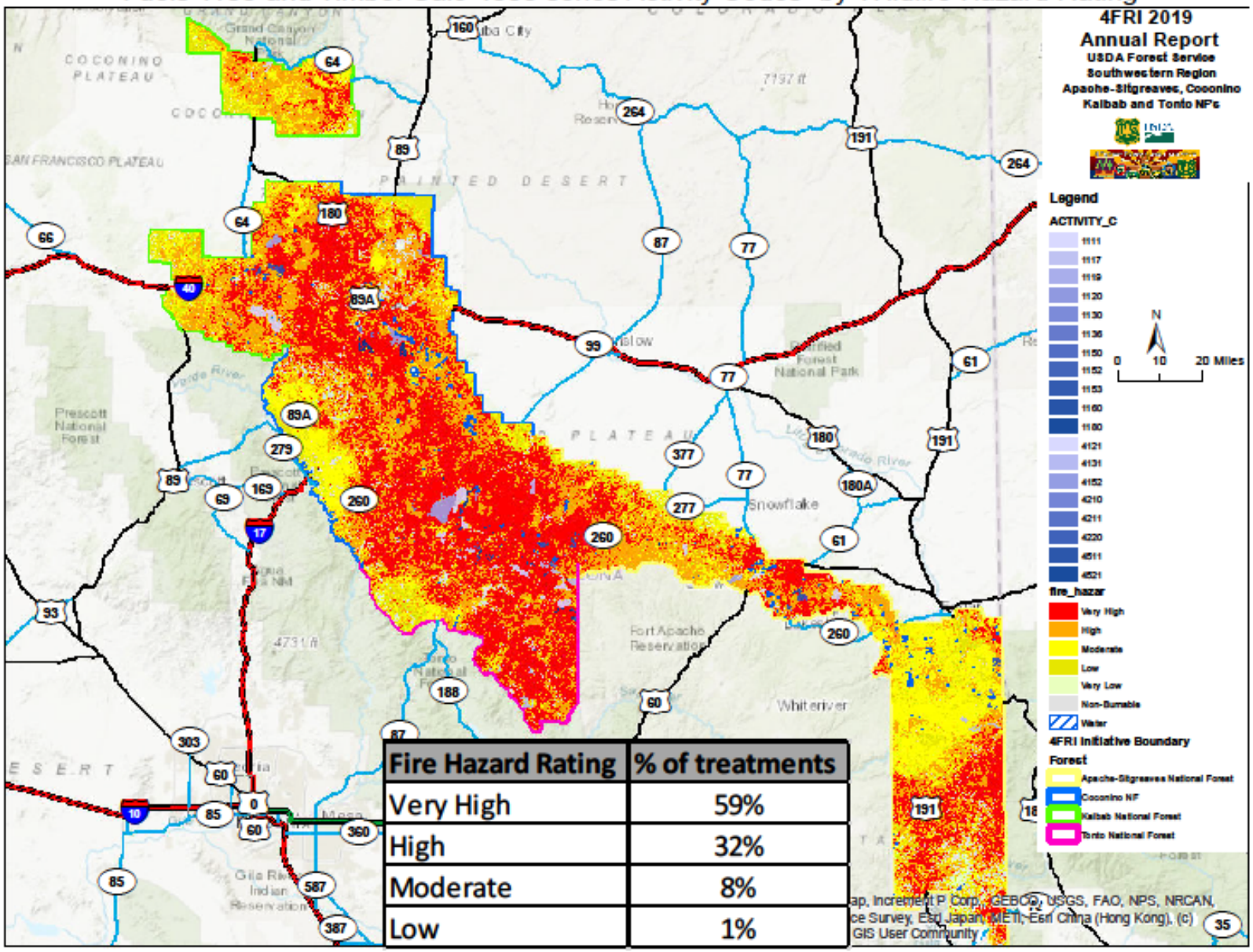
Fuels 1100 and Timber Sale 4000 series Activity Codes by Wildfire Hazard Rating



Fire Hazard Rating	% of treatments
Very High	59%
High	32%
Moderate	8%
Low	1%

Data from USDA Forest Service geospatial data and Open street map base layer. All line are approximate and subject to change.
dd
November 18 ,2019

Throughout the life of the 4FRI project, there has been large-scale implementation of mechanical harvest. The table below displays the acres of mechanical harvest issued in contracts and the acres harvested since 2010. This combined effort to implement mechanical thinning treatments is moving these portions of the landscape toward desired conditions and the goals outlined in the 10-year strategy. However, the lack of existing industry on the west side of 4FRI (Kaibab and Coconino National Forests) is creating an issue with acres that will be available for prescribed fire in the future because sales under contract cannot be utilized for prescribe fire due to the potential for claim with lost volume and the loss of butt marks in painted units. This will move prescribe fire away from urban interface areas where there are sales that are awarded but not harvested.

Summary by Fiscal Year	Acres awarded in all contracts	Acres completed in all contracts
Fiscal Year 2010	10,882	13,265
Fiscal Year 2011	17,638	16,034
Fiscal Year 2012	10,063	8,653
Fiscal Year 2013	25,479	15,469
Fiscal Year 2014	22,069	13,585
Fiscal Year 2015	38,819	14,550
Fiscal Year 2016	22,137	11,569
Fiscal Year 2017	32,514	13,108
Fiscal Year 2018	21,983	12,731
Fiscal Year 2019	31,028	11,102
	232,612	**130,066**

The following photos display before and after of treatments in the Mountainaire project in the Flagstaff Urban Interface.

The first photo (upper left) is pre-harvest on June 5, 2012, the second photo (upper right) is during harvest on June 17, 2012, the third photo (bottom left) is immediately after the prescribe fire tht took place on April 15, 2015 (the photo is April 26, 2015). The final photo (bottom right) is two years after harvest displaying understory response and desired spatial pattern that is designed to increase understory diversity and reduce crown fire potential and decreasing fire hazard.

Expenditures

Category	**$**
FY2019 Wildfire Preparedness[9]	$17,454,906
FY2019 Wildfire Suppression[10]	$23,251,475
The cost of managing fires for resource benefit if appropriate (i.e. full suppression versus managing)	No data
FY2019 Hazardous Fuels Treatment Costs (CFLN)	None planned[11]
FY2019 Hazardous Fuels Treatment Costs (other BLIs)	CWFS $40,200 CWKV $76,651 NFHF $8,960,305 NFTM $1,039,681

How may the treatments that were implemented contribute to reducing fire costs? Overall, 4FRI has utilized larger burn blocks on prescribe fire to decrease costs over from the beginning of the Initiative. In addition, expanded use of wildfire to meet forest plan conditions have decreased costs over the lifetime of the 4FRI Initiative. The Coconino NF has a joint burn plan with the State of Arizona to allow prescribed fire to cross jurisdictional boundaries which decreases costs and increased the benefit of prescribed fire across all lands.[12]

[9] 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).

[10] 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.

[11] None planned in work plan as direct fire and fuels, but a portion of the $2,699,404 that is planned in mechanical thinning produced 18,472 acres through timber sales sold in CFLN

[12] The 4FRI landscape has limited State of Arizona lands within the 4FRI boundary, the bulk of the Arizona state lands are centered on the Coconino National Forest.

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:

Thomas Combrink and Wade Rousse. 2019. The Economic Impact of Post Fire Flooding Bill Williams Mountain The Alliance Bank Economic Policy Institute The W.A. Franke College of Business Northern Arizona University -available online at The Economic Impact of Post Wildfire Flooding Bill Williams Mountain

Wayne Fox, Director, Arizona Rural Policy Institute; Assistant Dean, W.A. Franke College of Business at Northern Arizona University completed a cost avoidance study for the Flagstaff Watershed Protection Project. The link is attached. http://arizonastatelawjournal.org/wp-content/uploads/2016/04/Fox_Final.pdf;

Changes in potential wildland fire suppression costs due to restoration treatments in Northern Arizona Ponderosa pine forests. Forest Policy and Economics Volume 87, February 2018, Pages 101-114. https://www.sciencedirect.com/science/article/pii/S1389934116302362; Fitch, R., & Kim, Y. S. (2015).

Expected wildfire suppression costs for proposed 4FRI treatment areas. In The Colorado Plateau VI: Science and Management at the Landscape Scale (pp. 331-338). University of Arizona Press. https://www.scopus.com/record/display.uri?eid=2-s2.0-84952332372&origin=inward&txGid=2bafcb4380443a44a5c3374c410cd5c5

When a wildfire interacts with a previously treated area within the CFLR boundary:

Fire Suppression (WFSU)

The 4FRI project area had an active wildland fire year in 2019. The table below summarizes fire activity that was reported as FACTS Activity Codes 1117 Wildfire-Natural Ignition and 1119-Planned Treatment Burned in Wildfire in FP-FUELS_WUI and FP_FUELS-NON_WUI performance measures for the Initiative. There were 45,259 acres reported in these activity codes. Of these, 10,581 acres were reported as wildfires-natural ignition, and 34,678 acres were reported as planned treatment burned in wildfires (27,980 acres in the WUI and 6,698 acres in the Non-WUI, respectively). There was one fire that was full suppression over 100 acres that was reported in WFDSS---the 1,961 acres Museum Fire on the Coconino National Forest.

FP-FUELS_WUI

ACTIVITY CODE/FOREST/FIRE NAME	ACRES
1119-Planned Treatment Burned in Wildfire	**27,980**
APACHE-SITGREAVES NATIONAL FOREST	**2,240**
RODEO-CHEDISKI BURN BAGNAL FIRE	2,240
COCONINO NATIONAL FOREST	**21,701**
COLDWATER WILDFIRE	16,790
NEWMAN WILDFIRE	4,911
KAIBAB NATIONAL FOREST	**4,039**
BOULIN WILDFIRE	4,039
Grand Total	**27,980**

FP-FUELS_NON_WUI

ACTIVITY CODE/FOREST/FIRE NAME	ACRES
1117 Wildfire-Natural Ignition	**10,581**
APACHE-SITGREAVES NATIONAL FOREST	**7,459**
BLUE RIVER FIRE	2,168
CHEV FIRE	90
COLEMAN FIRE	990
DEER FIRE	1,905
GRAMA FIRE	2,153
RABBIT FIRE	153
COCONINO NATIONAL FOREST	**3,122**
MAROON WILDFIRE	3,122
1119-Planned Treatment Burned in Wildfire	**6,698**
APACHE-SITGREAVES NATIONAL FOREST	**503**
HOYLE FIRE	503
COCONINO NATIONAL FOREST	**6,195**
HART WILDFIRE	715
MAROON WILDFIRE	5,480
Grand Total	**17,279**

The following table displays the status of these fires (and the full suppression Museum Fire) and whether there were treatment interactions with the wildfire.

Incident Name	Jurisdiction(s)	Size	Strategy	Forest	Treatment Interaction
Blue River	USFS	2,168	Resource Benefit	Apache-Sitgreaves	Yes-no report
Chev	USFS	90	Resource Benefit	Apache-Sitgreaves	No
Grama	USFS	2,153	Resource Benefit	Apache-Sitgreaves	No
Rabbit	USFS	153	Resource Benefit	Apache-Sitgreaves	No
Deer	USFS	1,905	Resource Benefit	Apache-Sitgreaves	Yes-monitoring in progress
Coleman	USFS	990	Resource Benefit	Apache-Sitgreaves	yes-no report
Bagnal	BIA/Tribal, USFS	2,243	Resource Benefit	Apache-Sitgreaves	No
Hoyle	USFS	503	Resource Benefit	Apache-Sitgreaves	No
Maroon	USFS	8,602	Resource Benefit	Coconino	No
Coldwater	USFS	16,790	Resource Benefit	Coconino	yes-no report
Newman	USFS	4,907	Resource Benefit	Coconino	No
Hart	USFS	715	Resource Benefit	Coconino	yes-no report
Museum[13]	USFS	1,961	Full Suppression	Coconino	yes-no report
Boulin	USFS, Other	4,039	Resource Benefit	Kaibab	yes[14]-no report
TOTAL		**47,219**			

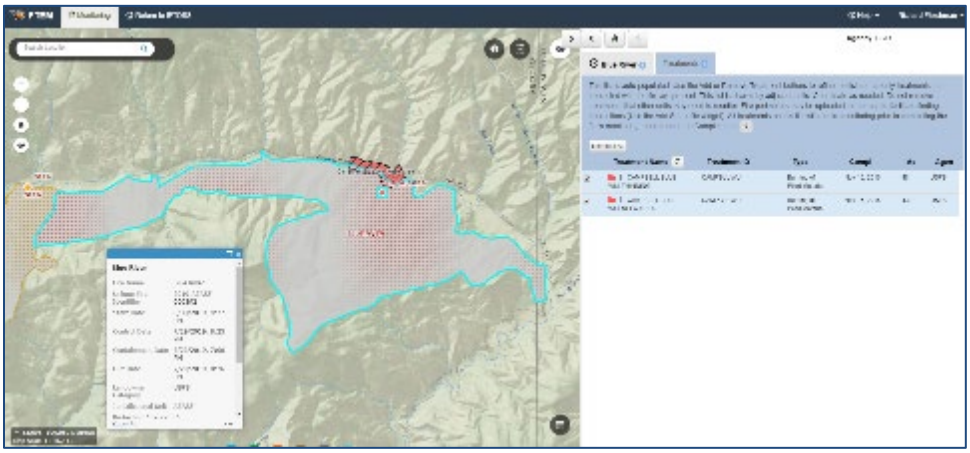
Blue River Fire

The Blue River fire burned on Apache-Sitgreaves National Forest from June 30 to July 29, 2019. There are two treatments identified within the project area (see map), but comprise only a small portion of the area. No other

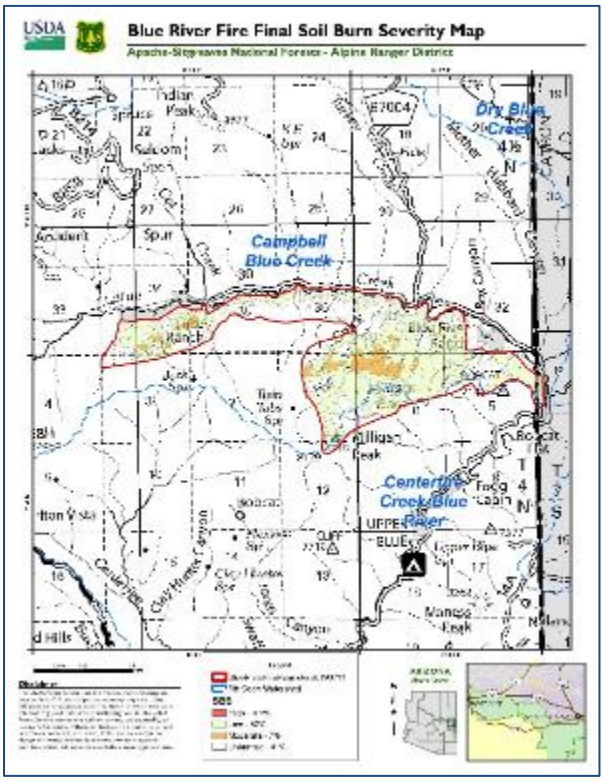
[13] Not counted as CFLRP accomplishment.

[14] Past treatments are adjacent to the fire edge-see map below.

jurisdictions were in or adjacent to the fire. The objective of the fire was to reintroduce fire into the landscape and to reduce fuel loading. No Fuels Treatment Effectiveness Monitoring (FTEM) report has been started for this fire.

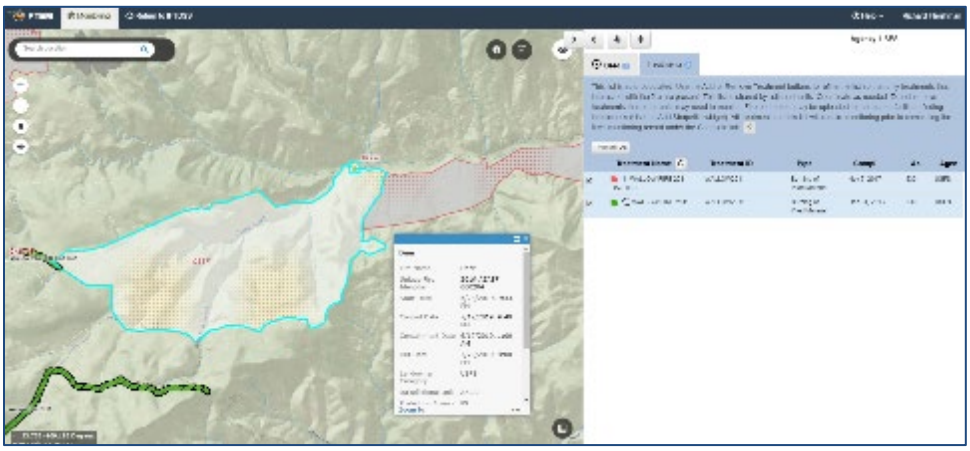


The soil burn severity for the Blue River fire is displayed below. Note that where the treatment is identified above for hand thinning, the fire severity is either low or unburned.

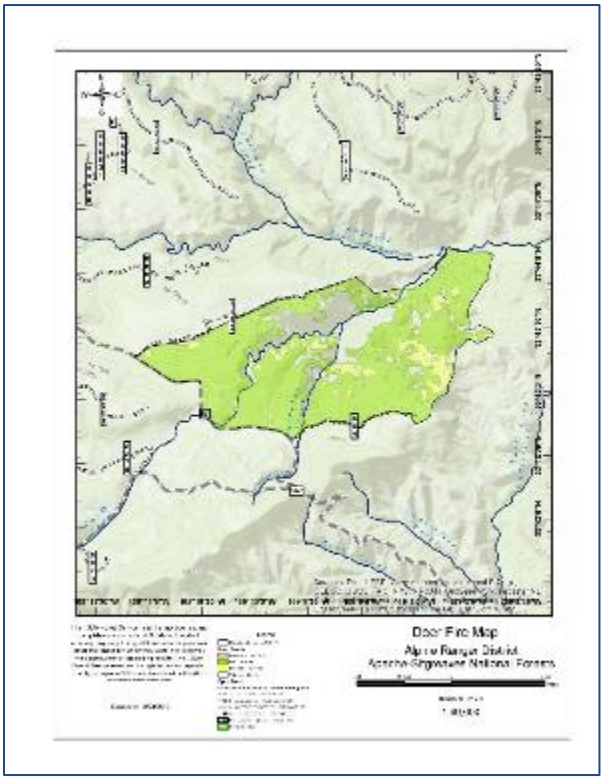


Deer Fire

The Deer River fire burned on Apache-Sitgreaves National Forest from May 26 to July 29, 2019. There are two treatments identified within the project area (see map), but comprise only a small portion of the area. No other jurisdictions were in or adjacent to the fire. The objective of the fire was to implement the Forest Plan objective for ecological components (e.g., soil, vegetation, water) that are resilient to disturbances including human activities and natural ecological disturbances (e.g., fire, drought, wind, insects, disease, pathogens) and to have natural ecological disturbances return to their characteristic roles within the ecosystem. Wildfire, in particular, is restored to a more natural function. The status of this fire in FTEM is that monitoring has begun on this fire.

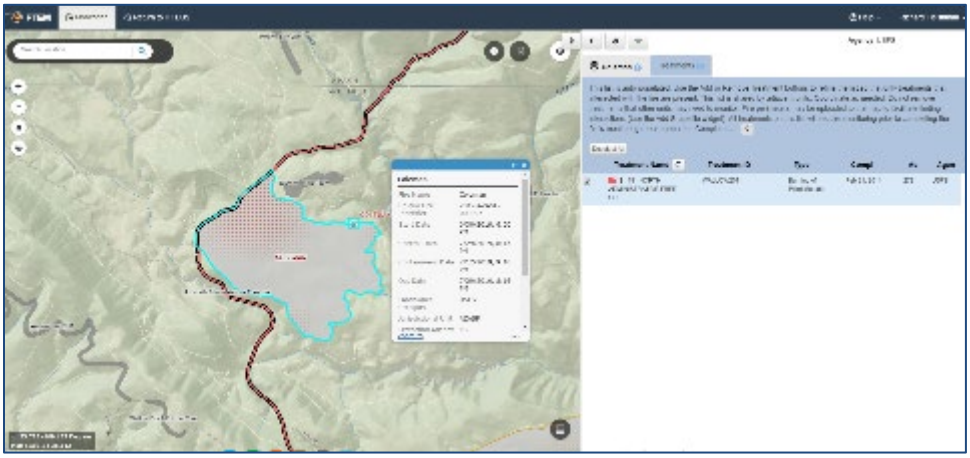


The soil burn severity for the Blue River fire is displayed below. Note that where the treatment is identified above for hazard trees and burning of piled material on the western corner of the fire, did burn with low severity (as did most of the fire).

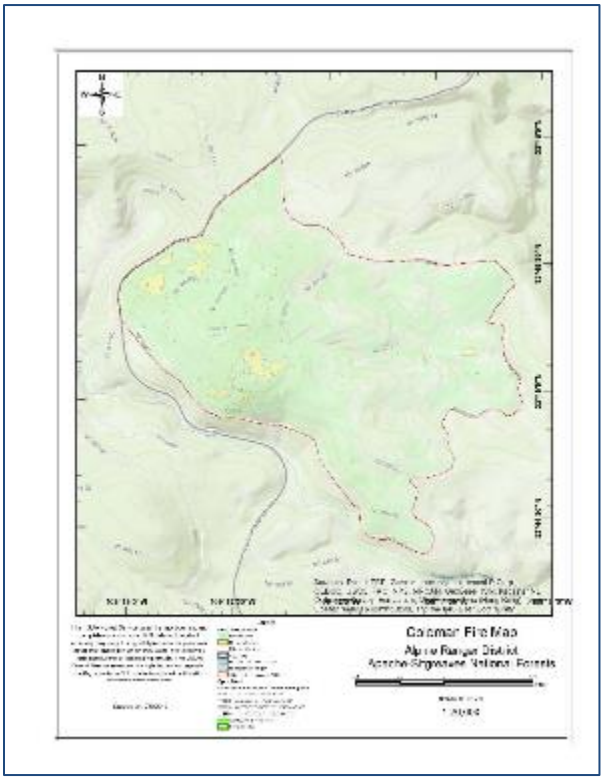


Coleman Fire

The Coleman River fire burned on Apache-Sitgreaves National Forest from June 30 to July 29, 2019. There are two treatments identified within the project area (see map), but comprise only a small portion of the area. No other jurisdictions were in or adjacent to the fire. However, because the fire was adjacent to US Highway 191, coordinator with Arizona department of Transportation and Arizona Department of Public Safety were paramount in the planning of this incident. The objective of the fire was to implement the Forest Plan objective for ecological components (e.g., soil, vegetation, water) that are resilient to disturbances including human activities and natural ecological disturbances (e.g., fire, drought, wind, insects, disease, pathogens) and to have natural ecological disturbances return to their characteristic roles within the ecosystem. Wildfire, in particular, is restored to a more natural function. No FTEM report has been started for this fire.



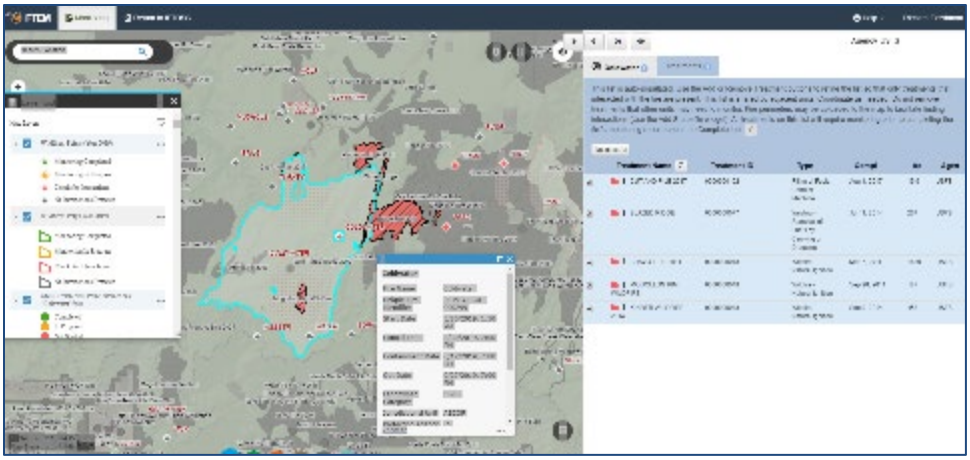
The soil burn severity for the Coleman River fire is displayed below. Note that where the treatment is identified above for administrative free use along US Highway 191 on the western edge of the fire did burn with low severity (as did most of the fire).



Coldwater Fire

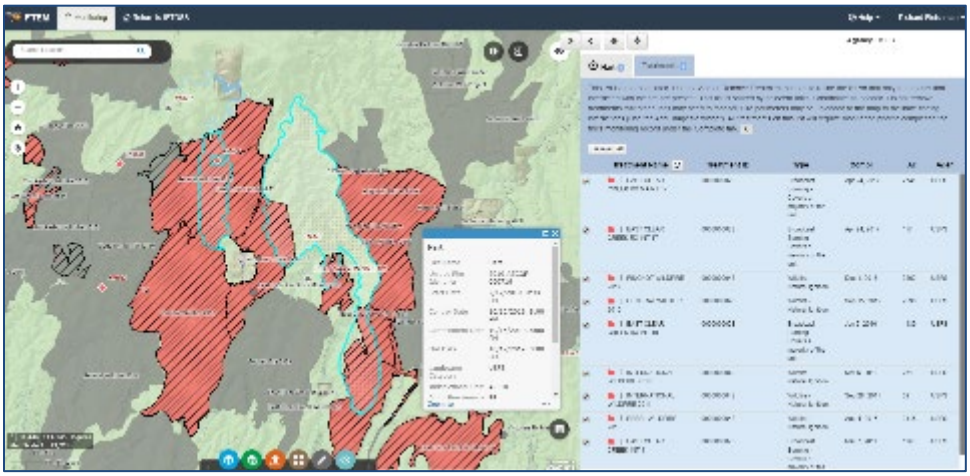
The Coldwater Fire burned on Coconino National Forest from May 30 to September 27, 2019. There are five treatments identified within the project area (see map). No soil burned area map is available for this fire. No other jurisdictions were in or adjacent to the fire. However, because the fire was adjacent to State Highway 87, coordinator with Arizona Department of Transportation and Arizona Department of Public Safety were paramount in the planning of this incident. Also, coordination and planning heavily involved US Fish and Wildlife Service when burning in Mexican spotted owl Protected Activity Centers and the ignition on steep slopes above Little Colorado spinedace critical habitat. Also, coordination with Salt River Project and the City of Payson was in place because the watershed is a water source for the City of Payson and the CC Cragin reservoir infrastructure is owned by Salt River Project. There were multiple objectives

of the fire to implement the Forest Plan in regards to maintaining a healthy ecosystem by reintroducing natural fire back into the forest and to minimize impacts to two federally threatened species-the Mexican spotted owl and Little Colorado spinedace. No FTEM report has been started for this fire.

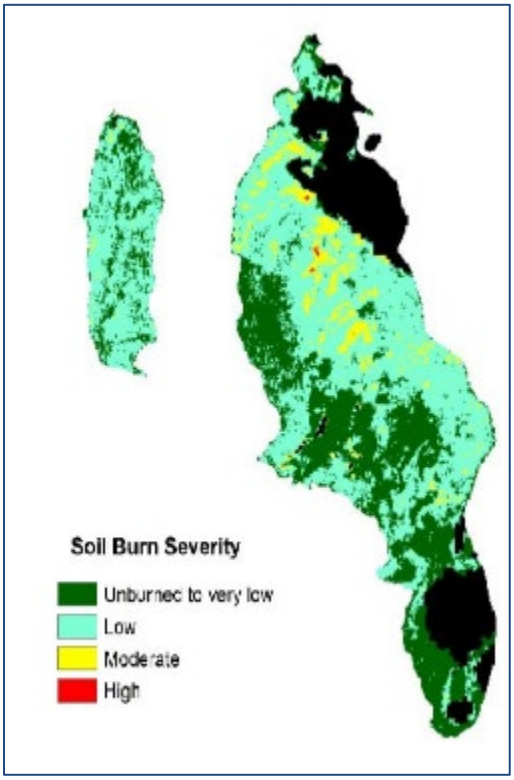


Hart Fire

The Hart Fire burned on Coconino National Forest from July 12 to October 17, 2019. There are nine treatments identified within the project area (see map). A majority of the treatments are previous burning projects, either wildfires or prescribe fire. No other jurisdictions were in or adjacent to the fire. Coordination and planning heavily involved US Fish and Wildlife Service when burning in Mexican spotted owl Protected Activity Centers and the ignition on steep slopes above Little Colorado spinedace critical habitat. Also, coordination with Salt River Project and the City of Payson was in place because the watershed is a water source for the City of Payson and the CC Cragin reservoir infrastructure is owned by Salt River Project. There were multiple objectives of the fire to implement the Forest Plan in regards to maintaining a healthy ecosystem by reintroducing natural fire back into the forest and to minimize impacts to two Federally threatened species-the Mexican spotted owl and Little Colorado spinedace. No FTEM report has been started for this fire.

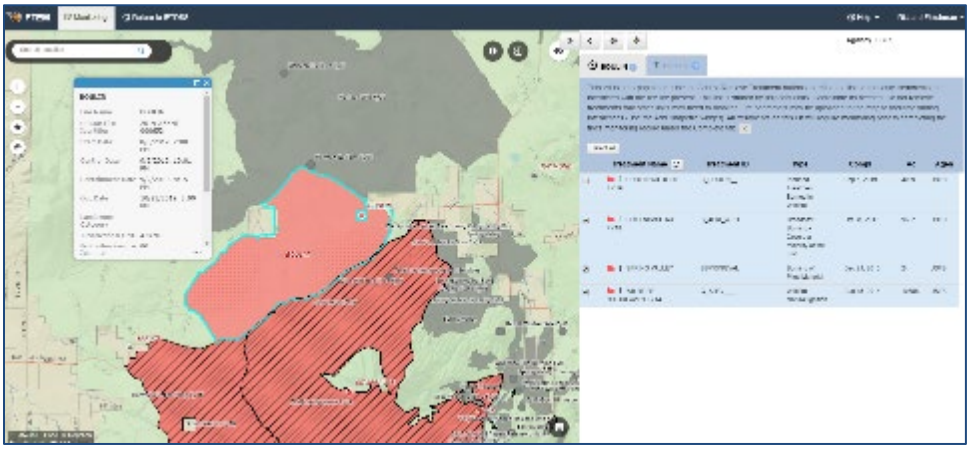


The fire burn severity map displays most of the fire burned in either low or very low. The BARC image does display several areas in black that are cloud cover. Note that where previous treatments occurred, either wildfires managed for resource benefit, or other prescribed fire treatments, the burn severity ranges from unburned to low fire severity to soils.

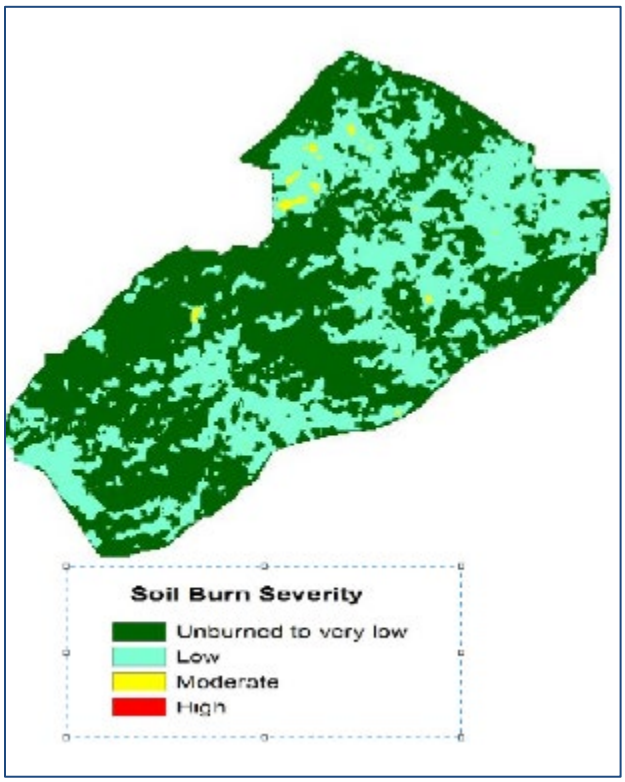


Boulin Fire

The Boulin Fire burned on Kaibab National Forest from August 6th to October 23, 2019. There are three treatments identified adjacent to the project area (see map). There are multiple inholdings adjacent to the Boulin Fire which required coordination with the State of Arizona. One objective of the fire was to keep the fire out of the communities and this objectives was met. Additional Forest Plan desired conditions include allowing natural fire to play its role as a disturbance factor in the ecosystem, to enhance wildlife habitat, improve forest health, and reduce potential for uncharacteristic high severity wildfires in future years. Additional coordination with Arizona Department of Environmental Quality was implemented to monitor the smoke in and adjacent to the local inholdings of Spring Valley, Pumpkin Center and Boulin tank private residences. This fire is within the 4FRI EIS and is identified for future treatment (Rx burn and mechanical thinning). No FTEM report has been started for this fire.

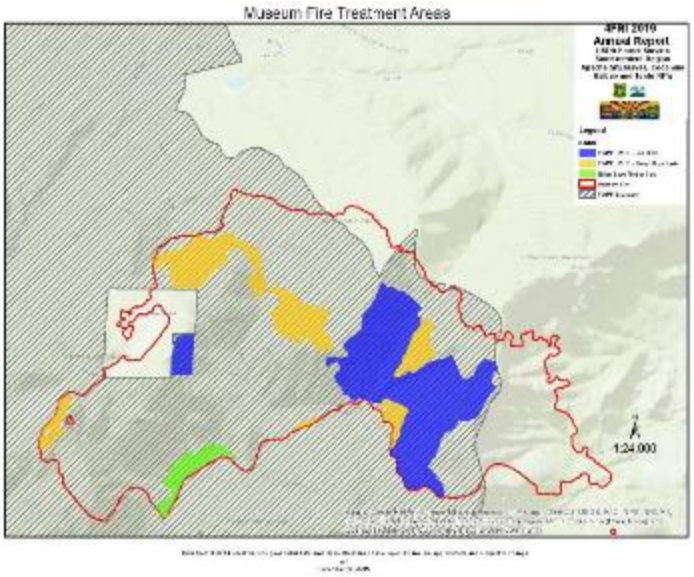


The fire burn severity map displays most of the fire burned in either low or very low soil severity.



Museum Fire

The Museum Fire started on Flagstaff Ranger District on Coconino National Forest on July 21 and was contained on August 9, 2019. The Museum Fire was a full-suppression fire. No FTEM report has been started for this fire, however, the fire did have multiple treatments that were within the fire that were either recently completed (Elden Base timber sale, Helicopter and Steep slopes service contracts) or were being implemented as part of the Flagstaff Watershed Protection Project (FWPP).

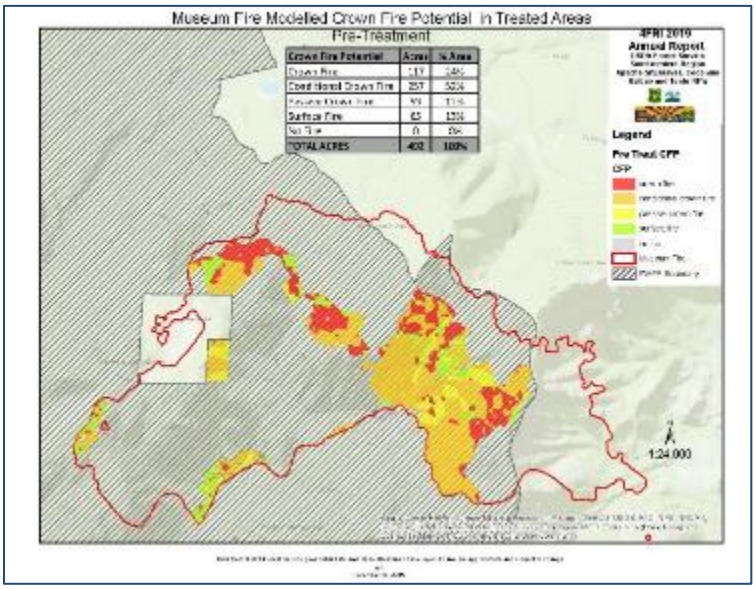


All of the projects that were harvested were not prescribe burned, so slash was still present within the units when the fire entered the harvested units. The Elden Base project had delimber piles in landings and scattered small hand piles. The helicopter logging units had various depths of slash from small diameter thinning that had yet to be treated (harvest had only completed one month prior to the fire). The steep slope logging operations were still in progress with no slash burned and were the actual cause of the fire.

The following summarizes the modelled crown fire potential both pre and post treatment (treatment includes thinning and post fire burning).

Pre-harvest modelled crown fire potential

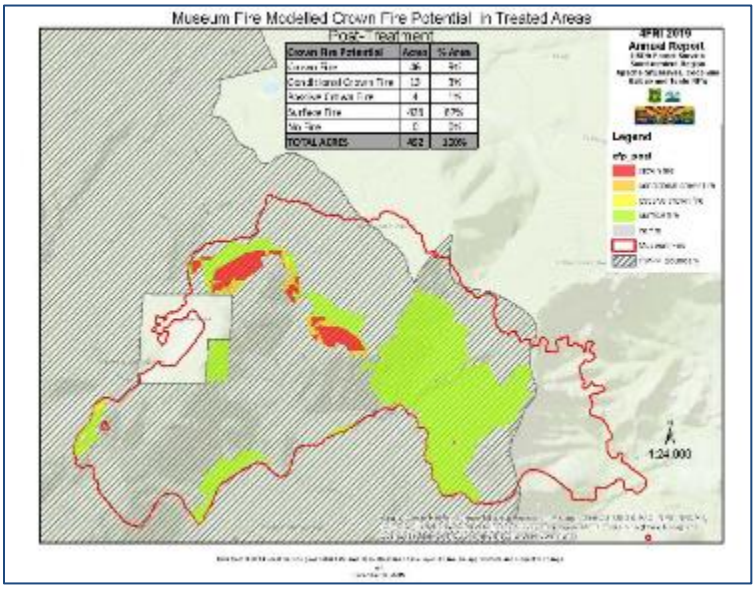
During the FWPP NEPA analysis, crown fire potential was modelled both pre-harvest (existing condition) and post-harvest/fuels treated through pile and broadcast burning using the same weather conditions as the Schultz Fire that burned in June of 2010. The map below displays the crown fire potential for the areas that were either treated or in progress of being treated.



Note that 87% of the area was modelled to have some form of crown fire, with 78% having crown fire or conditional crown fire.

Post-harvest modelled crown fire potential

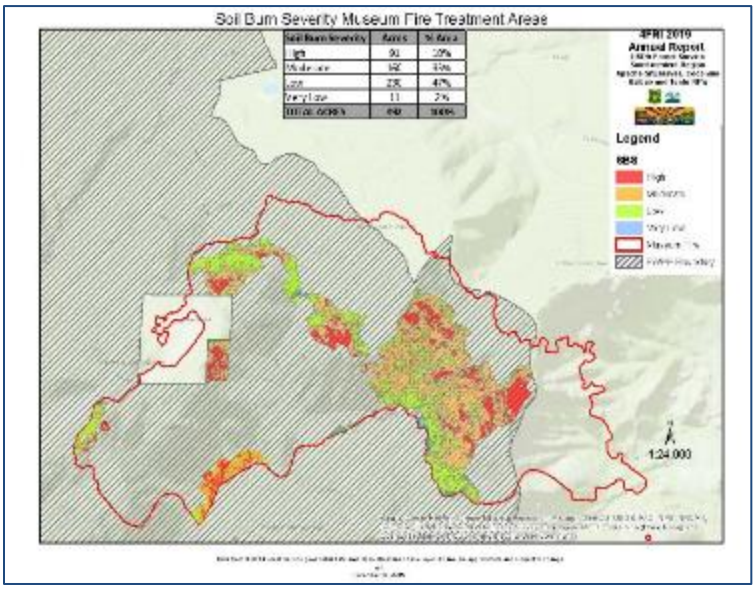
The post –harvest and treated slash modelled crown fire shows a dramatic shift in crown fire potential. Eighty seven



percent of the active treatment areas where expected to have a surface fire if a wildfire hit the burned area with the same weather conditions as the Schultz Fire. Note that areas within Mexican spotted owl Protected Activity centers received minimal treatment and still displayed crown fire activity post treatment.

Fuel Treatment Effectiveness

As stated above, a fuel treatment effectiveness report has not been completed for the Museum Fire, but we can discuss relative impacts of the Fire by exploring the soil burn severity map and looking at relationships to that and the modelled crown fire potential.



One thing is obvious is that the burn severity in the helicopter units in the southeast portion of the fire were dominated by high and moderate fire behavior. This is similar to the crown fire potential pre-treatment modelled runs, but are not the result of crown fire within these sites. The majority of the soil impacts are from recently created activity fuels that were present that the District did not have the opportunity to complete the treatment because the tree removal/harvest activity had just been completed one month prior to the fire.

The photos were taken inside the helicopter logging units and show intact canopy due to the removal of the ladder fuels by the thinning activities. However, the heavy slash accumulation from activity fuels did increase the soil burn severity across the area and did provide increased heating that heavily scorched the intact canopy. The treatments mirrored the expected fire behavior---this was a surface fire in the majority of the helicopter units---however the intensity of the fire from the fuel loading have deleterious effects that you would not expect with a surface fire. If the district had one to two years to treat the activity fuels, we would have expected a less severe effect to the soils and canopy that was not so severely scorched. Overall, the treatments did change the type of fire to a surface fire as modelled.

When a wildfire occurs within the CFLR landscape on an area <u>planned</u> for treatment but not yet treated:

The following wildfires burned in areas that had future treatments planned and are reported in 1119-Planned Treatment Burned in Wildfire. The table displays the wildfire, planned future treatments and the ability to implement the future

ACTIVITY CODE/FOREST/FIRE NAME	ACRES	FUTURE TREATMENT	ABILITY to IMPLEMENT POST FIRE
APACHE-SITGREAVES NATIONAL FOREST	**2,240**		
RODEO-CHEDISKI BURN BAGNAL FIRE	2,240	Rx burn	yes
COCONINO NATIONAL FOREST	**21,701**		
COLDWATER WILDFIRE	16,790	Mechanical and hand thinning, Rx burn	yes
NEWMAN WILDFIRE	4,911	Mechanical and hand thinning, Rx burn	yes
KAIBAB NATIONAL FOREST	**4,039**		
BOULIN WILDFIRE	4,039	Mechanical and hand thinning, Rx burn	yes
Grand Total FP FUELS WUI	**27,980**		
APACHE-SITGREAVES NATIONAL FOREST	**503**		
HOYLE FIRE	503	Rx burn	yes
COCONINO NATIONAL FOREST	**6,195**		
HART WILDFIRE	715	Mechanical and hand thinning, Rx burn	yes
MAROON WILDFIRE	5,480	Rx burn	yes
Grand Total FP FUELS NON-WUI	**6,698**		
TOTAL FP-FUELS-ALL	**34,678**		

treatment post-fire. All of the fires burned with a majority of the fire severity being low, so this does not preclude future mechanical harvest within the project areas, nor future prescribe fire projects. For example, there are potions of six sales in that will be offered in the next six years within the Coldwater Fire boundary and these will move forward because of the low fire severity within the wildfire area. The timing of the prescribed fire projects will likely be pushed back due to fuel availability. The next steps will be incorporated into the individual Forests 5-year plans for mechanical harvest and prescribed fire. The prioritization of these projects will be done using the method described above that utilized stakeholder candidate areas and Forest Supervisor prioritization.

BAER Summary

The Museum Fire started on July 21 on the Flagstaff Ranger District of the Coconino National Forest and burned 1,961 acres. The soil fire severity map for the fire is included below. The fire burned on slopes from 0-80% on drainages that lead directly into the heart of Flagstaff, Arizona (population 70,000). The following treatments were proposed:

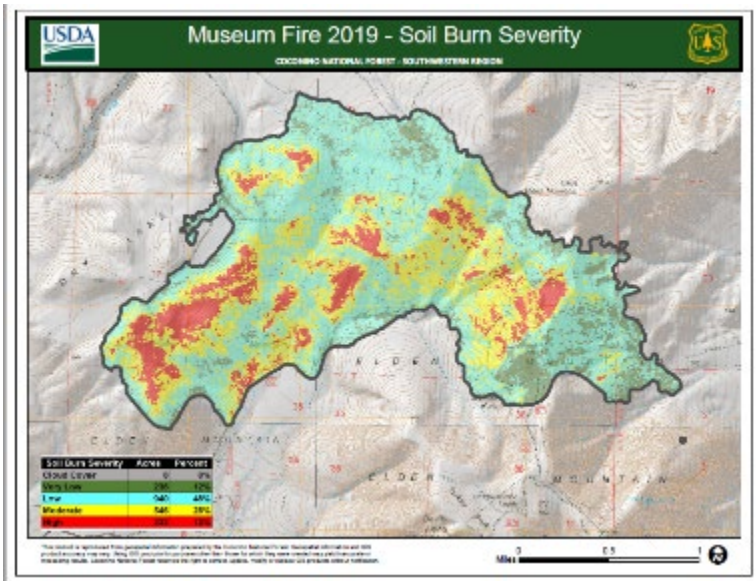
Life and Safety

1. Post closure and warning signs to control public access and to inform the public of post-wildfire hazards that exist within the burned area.

Land Treatments

2. Mulch to minimize the negative effects to soil productivity and hydrologic function from runoff and sedimentation. This treatment will also assist in stabilizing key areas above FSR 557, MSO habitat, and provide ground cover to assist- in protection of native plant communities from invasion by invasive species.

3. Early detection and rapid response to targeted areas to detect infestation of invasive and noxious weeds in burned areas as well as locations impacted by suppression activities to determine the extent of necessary control treatments.



Road and Trail Treatments

4. Ensuring access to the fire lookout, forest service communications, and emergency service communication. This critical infrastructure is in important for communication across the eastern portion of the Coconino National Forest and detecting and reporting new fire starts across the Coconino and Kaibab National Forests. FSR 789 will need drainage reinforcement and berm removal to protect the critical value.

5. Minimal work should be done to save some trail segments from total loss requiring full reconstruction.

Not all of the proposed projects were funded with the bulk of the approved funding implementing for the land treatments. The total funding for stabilization work was $1,267,252.

3. **What assumptions were used in generating the numbers and/or percentages you plugged into the TREAT tool**?

CFLR/CFLN

1) Total CFLR funding in Table 1 includes appropriated CFLN plus carryover from final expenditure report.
2) % contract in Table 1 is 20% from contracts let using CFLN and CFLN carryover--$3.8 million. % of contracts derived from Work Plan contract values.
3) % of contracting split in Table 2 in CFLR is based on the percentage of contracts derived from Work Plan contract values.
4) Volume in Table 3 is from Timber Information Manager (TIM) database cut and sold report.
5) % manufacturing in Table 4 is from values produced by Arizona Department of Forestry and Fire Management Wood Utilization & Marketing Specialist and validated with a product mix census conducted by the US Forest Service. In this project, energy is comprised of cogeneration as well as wood pellets. Some biomass is going to soil amendments, decorative bark, horse Bedding etc., which is not categorized and is actually manufactured outside of the project area in Maricopa County so the percentage is less than 100%.

FULL PROJECT

1) Total project funding in Table 1 from final funding report and does not include CFLN plus carryover.

2) % of contracting in Table 1 is the 23% that went to contracts. % of contracts derived from Work Plan contract values.
3) % of split in Table 2 is based on the percentage of the actual cost by bli, assigned to the categories in the table.
4) Volume in Table 3 is from Timber Information Manager (TIM) database cut and sold report.
5) % manufacturing in Table 4 is from values produced by Arizona Department of Forestry and Fire Management Wood Utilization & Marketing Specialist and validated with a product mix census conducted by the US Forest Service. In this project, energy is comprised of cogeneration as well as wood pellets. Some biomass is going to soil amendments, decorative bark, horse Bedding etc., which is not categorized and is actually manufactured outside of the project area in Maricopa County so the percentage is less than 100%.

FY 2019 Jobs Supported/Maintained (FY19 CFLR/CFLN/ WO funding):

FY 2019 Jobs Supported/Maintained	Jobs (Full and Part-Time) (Direct)	Jobs (Full and Part-Time) (Total)	Labor Income (Direct)	Labor Income (Total)
Timber harvesting component	43	52	$1,929,599	$2,252,467
Forest and watershed restoration component	7	9	$110,680	$184,307
Mill processing component	19	32	$670,449	$1,055,395
Implementation and monitoring	20	28	$1,933,853	$2,229,210
Other Project Activities	2	2	$39,620	$53,062
TOTALS:	91	124	$4,684,201	$5,774,442

FY 2019 Jobs Supported/Maintained (FY19 CFLR/CFLN/ WO and matching funding):

FY 2019 Jobs Supported/Maintained	Jobs (Full and Part-Time) (Direct)	Jobs (Full and Part-Time) (Total)	Labor Income (Direct)	Labor Income (Total)
Timber harvesting component	284	348	$12,863,896	$15,016,334
Forest and watershed restoration component	52	73	$901,882	$1,551,395
Mill processing component	125	214	$4,469,629	$7,035,915
Implementation and monitoring	349	417	$16,348,207	$18,845,073
Other Project Activities	12	15	$227,086	$306,763
TOTALS:	822	1,066	$34,810,700	$42,755,480

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).

The Four Forest Restoration Initiative (4FRI) achieved a number of community benefits over the last year. The table below highlights four areas.

Indicator	Brief Description of Impacts, Successes, and Challenges	Links to reports or other published materials (if available)
Volunteer/outreach participation	Multiple partners continue to provide extensive amounts of volunteer hours performing monitoring and restoration work across the 4FRI landscape. Major partners that solicit for and provide volunteers include the Trout Unlimited (1,742 hours), Friends of Northern Arizona Forests (2,899 hours), Grand Canyon Trust (632 hours), TRACKS (1,407 hours) and Arizona Elk Society (1,000 hours).	
Volunteer/outreach participation	Kaibab NF 2019 Citizen Science Project. This project will help to identify and document the biodiversity of the Kaibab National Forest in the calendar year 2019. We invite forest staff and visitors to discover and report the plants and animals they see, and to contribute this information to improve our understanding of the abundance and distribution of species in the Kaibab NF. You might even find something new! Through this platform Kaibab National Forest biologists will help you identify your findings.	https://www.inaturalist.org/projects/kaibab-nf-2019-citizen-science-project
Economic dependency/sectors impacted/expanding market development	A team of researchers from the Ecological Restoration Institute at NAU has worked closely over the past year with the Arizona Department of Forestry and Fire Management (DFFM), DEMA, Hyundai Merchant Marine, BNSF Railway and the U.S. Forest Service to launch a pilot project that Chips and Ships woody biomass to South Korea. The first phase of the project took place at the Department of Emergency and Military Affairs (DEMA) Camp Navajo Training Center over the course of eight days. It includes chipping 1,300 tons of small-diameter logs extracted from forest restoration at Chimney Springs, which has struggled to find markets for the low-value wood removed from its thinning efforts. The wood chips will then be loaded onto 60 shipping containers bound for South Korea via railway and cargo ships.	https://eri.nau.edu/chip-and-ship-project-aims-to-speed-up-forest-restoration-in-northern-arizona/ http://news.nau.edu/eri-biomass/#_.XVLhGi2ZNPV
Economic dependency/sectors impacted/expanding market development and Responses to surveys about collaboration conducted locally	Socioeconomic info concerning the impacts of the economic impact of the logging industry on local economies were collected by Evan Hjerpe of Conservation Economics Institute for use in a study of the socioeconomic effects of the logging industry that is being conducted as part of the socioeconomic component of the 4FRI Multi-Party Monitoring Board. The final report for the study was completed in early FY 2019 and displays that 4FRI In total, including multiplier effects, that FY 2017 4FRI activities generated: -almost 1,000 full and part-time jobs and more than 900 FTE jobs in the region; -approximately $150 million in regional output; -$50 million in regional labor income; and -impacted over 140 different industry sectors in the region.	https://www.fs.fed.us/restoration/documents/cflrp/results/4FRI/RegionalEconomicContributions4FRI-Dec2018.pdf
Tribal Connections	The FS received a $25k grant through the Forest Service Citizen Science Competitive Funding Program to collaborate with NAU and southwestern tribes on the identification, documentation, and future management of culturally important plants within	More information on the program and our proposal can be found here….

Indicator	Brief Description of Impacts, Successes, and Challenges	Links to reports or other published materials (if available)
	the 4FRI footprint. The intent of this project is to develop tools, and management recommendations that can be applied across the 4FRI project area. As this is the first year for the Competitive Funding Program, this project will be highlighted as a pilot project to develop best management practices for future citizen science projects. The Forest Service and the San Carlos Apache, Tonto Apache, White Mountain Apache and Zuni tribes have signed a Master Participating Agreement (MPA) to partner on a wide range of restoration activities within the 4FRI footprint. Staff on all four forests have been discussing potential projects with tribes for some time, so implementation of the MPA will allow each unit to move forward on developing forest-level SPA's to implement these projects. Using the MPA the Apache-Sitgreaves entered into a $1,000,000 partnership with the White Mountain Apache Tribe through the DOI Reserve Treaty Rights Lands to conduct fuels reductions activities on culturally important sites on NFS lands using Tribal labor supervised by Forest Service employees.	https://www.fs.fed.us/working-with-us/citizen-science/2018-awardees-citizen-science-competitive-funding-program
Tribal Connections	Four Kaibab National Forest employees were recently honored with the 2018 Regional Forester's Excellence in Service Award for their dedication to increasing tribal access to forest products, enlisting tribes as partners in restoration, and strengthening local communities by providing a wide range of goods and services that contribute to social, economic and environmental well-being. A few highlights of their work include overhauling the forest's fuelwood policy to increase access to permits and available supply while also lowering costs for rural communities; hosting remote permit events on the Navajo and Hopi reservations so that community members can easily obtain permits without the burden of a four-hour round trip drive to a Forest Service office; and, developing a product plan to provide small-diameter logs of the specific length and diameter needed to construct a traditional Navajo Hogan.	https://www.fs.usda.gov/detail/kaibab/news-events/?cid=FSEPRD649506
Tribal Connections	The cornerstone of the Coconino National Forest's Tribal Relation Program in FY2019 was the Coconino NF/Hopi Tribe/Museum of Northern Arizona Youth Spring Census. Ten students attended the week-long springs inventory workshop and many more Hopi tribal employees were involved in the project through providing career mentoring lectures in the evenings. During the springs inventory, youth were trained in the concepts of western science, and in the measurement of flow,	

Indicator	Brief Description of Impacts, Successes, and Challenges	Links to reports or other published materials (if available)
	water quality, solar radiation budget, floral and faunal biology, and assessment of anthropogenic impacts. By the end of the field trip, the crews were exposed to a wide array of scientific and technical skills and opportunities, and had extensive exposure to basic ecological inventories. Information gathered during the effort was entered into Springs Online, the US Forest Service's online portal for springs data, by the Hopi Tribal youth members. This partnership project was very successful in that it not only taught youth scientific data collection techniques, but also facilitated the sharing of traditional knowledge between Hopi elders and youth as well as between Hopi elders and Museum of Northern Arizona Springs Stewardship Institute staff. This project benefited the US Forest Service in meeting its Forest Plan management goals to identify and monitor springs for consideration of restoration, benefited the Hopi Tribal youth by providing exposure to science and work-related opportunities as well as career opportunities, and benefitted the mission of MNA-SSI by helping document the springs and natural resources of the southern Colorado Plateau through partnering with local tribes and agencies.	
Community support for relevant initiatives	The paper outline the community partnerships that were created or were in place to create the Flagstaff Watershed Protection Project lessons learned include: Manage expectations regarding NEPA requirements and timelines; Be prepared to show immediate on-the-ground progress; Assure quality internal communication within the USFS; Convey project as an investment, not a cost and Keep the management structure simple.	Flagstaff Watershed Protection Project: Creating Solutions through Community Partnerships http://www.flagstaffwatershedprotection.org/wp-content/uploads/2015/11/FWPP-Creating-Solutions-Through-Community-Partnerships.pdf
Community support for relevant initiatives	The Greater Flagstaff Forests Partnership (GFFP) and its many partners presented a "Forest Treatments, Logging Methods and Fire Adapted Com-munities" exhibit at the Festival of Science, Science in the Park event at Wheeler Park on Sat, Sept. 21. Science goers explored logging equipment and spoke with real-woods loggers, firefighters and with forest product industry professionals. Forestry and fire staff from the US Forest Service, City of Flagstaff, Arizona Department of Forestry and Fire Management, Coconino County, Campbell Global, RDO Equipment Co. and many other partners were on-hand to discuss current and planned forest thinning operations and how small-diameter ponderosa pine is used and processed into products. Residents had the opportunity to learn about how to protect their homes, property, and family from wildfire and how they can contribute to increasing their community's fire-adaptation and Firewise practices.	https://4FRI.org/wp-content/uploads/2019/11/4FRI-Newsletter_fall2019_FINAL_111819.pdf

Indicator	Brief Description of Impacts, Successes, and Challenges	Links to reports or other published materials (if available)
Public input in political processes	The White Paper provides collaborative organizations or groups with information about the Forest Service's administrative review process, as well as the judicial review process, and opportunities for engagement at both levels. The White Paper is a resource for collaborative groups to educate themselves on the laws and procedures surrounding administrative and judicial reviews of Forest Service projects.	Administrative and Legal Review Opportunities for Collaborative Groups https://cdm17192.contentdm.oclc.org/digital/collection/p17192coll1/id/633/rec/10

4FRI has also provided numerous public education/outreach opportunities, including the following:

1) The 4FRI stakeholders created a restoration brochure 4FRI brochure that outlines the basic concepts around restoration that are available for all stakeholders to distribute. Examples of how these were used include Suarez Logging handing copies out to interested publics within their sale areas, the Forest Service distributing copies to local homeowner's near the Chimney Springs harvesting project.
2) Outreach was conducted through presentations on 4FRI at SAF National Convention conference in Portland, Oregon (FS and ERI October 3), National TREAT webinar (October 17), Western Coalition of Arid States in Phoenix, AZ (October 23), presented on national CFLRP all hands webinar FS and ERI (November 15), multiple partners (ERI, TNC) and FS presented on 4FRI at 12th North American Forest Ecology Workshop June 25.
3) The FS created and distributed a monthly 4FRI update summarizing progress on planning and implementation (on 4FRI website at 4FRI monthly updates);
4) The 4FRI Stakeholder Group held monthly stakeholders meetings open to the and publishes a monthly new letter (the most recent copy of the newsletter can be found on the home page of the 4FRI stakeholders at 4FRI home page 4FRI.org).

5. Based on your project monitoring plan, **describe the multiparty monitoring process.**

The Multiparty Monitoring Board (MPMB) has collaborated with the Forest Service to design and implement data collection activities based on high priority stakeholder monitoring questions. Meetings are held on a monthly basis and more frequently in topic-based subgroups to develop study designs, review ongoing data collection efforts, and assess information needs. The MPMB developed a plan that will implement a long term strategic approach to data collection that will answer ecological and socioeconomic questions at landscape scales. They have also engaged a pool of subject matter experts who are available to review and consult on monitoring design and data analysis. A variety of stakeholders are active participants in the MPMB particularly in the development of monitoring question and study design. These include the Ecological Restoration Institute at Northern Arizona University, The Nature Conservancy, Arizona Department of Game and Fish, Campbell Global, Mottek Consulting, The Center for Biological Diversity, the Salt River Project, the Greater Flagstaff Forest Partnership, the Grand Canyon Trust, Beale Mountain Forestry, Trout Unlimited, the Rocky Mountain Research Station, and others listed below.

Ongoing Monitoring:

Ecological monitoring results have not yet resulted in adaptive management changes, due to the limited acreage of mechanical treatment completed to date. However, the MPMB has collected a wealth of pre-treatment data to inform adaptive management as implementation ramps up, which is detailed in the 4FRI Rapid Plot Pre-Treatment Monitoring Report 2019. For example, pretreatment data confirms that tree densities across all projects were in a higher range than the range of natural variability. 4FRI pretreatment densities were 124 to 228 trees per acre while historical reconstructions estimate the natural range of variability for southwestern ponderosa pine was between 12 to 124 trees per acre (Reynolds et al. 2013). The MPMB has also been active in adapting their monitoring approaches and protocols

to opportunistically collect post-treatment data. Socio-economic monitoring has resulted in the 4FRI Socioeconomic Monitoring Report in 2013 and a Regional Economic Contributions of 4FRI in December of 2018 to understand the economic impacts of 4FRI.

Data collection continues on a number of fronts. The following monitoring projects will provide information on the short term and long term effects of some restoration activities. All of the completed 4FRI monitoring reports are available at https://www.fs.usda.gov/main/4fri/monitoring.

Songbird occupancy bird data has continued to expand and continues to be collected in partnership with the Bird Conservancy of the Rockies across the treatment landscape. When complete, it will help identify the effects of landscape restoration on bird communities. This data will also leverage existing regional and national songbird data to separate treatment effects from climate driven changes to bird populations. Additional information is coming in the form of a local species colonization/extinction analysis to identify key bird species expected to be sensitive to the forest changes created by restoration treatments.

Mexican Spotted Owl occupancy and reproduction monitoring is occurring as part of a broader region-wide effort lead by U.S. Fish and Wildlife Service. Initial baseline occupancy monitoring of protected activity centers continues annually. The study design will explore the differences between paired mechanical and prescribed fire treatments and treatments that only use prescribed fire. This data will be aggregated with identical studies that are occurring throughout the state to increase the size of the dataset and the predictive power. This will ultimately improve our understanding of the effects of restoration on MSO populations. The initial fire treatments were implemented in select PACs in 2018. Occupancy monitoring will continue and vegetation have been re-surveyed in 2019 to document changes. Data analysis is underway on these data.

Landscape pattern analysis of remote sensing imagery continues to be an area of active monitoring and stakeholder engagement. LiDAR data was collected across the entire southern zone of the Kaibab National Forest and portions of the Coconino National Forest scheduled for restoration with the next 5 years. This data will be essential to the evaluation of the spatial pattern created in restoration treatments. We have also partnered with Northern Arizona University and the Nature Conservancy to develop models that will individually segment trees from within the LiDAR data to create a forest stem map that will be helpful in treatment preparation and effects analysis.

In cooperation with Northern Arizona University, permanent vegetation plots were established across the ponderosa pine belt of the Coconino National Forest. These plots were established using a multi-scale sample design that will allow data collected at fine scales to support broader scale analyses. The sample design also dovetails with the permanent plots established on both the Kaibab and Coconino National Forests, allowing cross-boundary trend analysis. These plots will evaluate changes in vegetation composition and structure that occur as a result of restoration treatments. Tree structure, surface vegetation cover, and fuel components are quantified to not only describe residual vegetation structure, but also to model the effects of fire on the landscape. The effect will be to create a dataset that is more cost efficient and capable of answering questions that go beyond the scope of this restoration project.

We are actively engaged in developing a landscape scale sample design and protocol to test the effects of restoration treatments on groundwater recharge/availability as expressed through spring flow. The design is being developed in collaboration with the Springs Stewardship Institute at the Museum of Northern Arizona.

In response to requests from industry partners, we have completed a monitoring program with Forest Health Protection and Northern Arizona University to evaluate the drying rate of logs left in the forest and the risk of insect outbreaks. This program will allow us to open the door to improving the economics of hauling low value wood to local mills while managing the risk to residual stands from wood beetle populations that can grow in drying logs. The second year of monitoring was completed this year, which tracked the drying rates earlier in the year to capture pre-monsoonal effects. A risk assessment and recommendations for best management practices are currently being developed.

In collaboration with The Nature Conservancy and AmeriCorps, the MPMB surveyed post treatment areas to evaluate the establishment and spread of noxious weeds. This project helps evaluate the success of not only the site specific weed treatments, but also the FS best management practices used to mitigate noxious weed outbreaks.

As 4FRI approaches the publishing the DEIS for a second large scale analysis covering the east side of the project area, the MPMB in cooperation with the Forest Service have developed a Monitoring and Adaptive Management Plan for the DEIS.

Weaknesses:

Our monitoring process is vibrant and provides additional confidence to a highly engaged stakeholder group. However, the greatest shortcoming of this process is that it takes time to collect and properly interpret the data. There is a genuine and reasonable desire to swiftly integrate new information into an adaptive management framework, but the most important questions are frequently those that cannot be quickly answered. So we collect both short-term and longer term-data and combine it with the best available science to inform our decisions and adapt our approaches to management. A second shortfall of the monitoring process is the lack of post treatment implementation data that will inform possible changes in management.

Monitoring Plan: Multi-Party Monitoring Plan

6. FY 2019 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	9,212	NFMP 58 $3,190[15] NFTM 49 $2,695 RTRT 9,105 $500,775
Acres of forest vegetation improved FOR-VEG-IMP	Acres	13,948	CFLN 2,798 $209,850[16] NFHF 3,050 $228,750 NFTM 5,407 $405,525 NFVW 181 $13,575 NFXN 7 $525 NONE 601 $45,075 PTNR 261 $19,575 SSCC 1,140 $85,500 WFPR 503 $37,725
Manage noxious weeds and invasive plants	Acre	1,228	CFLN 550 $126,500[17]

[15] Locally derived costs of $55/acre
[16] Locally derived costs of $75/acre
[17] Locally derived cost of $239/acres

Performance Measure	Unit of measure	Total Units Accomplished	Total Treatment Cost ($) *(Contract Costs)*
INVPLT-NXWD-FED-AC			NFVW 679 $156,170
Highest priority acres treated for invasive terrestrial and aquatic species on NFS lands INVSPE-TERR-FED-AC	Acres	0	
Acres of water or soil resources protected, maintained or improved to achieve desired watershed conditions. S&W-RSRC-IMP	Acres	41,983	CFLN 261 $31,351[18] NFHF 30,262 $3,635,071 NFRW 725 $87,087 NFTM 3,965 $476,276 NFVW 912 $109,549 NFWF 22 $2,643 NFXN 499 $59,940 NONE 3,335 $400,600 PTNR 1,482 $178,018 WFPR 520 $62,462
Acres of lake habitat restored or enhanced HBT-ENH-LAK	Acres	30	NFWF 9 $990 PTNR 21 $2,310
Miles of stream habitat restored or enhanced HBT-ENH-STRM	Miles	23	CWFS 1.3 $170[19] NFHF 4.3 $562 NFRW 17.0 $2,223
Acres of terrestrial habitat restored or enhanced HBT-ENH-TERR	Acres	86,739	CFLN 6,238 $1,474,289[20] NFHF 27,936 $6,602,394 NFRR 429 $101,390 NFRW 853 $201,598 NFTM 12,928 $3,055,404 NFWF 254 $60,030 NFXN 1,312 $310,078 NONE 5,468 $1,292,307 PTNR 1,482 $350,256 WFPR 10,173 $2,404,287 WFSU 19,666 $4,647,862
Acres of rangeland vegetation improved RG-VEG-IMP	Acres	22,431	CFLN 1,434 $43,020[21] NFHF 5,301 $159,030 NFTM 6,155 $184,650 NFVW 1,039 $31,170 NFXN 575 $17,250 NONE 5,014 $150,420 WFPR 760 $22,800 WFSU 2,153 $64,590
Miles of high clearance system roads receiving maintenance RD-HC-MAIN	Miles	181	CMRD 117 $46,800[22] NONE 64 $25,600

[18] Locally derived cost of $120.12/acre. Note most of these acres are integrated targets, so cost are born by the core accomplishment. This displays what the cost would be if completed as core.

[19] Locally derived cost of $130.76/acre. Note most of these acres are integrated targets, so cost are born by the core accomplishment. This displays what the cost would be if completed as core.

[20] Locally derived cost of $236.34/acre. Note most of these acres are integrated targets, so cost are born by the core accomplishment. This displays what the cost would be if completed as core.

[21] Locally derived cost of $30/acre. Note most of these acres are integrated targets, so cost are born by the core accomplishment. This displays what the cost would be if completed as core.

[22] Locally derived cost of $400/mile

Performance Measure	Unit of measure	Total Units Accomplished	Total Treatment Cost ($) *(Contract Costs)*
Miles of passenger car system roads receiving maintenance RD-PC-MAINT	Miles	165	CMRD 165.0 $330,000[23]
Miles of road decommissioned RD-DECOM	Miles	12	SSCC 12 $12,000[24]
Miles of passenger car system roads improved RD-PC-IMP	Miles	7	CMRD 7 $147,000[25]
Miles of high clearance system road improved RD-HC-IMP	Miles	20	CMRD 20 $20,000[26]
Road Storage *While this isn't tracked in the USFS Agency database, please provide road storage miles completed if this work is in support of your CFLRP restoration strategy for tracking at the program level.*	Miles	Not available	
Number of stream crossings constructed or reconstructed to provide for aquatic organism passage STRM-CROS-MTG-STD	Number	0	
Miles of system trail maintained to standard TL-MAINT-STD	Miles	73	CMTL 4 $12,400[27] PTNR 69 $213,900
Miles of system trail improved to standard TL-IMP-STD	Miles	5	PTNR 5 $56,500[28]
Miles of property line marked/maintained to standard LND-BL-MRK-MAINT	Miles	13	NFHF 13.0 $130,000[29]
Acres of forestlands treated using timber sales TMBR-SALES-TRT-AC	Acres	8,192	CFLR 1,039 $140,265[30] NFHF 467 $63,045 NFTM 2,024 $273,240 NONE 4,030 $544,050 SSCC 632 $85,320
Volume of Timber Harvested TMBR-VOL-HVST	CCF		
Volume of timber sold TMBR-VOL-SLD	CCF	250,473	CFLN 76,162 $2,376,289[31] NFTM 174,311 $5,438,583[32]
Green tons from small diameter and low value trees removed from NFS lands and made available for bio-energy production BIO-NRG	Green tons	105,893	NONE 105,893
Acres of hazardous fuels treated outside the wildland/urban interface (WUI) to reduce the risk of catastrophic wildland fire FP-FUELS-NON-WUI	Acre	44,871	CFLN 11,405 $2,395,050[33] NFHF 18,392 $3,862,320 NFTM 18 $3,780 NFVW 181 $38,010 NONE 2,576 $540,960

[23] Locally derived cost of $2,000/mile
[24] Locally derived cost of $1,000/mile
[25] Locally derived cost of $21,000/mile
[26] Locally derived cost of $1,000/mile
[27] Locally derived cost $3,100/mile
[28] Locally derived cost $11,300/mile
[29] Locally derived cost $10,000/mile
[30] Locally derived cost $135/acre
[31] Total value of volume sold from Cut and Sold report proportioned to CFLN total volume
[32] Total value of volume sold from cut and Sold report proportioned to NFTM total volume
[33] Locally derived cost $210/acre

Performance Measure	Unit of measure	Total Units Accomplished	Total Treatment Cost ($) *(Contract Costs)*
			PTNR 1,488 $312,480 SSCC 1,380 $289,800 WFPR 754 $158,340 WFSU 8,677 $1,822,170
Acres of wildland/urban interface (WUI) high priority hazardous fuels treated to reduce the risk of catastrophic wildland fire FP-FUELS-WUI	Acres	70,271	CFLN 7,067 $1,484,070[34] CWFS 79 $16,590 NFHF 29,643 $6,225,030 NFRR 4,270 $896,700 NFXN 349 $73,290 NONE 1,711 $359,310 SPFH 163 $34,230 SSCC 3,322 $697,620 WFPR 598 $125,580 WFSU 23,069 $2,306,900[35]
Acres mitigated FP-FUELS-ALL-MIT-NFS	Acres	25,904	CFLN 10,141[36] CFLR 2,078 NFHF 12,504 NFTM 476 NFVW 181 WFPR 524
Please also include the acres of prescribed fire accomplished	Acres	83,152[37]	
Number of priority acres treated annually for invasive species on Federal lands SP-INVSPE-FED-AC	Acres	0	
Number of priority acres treated annually for native pests on Federal lands SP-NATIVE-FED-AC	Acres	0	

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

7. **FY 2019 accomplishment narrative** –

Utilizing a shared stewardship concept by having four partners (Salt River Project, Arizona Department of Forestry and Fire Management, Arizona Commerce Authority, and the USDI Bureau of reclamation) co-develop a 4FRI phase 2 stewardship solicitation Request for Proposals (RFP) for a 20-year Stewardship Contract that can treat up to 800,000 acres over the next 20 years was issued on September 16, 2019 in fedbizops[38]. Creating and stabilizing industry partners in a restoration economy will allow for the ability to get more acres treated through mechanical harvests, thus increasing forest resiliency across the initiative. The solicitation of the RFP was also highlighted by multiple stakeholders as the key accomplishment of 4FRI in 2019, including the Eastern Arizona Counties Organization (EACO), Novo Power, Tri-Star logging, Campbell Global, City Of flagstaff and Coconino County.

[34] Locally derived cost for WUI Rx burn $210/acre
[35] Locally derived cost for wildfire that meets forest plan objectives in the WUI $100/acre
[36] No cost estimate for this item.
[37] Includes FACTS activity codes 1117 and 1119 form FP-FUELS-WUI and FP-FUELS-NON-WUI performance measures from CDW
[38] Note fedbizops migrated to beta.sam.gov on November 6th---the solicitation link above is in beta.sam.gov.

The Apache-Sitgreaves NFs is working with the White Mountain Apache Tribe (WMAT) under a SPA using the Master Participating Agreement (#17-PA-11031600-056). The Reserved Treaty Rights Lands (RTRL) are ancestral rights associated with NFS lands which are of critical importance to many Native Americans across the United States. For FY19 the WMAT RTRL crews have hand thinned 363 acres on Greens Peak helping to reduce fire risks and protect over $500 million in communications infrastructure. The WMAT RTRL has completed an additional 248 acres of hand thinning within the West Escudilla EA to protect heritage sites. The WMAT RTRL crews will begin work within Little Creek on 154 acres of riparian stabilization.

2019 saw another productive year, with the total footprint acres increasing by 94,254 acres (134,407 acres of total treatment acres-see map below), with many of those acres coming from prescribed and wildfire acres. The total acres of fuels treatments within the Wildland Urban Interface (WUI) were 70,271 acres, and fuels treatments within the non-WUI were 44,871 acres. Note that some acres have a duel fuels accomplishment so the total acres exceed the actual footprint for the project area. The 10 year total of fuels treatments for 4FRI is 863,700 acres (513,312 in the WUI and 350,388 acres in the non-WUI). 4FRI continued to utilize multiple wildfires that are discussed in the fuels section above to re-introduce fire into our fire-adapted landscape.

The Forest Service continued the accelerated timber offerings outside of the 4FRI phase 1 contract on the east side (a total of 13,068 acres and 99,136 CCF were offered and awarded on the Apache-Sitgreaves and Tonto National Forests to existing White Mountain industries). The west side of the project on the Coconino and Kaibab National Forests were very successful in awarding 18,734 acres and 135,196 CCF of contracts. The number of no bids decreased with one sale on the Coconino and Tonto National Forests respectively.

Overall, The pace and scale of preparation of timber sales has greatly increased in the last four years, primarily with the use of Designation by Prescription (D x P) on all sales since the authority to use of D x P was expanded with the passage of the 2014 Farm Bill. D x P has greatly decreased the time and costs pf sale preparation. The 4FRI forests have also used the shared resources concept in the timber arena as well. The timber arena also utilized IDIQ marking and layout contracts, as well as Enterprise personnel for sale layout to augment the existing personnel. Personnel from the Apache-Sitgreaves National Forest offered and sold the Greens Peak sale that is 100% DxP and 100% Digital Prescription Guide that implemented DxP with the technological advance of the Digital Prescription Guide.

At the November 20, 2019 4FRI Stakeholder Meeting the Forest Service asked the stakeholders present at the meeting what they thought were the best accomplishments of 4FRI for 2019. The remainder of the accomplishment discussion will highlight their thoughts and projects.

The collaboration related to the stakeholders participation and input into the Rim Country Draft Environmental Impact Statement (DEIS) was highlighted by the City of Flagstaff, Arizona Game and Fish Department, the Grand Canyon Trust, Coconino Sportsmen/Friends of Northern Arizona Forests, the Center for Biological Diversity, Trout Unlimited, and the Ecological Restoration Institute as a key highlight for Fiscal Year 2019. The 4FRI planning team increased efforts to get the stakeholder DEIS working group integrated into the planning progress including regular facilitated meetings, office hours and having chair persons from the stakeholder DEIS working group report out to the 4FRI Executive Board (which is comprised of the four Forest Supervisors, the 4FRI Chief Executive, the Deputy Regional Forester, and Regional Forestry Director.). There are still multiple issues related to the DEIS that will need work to resolved before the Final Environmental Impact Statement (FEIS) that will be worked on in Fiscal Year 2020. The cohesion of the stakeholders group and work with the Forest Service has never been stronger.

The City of Flagstaff continued their work and progress on the Flagstaff Watershed Protection Project (FWPP) as another highlight of 2019. Using funds from the FWPP bond, the City of Flagstaff contributed $2.2 Million to helicopter and steep slope logging contracts that continue to reduce the fire risk on the steep slopes directly adjacent to the City of Flagstaff. This example of shared stewardship displayed on this project can be a model for other collaborative to look at alternative funding sources to meet restoration goals. In addition, the City of Flagstaff also contributed approximately $500,000 to treat fuels on Forest Service, State and City lands in and around the City of Flagstaff.

Coconino County highlighted their work with the Forest Service and the Northern Arizona Forest Fund (NAFF[39]) that focused on the Bill Williams Mountain restoration project on the Kaibab National Forest in FY 19. The potential for catastrophic flooding the City of Williams, Arizona that is outlined in The Economic Impact of Post-Wildfire Flooding Bill Williams Mountain study prompted a partnership between Coconino County, the US Forest Service and NAFF to do work to mitigate the potential for unnatural stand-replacing fire on Bill Williams Mountain. The major focus was on 300 acres of steep slope thinning and removal of material through a helicopter logging contract that NAFF. Coconino County, specifically the Coconino County Flood Control District, provided $800,000 to NAFF and the Forest Service just over $1,000,000 to get the contract in place. Harvesting is completed and the removal of the material via helicopter is in process and is expected to be completed in January of 2020. NAFF also fundraised and additional $327,000 for the Twin Springs thinning project on less steep sections of Bill Williams Mountain. In addition to these activities, Coconino County also purchased an air curtain burner that is being utilized on the Chimney Springs project on the Coconino National Forest. This example of shared stewardship displayed on this project can be a model for other collaborative to look at alternative funding sources to meet restoration goals.

The Nature Conservancy (TNC) and Campbell Global noted their progress on completing the Chimney Springs Supplemental Project Agreement as a highlight as well as their continued work on Forest Products Modernization efforts in the Future Forest Project. The use of digital technologies to prepare sales through tablet-facilitated Designation by Prescription (DxP) and "virtual boundaries" is currently underway in both the Parks West and Sitgreaves West projects on the Kaibab National Forest. 4FRI is actively collaborating with partners including the U.S. Geological Survey (USGS) and TNC to fly project areas to demonstrate how data collected by UAS can be used to help streamline timber sale monitoring and the minimum resources required to do so. The drone flights have occurred on Future Forest project sites on the Kaibab and Coconino NF. TNC has been conducting their own drone flights independently on Chimney Springs. USGS has flown over two project areas, Weatherford and Clark in 2017 and 2018. They are scheduled to fly over the Moonset project areas this year. Through these partnerships, we are also identifying how drone technology may offer innovations and efficiencies in cruising, layout, surveys, sale administration and monitoring. Drone imagery from the Parks West and Sitgreaves West projects has been identified as a viable tool for establishing virtual boundaries and has been used to calculate post-treatment canopy cover and estimate the volume of wood piles and decks.

The Ecological Restoration Institute at Northern Arizona University (ERI) noted multiple positive outcomes in 2019. The Chip and Ship project, led by a team of researchers from the Ecological Restoration Institute at NAU that has worked closely over the past year with the Arizona Department of Forestry and Fire Management (DFFM), DEMA, Hyundai Merchant Marine, BNSF Railway and the U.S. Forest Service to launch a pilot project in August that Chips and Ships woody biomass to South Korea.

[39] NAFF is a component of the National Forest Foundation that is designed to restore the Salt and Verde Watersheds. The NAFF provides an opportunity for Arizona businesses and residents to invest in restoration projects on national forest lands in the Salt and Verde River watersheds.



[40]

The first phase of the project took place at the Department of Emergency and Military Affairs (DEMA) Camp Navajo Training Center over the course of eight days. It includes chipping 1,300 tons of small-diameter logs extracted from forest restoration at Chimney Springs, which has struggled to find markets for the low-value wood removed from its thinning efforts. The wood chips were loaded onto 60 shipping containers bound for South Korea via railway and cargo ships. ERI also noted that the 4FRI learning laboratory for modernization efforts (highlighted in DxP and TNC discussion in this section) were also a highlight of 2019,as well as the work on the Rim Country DEIS planning team.

4FRI industry members had multiple positive outcomes in 2019, including as mentioned above the issuance of the RFP was a key accomplishment. Novo Power, Tri-Star Logging and New Life Forest Products all echoed that in 2019 industry across the 4FRI footprint began to work together in previously unprecedented fashion to be able to fill product mixes across the 4FRI footprint which is working towards a more stable environment for industry. Work begun by EACO to work with the Arizona Department of Transportation to increase weight loads across highways for forest product delivery has expanded across the entire 4FRI footprint was highlighted by New Life as very positive move for industry.

New Life Forest Products also highlighted the move to load counts on 4FRI Phase 1 task orders as well as the breaking ground on their new Windfall Mill in Garland Prairie (just outside of Williams, Arizona) as highlights of 2019. Coconino County also highlighted the progress of capital investment in the Garland Prairie area as a highlight of 2019.

Fiscal Year 2019 also had some setbacks, particularly around support for biomass energy. In the fall of 2018, the Arizona Corporation Commission (ACC) opened a docket item to explore the possibility of mandating a small portion of Arizona's energy profile come from biomass (60-90 megawatts—approximately 1% of Arizona's energy profile). This is a key component of creating the long-term market for biomass energy and provide power purchase agreements with existing and potentially new biomass energy sites. Without this component, the ability of biomass and low value trees that dominate the 4FRI landscape is seriously in jeopardy.

4FRI stakeholders actively lobbied in support of this docket item through letters to the ACC, as well as providing testimony to the need for biomass energy as part of a restoration strategy. Ultimately, the proposal to mandate biomass energy did not pass. One 4FRI stakeholder noted their concern over this decision as follows:

> *Their unwillingness to step-up is a black-eye for the State, shortsighted to the extreme, prevented a key piece of the puzzle from being realized (one that only they could provide), and showed a deeply unrealistic view of the state-of-our-forests and their responsibility to contribute to the overall long-term welfare of our citizens. We can only hope and work toward a change in that unfortunate decision.*

[40] Photo Credit Ryan Heinsius / KNAU

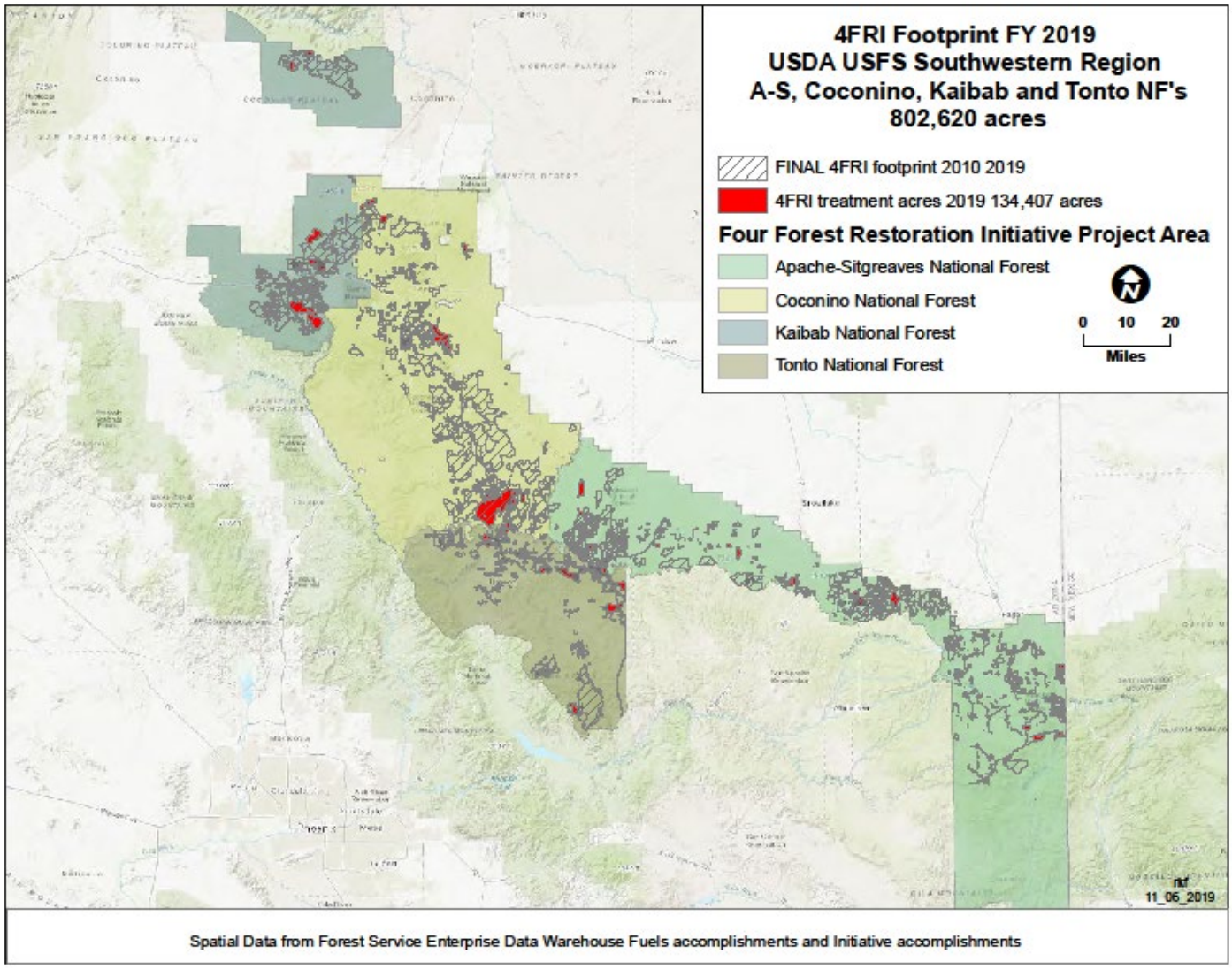
In response to this action, the 4FRI stakeholders created a biomass working group to continue lobbying efforts to get biomass as a mandated part of the energy profile and provide the long-term stability of biomass energy that is a large component of 4FRI restoration efforts.

One other downside to 2019 was the Museum Fire which was caused by logging activity on the FWPP steep slope logging operations. The fire investigation noted that there was not negligence by the contractor. With that being said, the treatments in the FWPP footprint did effect the modelled crown fire potential, just not as completely as expected had the fuels that were recently cut had the time to be treated prior to the wildfire. Please refer to the discussion of the Museum Fire in the fuels section above.

8. **Initiative Footprint**

Fiscal Year	Footprint of Acres Treated (without counting an acre of treatment on the land in more than one treatment category)
FY 2010	75,255
FY 2011	57,684
FY 2012	37,079
FY 2013	46,655
FY 2014	84,841
FY 2015	84,997
FY 2016	144,443
FY 2017	97,897
FY 2018	83,155
FY 2019	90,614[41]
Estimated Cumulative Footprint of Acres (2010 or 2012 through 2019)	802,620

[41] Total of 134,407 acres treated, of these 40,153 acres were accomplished on previously treated acres for a net footprint of 93,793 acres.

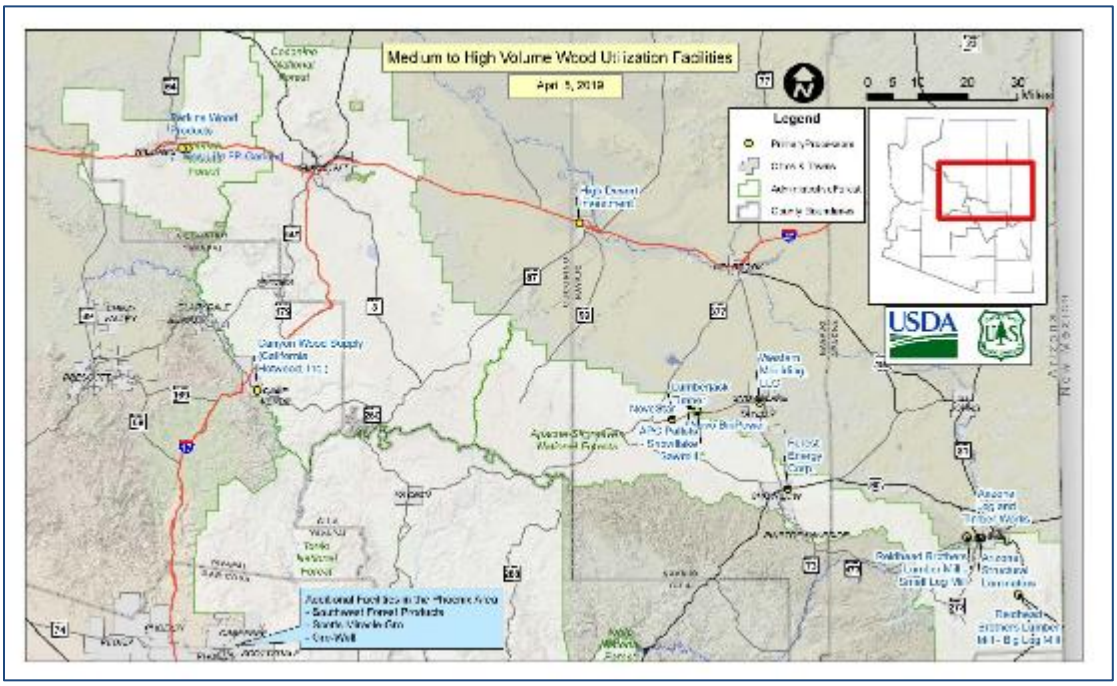


If you did not use the EDW estimate, please briefly describe how you arrived at the total number of footprint acres: what approach did you use to calculate the footprint?

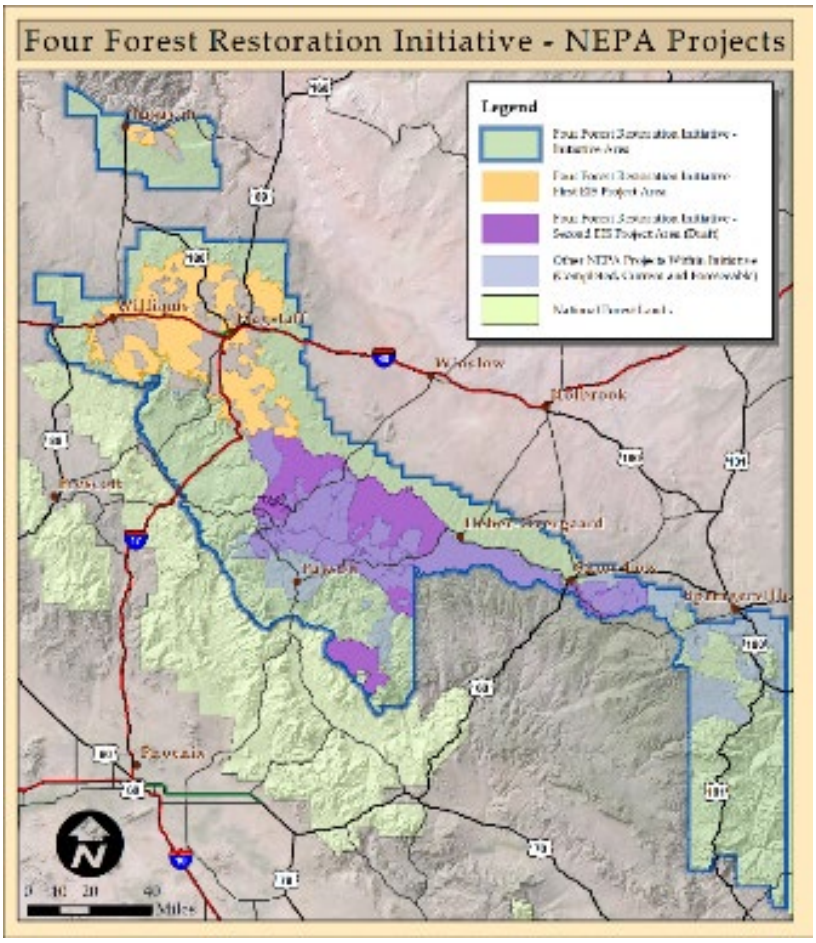
4FRI utilized a GIS exercise rather than the EDW estimate to be consistent with previous year's process and we also felt that the EDW estimate over-calculated the acres accomplished. The process selected all the timber harvest FACTS activity codes that were tagged as CFLRP accomplishments that were displayed as accomplished (contract awarded) and all fuels related FACTS activity codes that were shown as completed in FY 2018 and all non-commercial thinning that was shown as accomplished in FY 2018 (contract awarded for TSI). This last item likely is under reporting any force account TSI, but there is no clean way to do that using FACTS activity codes with planned and accomplished. These outputs were unioned together and then dissolved to get the footprint acres. This is consistent with how 4FRI footprint acres have been calculated throughout the life of the Initiative.

9. **Describe any reasons that the FY 2019 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? ***For projects finishing their tenth year***, if you have any additional insights from your cumulative work over the course of the project please share those here as well. (Please limit answer to two pages).

The shortage of timber markets on the west side of the project area (see map below) have still kept the 4FRI project from meeting its timber sale treat acres and timber volume sold goals. There is progress in that arena with the breaking ground of the New Life Forest Products Windfall Mill in the Garland Prairie area (not shown on map, but adjacent the New Life FFP Garland mill on the map). In addition, the solicitation for the 4FRI phase 2 RFP is also designed to increase the pace and scale of mechanical harvesting to the 4FRI goal of 50,000 acres per year. 4FRI will be applying for an extension under the 2018 Farm Bill to complete this unfinished portion of the Initiative



One of the major successes of 4FRI since 2010 has been and continues to be getting completed NEPA acres available for implementation. The signing of the 1st 4FRI EIS for the Coconino and Kaibab National Forest proved that landscape scale, collaboratively developed NEPA can be completed. 4FRI has also been very successful in increasing the size of other NEPA projects within the 4FRI footprint (Rim Lakes, Rodeo-Chediski Fuels, CC Cragin, and Upper Rocky Arroyo to name a few examples), please refer to a map below to display the status of NEPA across the 4FRI project area. The next large landscape 4FRI Rim Country, is a 1.24 million acre analysis area spanning three forests that is utilizing condition based management tools that is currently at the DEIS stage.



The table below is a summary of the 10 years of accomplishments for performance measures for 4FRI. Overall, there has been a lot of success with fuels treatments across the landscape that have benefited not only fuels, but also the integrated accomplishments of improved soil and watershed habitat and terrestrial habitat enhanced across the lifetime of the first 10 years of 4FRI.

Performance Measure	Unit of measure	TOTAL	Average per year
Acres of forest vegetation established	Acres	72,678	7,268
Acres of forest vegetation improved	Acres	159,724	15,972
Manage noxious weeds and invasive plants	Acre	19,739	1,974
Acres of water or soil resources protected, maintained or improved to achieve desired watershed conditions.	Acres	312,847	31,285
Acres of lake habitat restored or enhanced	Acres	103	10
Miles of stream habitat restored or enhanced	Miles	125	13
Acres of terrestrial habitat restored or enhanced	Acres	773,714	77,371
Acres of rangeland vegetation improved	Acres	189,024	18,902
Miles of high clearance system roads receiving maintenance	Miles	3,287	329
Miles of passenger car system roads receiving maintenance	Miles	5,839	584
Miles of road decommissioned	Miles	106	11
Miles of passenger car system roads improved	Miles	476	48

Performance Measure	Unit of measure	TOTAL	Average per year
Miles of high clearance system road improved	Miles	301	30
Number of stream crossings constructed or reconstructed to provide for aquatic organism passage	Number	1	0
Miles of system trail maintained to standard	Miles	1,279	128
Miles of system trail improved to standard	Miles	169	17
Miles of property line marked/maintained to standard	Miles	131	13
Acres of forestlands treated using timber sales	Acres	82,952	8,295
Volume of timber sold (CCF)	CCF	1,672,932	167,293
Green tons from small diameter and low value trees removed from NFS lands and made available for bio-energy production	Green tons	2,271,700	227,170
Acres of hazardous fuels treated outside the wildland/urban interface (WUI) to reduce the risk of catastrophic wildland fire	Acre	350,388	35,039
Acres of wildland/urban interface (WUI) high priority hazardous fuels treated to reduce the risk of catastrophic wildland fire	Acres	513,312	51,331
Number of priority acres treated annually for native pests on Federal lands	Acres	733	73

12. **Please include an up to date list of the members of your collaborative <u>if</u> 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.

The table below displays membership in good standing who have attended at least 4 meetings a year. The members listed in the FY 18 annual report tht are not displayed here have not met the 4FRI charter requirement for attendance.

Organization Name	Organization Name
Apache County	Grand Canyon Trust
Arizona Game and Fish Department	Greater Flagstaff Forest Partnership
Arizona State Forestry	Mottek Consulting
Campbell Global	Navajo County
Center for Biological Diversity	Novo BioPower
Coconino County Board of Supervisors	The Nature Conservancy
Coconino Sportsmen	TRACKS
Eastern Arizona Counties Organization	Tri STAR / Novo STAR Wood Products
Ecological Restoration Institute	Trout Unlimited
Empire Machinery	U.S. Fish and Wildlife Service
Flagstaff Fire Department	

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.

Print/TV Media

West Escudilla forest restoration project underway

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