CFLR Project (Name/Number): Colorado Front Range/CFLR004

National Forest(s): Arapaho & Roosevelt and Pike & San Isabel 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
CFLN19	$2,242,574

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
NFTM19	$921,398
NFVW19	$393,799
NFHF19	$303,377

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
NFTM19	$614,525
NFVW19	$333,457
RTRT19	$55,181
NFHF19	$3,937,643

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
CWFS	$1,085,417
NFXN	$1,240,683

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
Colorado Forest Restoration Institute	$65,000
Coalitions and Collaboratives	$15,000
Bird Conservation of the Rockies	$5,000

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
PSICC, Mothball Springs Stewardship	$6,419
PSICC, Ensign Gulch Stewardship	$3,494
ARP, Elkhorn Stewardship	$5,406

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.

Description of item	Where activity/item is located or impacted area	Estimated total amount	Forest Service or Partner Funds?	Source of funds
Fuel reduction thinning for wildfire protection	**637 acres – Upper South Platte**	**$1,274,000**	**Partner**	**TNC and Colorado State Forest Service**
Fuel reduction thinning for wildfire protection &	**300 acres – Upper South Platte**	**$600,000**	**Partner**	**TNC corporate funding**
Fuel reduction thinning for wildfire protection	**199 acres – Upper South Platte**	**$398,000**	**Partner**	**TNC corporate funding**
Fuel reduction thinning for wildfire protection & post fire	**Cache La Poudre Watershed**	**$80,000**	**Partner**	**TNC and Coalition for Poudre River Watershed**
Project NEPA support	**Magic Feather – Cache La Poudre**	**$35,000**	**Partner**	**NRCS**
Social license building with communities	**Joint Chiefs' Projects – Cache La Poudre**	**$25,000**	**Partner**	**CPRW**
Prescribed fire support	**Red Feather North**	**$5,000**	**Partner**	**DFPC**

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	2,140
Number of acres treated by mechanical thinning	2,222
Number of acres of natural ignitions that are allowed to burn under strategies that result in desired conditions	0
Number of acres treated to restore fire-adapted ecosystems which are maintained in desired condition	4,362
Number of acres mitigated to reduce fire risk	4,362

The continuing goal of the Colorado Front Range Project is to restore lower montane forest structure and function by reducing forest densities, creating diverse patterns of forest structure at stand and landscape-scales, and reducing the potential for uncharacteristically severe wildfire. The Colorado Front Range CFLRP has implemented large-scale implementation of mechanical treatments, while striving to increase treatment by prescribed fire over the 10 years of the CFLRP program. The table below displays the acres of mechanical contract awards and prescribed fire acres completed over the 10 years of CFLRP.

Fiscal year	**Mechanical Contract (acres)**	**Prescribed fire (acres)**
2010	**981**	**0**
2011	**4,147**	**0**
2012	**2,799**	**0**
2013	**2,978**	**0**
2014	**2,808**	**0**
2015	**784**	**0**
2016	**3,401**	**301**
2017	**2,116**	**2,038**
2018	**2,490**	**2,622**
2019	**2,222**	**2,140**

PIKE AND SAN ISABEL NATIONAL FORESTS

For the PSICC in 2019, areas prioritized for treatment included new NEPA decisions such as Upper Monument Creek of the Pike and San Isabel NF. This was a collaboratively planned vegetation management project who primary purpose is to reduce fuel loads and increase the ecological resiliency of this forest landscape, particularly in the ponderosa pine/mixed conifer cover types. We are in year 2 of the implementation under the UMC project, so far treatments have consisted of mechanical thinning in areas of high fuels load and fire potential. They are also designed to facilitate future prescribed burning in these area by strategically placing the mechanical treatments on ridgetops and other line holding areas. These treatments are also within and adjacent to major WUI areas including communities at risk such as Woodland Park, CO. From the "wildfire hazard potential map" (https://www.firelab.org/project/wildfire-hazard-potential) all treatments are located in "high" or "very high" hazard areas. The values at risk in this areas are tremendous as not only is it located within major population like Woodland Park, but these treatments are in priority watersheds for Colorado Springs Utilities and Denver Water.

Pike and San Isabel NF – Carrol Lakes Stewardship (Upper Monument Creek Project Area)

Before picture

After Picture

No prescribed fire was completed within the Upper Monument Creek area in 2019 but expectations are that burning will occur in the next year Prescribed fire was completed in 2019 in the Trout West area, continuing a prescribed burn program there that was been ongoing for several years. The Trout West area is located adjacent to UMC.

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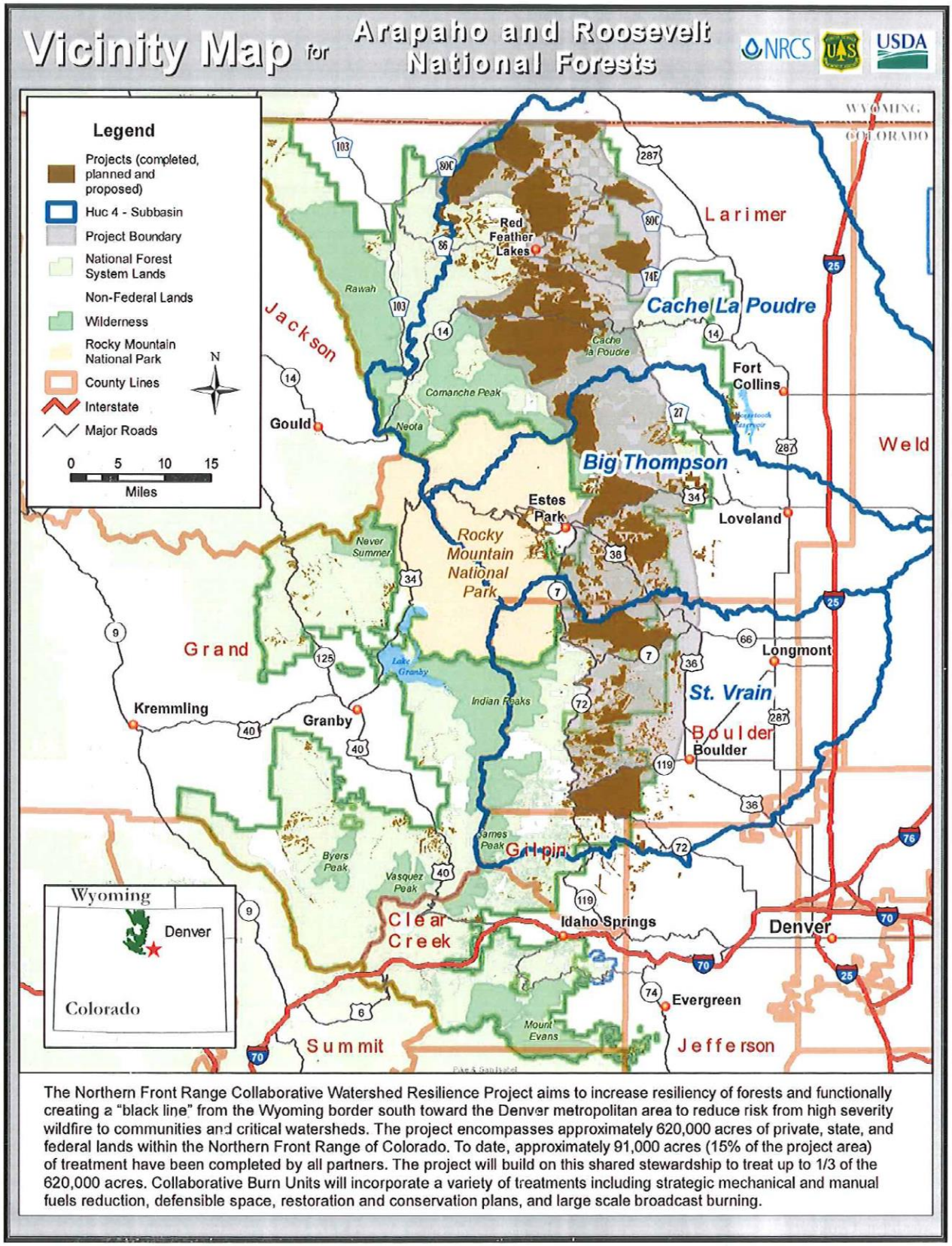
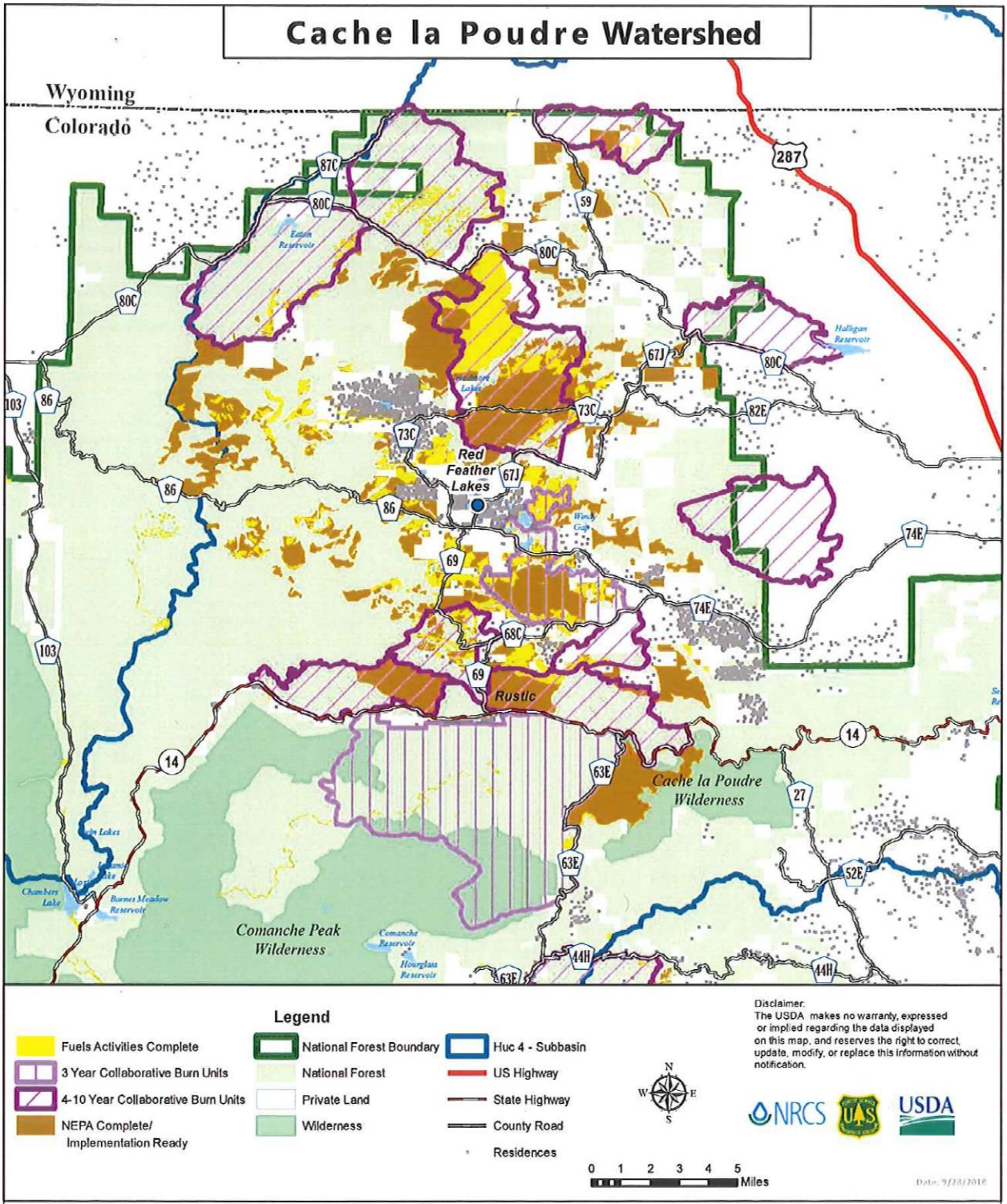
ARAPAHO-ROOSEVELT NATIONAL FOREST

In 2019 there were several areas on the ARP that were prioritized for treatment. Treatment areas in 2019 were a subset of larger overall project planning areas which include the St. Vrain, Red Feather, Pingree Hill, Magic Sky, and Poudre Canyon fuels reduction projects. This year the ARP continued moving toward taking advantage of previous, strategically placed mechanical and manual fuels reduction treatments to expand the scale of lower montane restoration treatments through the implementation of prescribed fire. Prescribed broadcast burning was implemented in a variety of forest structural stages, which ranged from more openly distributed ponderosa pine to more densely distributed ponderosa pine and mixed-conifer stands, requiring pre-treatment. Overall, the ARP implemented 3,742 acres of prescribed broadcast burning in the Cache La Poudre watershed on the northern portion of the Colorado Front Range CFLR footprint.

The Red Feather and Pingree Hill prescribed burns were prioritized based on a combination of factors, which included readiness for implementation and alignment with partners and community members. Work completed on the Red Feather prescribed burn was part of the Northern Front Range Collaborative Watershed Resilience Project. This was the first year of a three-year Joint Chiefs' initiative project (https://www.fs.usda.gov/goto/arp/jointchiefs) which aims to create a more resilient landscape across both public and private lands to reduce the detrimental effects of wildfire to infrastructure and watersheds, while engaging with fifteen partner organizations. The effort essentially creates a "ribbon" of interconnected prescribed fire treatment units at a landscape scale. The following maps show where projects will be located under the **Joint Chiefs' Collaborative Burn Projects**



The Northern Front Range Collaborative Watershed Resilience Project aims to increase resiliency of forests and functionally creating a "black line" from the Wyoming border south toward the Denver metropolitan area to reduce risk from high severity wildfire to communities and critical watersheds. The project encompasses approximately 620,000 acres of private, state, and federal lands within the Northern Front Range of Colorado. To date, approximately 91,000 acres (15% of the project area) of treatment have been completed by all partners. The project will build on this shared stewardship to treat up to 1/3 of the 620,000 acres. Collaborative Burn Units will incorporate a variety of treatments including strategic mechanical and manual fuels reduction, defensible space, restoration and conservation plans, and large scale broadcast burning.



The Cache la Poudre Watershed broadcast burning projects under decision includes 9,143 acres of which 4,000 acres are currently available for implementation. Nearly completed NEPA decisions will include 28,000 acres of broadcast burning while future planning will include 71,000 acres under the anticipated 2020 Broadcast Burn Programmatic EA. Of the current projects under decision, collaborative burning efforts are ongoing with numerous partners across 625 acres of private and 383 acres of state lands. All projects being planned and implemented are within the "High" and "Very High" risk categories from the 2013 Region 2 Wildfire Risk Assessment (see associated map).

Arapaho and Roosevelt NF – Red Feather Prescribed Burn

In addition to prescribed burning projects, the ARP continued to work on a variety of other forest restoration treatments through the implementation of manual and mechanical fuels reduction contracts. The forest completed 1,278 acres of manual and mechanical thinning in the Cottonwood, Sheep, Magic Sky 2 and Elkhorn project areas. These projects were designed with restoration prescriptions and will also serve as key containment areas during future prescribed burn operations in adjacent project areas. Forest fire and fuels personnel also completed 1,280 acres of slash pile burning in the James Creek, Lump Gulch, Saint Vrain, Glen Haven, Elkhorn, and Red Feather project areas. These slash burning projects removed activity created fuels from previous restoration projects and serve as the final step in completing the treatments.

Arapaho and Roosevelt NF – Elkhorn Stewardship

Before Treatment

After Treatment

Fire Preparedness and Suppression Expenditures

Category	**$**
FY2019 Wildfire Preparedness[1]	3,778,146 (PSI) 3,695,101 (ARP)
FY2019 Wildfire Suppression[2]	621,583 (PSI) 1,510,800 (ARP)
The cost of managing fires for resource benefit if appropriate (i.e. full suppression versus managing)	3,486,000 (PSI) 0 (ARP)
FY2019 Hazardous Fuels Treatment Costs (CFLN)	1,526,650 (PSI) 1,133,500 (ARP)
FY2019 Hazardous Fuels Treatment Costs (other BLIs)	2,303,730 (PSI) 1,857,621 (ARP)

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

No analysis has been completed.

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:

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

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

No reports have been completed.

There were no occurrences in 2018 of wildfires burning through treated or planned treatment areas within the Colorado Front Range CFLRP boundary.

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

- Many of the projects produce little or no forest products due to wood deterioration from mountain pine beetle mortality.
- The Front Range of Colorado has very little forest products infrastructure.
- There are limited markets for forest products on the Front Range.
- The cost of transporting forest biomass is a limiting factor.

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	**14**	**16**	652,561	1,022,633
Forest and watershed restoration component	**31**	**39**	539,966	884,903
Mill processing component	**8**	**14**	258,985	446,459
Implementation and monitoring	**28**	**31**	598,215	742,265
Other Project Activities	**3**	**4**	127,076	184,026
TOTALS:	**85**	**104**	2176803	3,280,286

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	**14**	**16**	**652,561**	**1,022,633**
Forest and watershed restoration component	**91**	**114**	**1,567,528**	**2,568,885**
Mill processing component	**8**	**14**	**258,985**	**446,459**
Implementation and monitoring	**48**	**58**	**1,736,625**	**2,154,803**
Other Project Activities	**6**	**9**	**338,078**	**479,600**
TOTALS:	**168**	**211**	**4,553,776**	**6,672,379**

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).

We're working on compiling and analyzing the economic component of CFLRP contractors for 2016-18. Personnel turnover and other organizational issues in 2016-17 knocked us off the socio-econ monitoring track. This is currently being addressed by the hiring of a few folks this year to pick this monitoring back up. The current struggle is getting

sufficient data from the contractors to populate the economic impact analysis model (a variation of TREAT, with largely similar math under the hood).

From last year, the indicators remain the same, with some updated links and info:

Indicator	**Brief Description of Impacts, Successes, and Challenges**	**Links to reports or other published materials (if available)**
Project partnership composition	Partnerships associated with the FR-CFLRP have been instrumental in accomplishing additional acres of treatment by giving us the opportunity to leverage appropriated funds to increase effectiveness across larger scales. MOU's with major water providers along the Front Range have enabled the CFLRP landscape to extend the number of acres treated where goals are common.	Upper South Platte Partnership Monitoring Forests to Faucets
Relationship building/collaborative work	The Landscape Restoration Team and Monitoring Group has been instrumental in influencing the design and implementation of restoration treatments and the success of the FR-CFLR Project. A new tool named PODs are a strategic planning tool developed using a combination of local expertise and advanced spatial analysis. They identify the safest and most effective control lines used to contain a wildfire and can assist in integrating land management objectives and incident response. The Peaks to People Water Fund is working to improve watershed health and protect water resources on the northern Colorado Front Range by using active forest management in areas of high wildfire risk and potential impact to water resources. Peaks to People Water Fund completed a demonstration of the benefits of forest management in moderating wildfire behavior and protecting water resources from negative impacts associated with postfire soil erosion and sedimentation. The goals of establishing demonstration sites were to enhance communication of connections between forest and watershed health, attract investors, promote water	The General Technical Report, Principles and Practices for the Restoration of Ponderosa Pine and Dry Mixed-Conifer Forests of the Colorado Front Range (RMRS-GTR-373) was published in 2018. Collaboratively Engaging Stakeholders to Develop Potential Operational Delineations 2018 Ecological Monitoring Report for Peaks to People Water Fund Demonstration Sites

	resource protection, and serve as a learning lab to enhance effectiveness of forest management.	
Community support for relevant initiatives	Projects have given us the opportunity to build community support for projects and treatments. The public has gained a new understanding of projects and processes. Prior to the Front Range CFLRP, an assessment of collaborative progress and performance was conducted for two projects in 2009, the Woodland Park Healthy Forest Initiative. A number of watershed partnerships have emerged in the western US to address the impacts of wildfire through investing in wildfire mitigation activities. To motivate collective action and design effective risk mitigation programs, these stakeholders draw on evidence linking wildfire mitigation to outcomes of interest.	Woodland Park Healthy Forest Initiative Woodland Park Healthy Forest Initiative-Collaboration Case Study Stakeholder perceptions and scientific evidence linking wildfire mitigation treatments to societal outcomes
Economic dependency/sectors impacted/expanding market development		FRRT CFLRP 2018 Ecological, Social and Economic Monitoring Plan FRRT CFLRP 2018 Ecological, Social, and Economic Monitoring Plan The Right Work in the Right Places: Prioritizing Fuels Reduction to Protect Water Supplies

5. Based on your project monitoring plan, **describe the multiparty monitoring process. You may simply reference your ecological indicator reports here if they adequately represent your multiparty monitoring process**. If further information is needed, please answer the questions below.

MULTI-PARTY MONITORING PROCESS

At the beginning of the Colorado Front Range CFLRP in 2010, a subgroup of the Front Range Roundtable (FRRT), the Landscape Restoration Team (LRT) was tasked with the creation of a CFLR project monitoring plan. The initial monitoring plan was successfully completed in June 2011 and has been updated almost annually with the latest in the FRRT CFLRP 2018 Ecological, Social, and Economic Monitoring Plan. The CFLR project monitoring plan has been the continued result of multiple stakeholder learning and deliberations by the LR Team and Front Range Roundtable, led by the Colorado Forest Restoration Institute (CFRI).

UPDATE-Forest Structure, Composition and Spatial-from 2019 monitoring meeting

- Data was collected in 2018 from 14 different Colorado Forest Landscape Restoration Project CFLRP) treatments (2010-2016) on the Arapaho Roosevelt (ARP) and Pike San Isabel (PSICC) National Forests. There were 622 Common Stand Exam (CSE) plots there summarized by CFRI into 74

subunits, paired t-tests to evaluate pre- and post-treatment changes, and conducted linear regression to evaluate changes in treatment outcomes over time.
    - The analysis showed a reduced basal area over time and further reductions specifically in Douglas-fir basal area over time. It also showed a 36–37% reduction on wet slopes and further percent reduction of Douglas-fir on wet slopes over time.
- Through winter 2019, CFRI received data from PSICC on 25 projects (2010-2017) and CFRI has pre- and posttreatment data from 928 plots. CFRI has summarized the data into 113 treatment subunits (up from 74).
    - Objectives of this study were to:
        - Determine if CFLRP restoration treatments are contributing to desired conditions outlined by the Front Range CFLRP
        - Assess the adaptive management process outlined by the Front Range CFLRP by looking at changes in treatment outcomes over time from early to late in the program.
    - Results show that restoration treatments reduce basal area by 44% and reduce trees per acre by 63%. The treatments resulted in a 53% increase in ponderosa pine abundance. Over time there is further reduction in conifer basal area. Measuring horizontal complexity involves applying the evenness index to treatment unit basal area distributions. If a treatment is enhancing horizontal complexity, there will be values closer to 1. As treatments progress, the equitability index decreases. The results indicate that treatments are narrowing the basal area distributions.
    - There was an increase in ponderosa pine relative abundance from 45% to 65–70%. There was a 41% reduction of Douglas-fir on wet slopes and a 48% reduction on dry slopes. On wet slopes, there has been an increase in Douglas-fir percent reduction throughout the lifetime.
- A study was conducted to look at how restoration in the Front Range can change spatial patterns (especially of large gaps) and how spatial patterns of gaps resulting from restoration treatments compared to what was seen in areas that experienced low- to moderate-severity portions of the wildfires.
    - Imagery was pulled together from 15 different restoration treatments on the Front Range spanning from 2011 – 2017. Then, they compared that data to aerial imagery and spatial patterns from portions of wildfires that burned under low- to moderate-severity conditions as a proxy for prescribed fire.
    - Results show that wildfires created a greater increase in gap cover for given canopy reduction; wildfire decreased gap density; wildfire created a greater increase in gap shape complexity; wildfire tended to decrease structural evenness. Both restoration treatments and low- to moderate-severity wildfires accomplished multiple restoration objectives related to spatial patterns. They both increased spatial variability, enhanced the mosaic of canopy, openings, and gaps.
    - Wildfire resulted in lower canopy cover and higher gap cover than mechanical treatments. Wildfire also resulted in a distribution with a larger range of variability of gap sizes. Restoration treatments and wildfires both enhanced the structural complexity in similar manners. Multiple restoration treatments may be required to obtain spatial patterns that mimic the effect of natural disturbances.

UPDATE-Understory Botany Monitoring

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The Front Range Collaborative Forest Landscape Restoration Program (FR-CFLRP) is utilizing two complimentary understory plant monitoring efforts to evaluate whether FR-CFLRP treatments are having the following desired outcomes:

- Increasing (or at least maintaining) the abundance and diversity of native plants;
- Increasing (or at least maintaining) the abundance and diversity of native graminoids, forbs, and shrubs;
- Increasing the abundance and diversity of native early successional species; and
- Maintaining (or at least only minimally increasing) the abundance and diversity of exotic plants.

The first effort was initiated in 2011, with support initially coming from The Southern Rockies Landscape Conservation Cooperative (SRLCC), Boulder County, the United States Geological Survey (USGS), the Rocky Mountain Research Station (RMRS), and the Natural Resources Conservation Service (NRCS). In the first year of the effort, 66 monitoring plots were established within and surrounding five planned FR-CFLRP treatment units and two planned Boulder County treatment units, and pre-treatment data were collected. Treatments occurred in 2011-2012, and 1 year post-treatment data were subsequently collected in 2012-2013. Analyses of these data were published in a peer-reviewed publication in the journal Forest Ecology and Management. In 2017, the FR-CFLRP, RMRS, and the Colorado Forest Restoration Institute (CFRI) provided support to expand the temporal scope of this effort by collecting 5-6 year post-treatment data. Data analyses conducted in 2018 and 2019 suggest that treatments have resulted in progress toward several desired outcomes, including increasing native understory plant abundance; increasing the abundance of native graminoids and forbs; and minimizing increases in exotic plant abundance and diversity. Preparation of a publication to be submitted to Forests or similar journal also began in 2019. Last, in 2019, plans were also developed to collect 9-10 year post-treatment data in 2021 and analyze the data and publish the findings in 2022.

The second effort was initiated in 2015, with support provided by the FR- CFLRP, RMRS, and CFRI. In 2015, 189 monitoring plots were established within and surrounding 16 planned CFLRP treatment units, and pre-treatment data were collected. Treatments occurred in 2015-2016 in four units; the plots within and surrounding these units were measured in 2017, 1-2 years post-treatment. Six additional units were treated in 2017; the plots within and surrounding them were measured in 2018, 1 year post-treatment. In 2019, plans were developed to collect 4-5 year post-treatment data in 2020 and 2021 and analyze the data and publish the findings in 2022.

<u>UPDATE-Wildlife Monitoring</u>

- The Bird Conservancy has monitored bird population responses to restoration treatments in ponderosa pine forests. Ponderosa pine forest heterogeneity is naturally maintained by frequent, low-severity fires.

Unfortunately, fire suppression has led to greater stand density and homogenization. A spatially balanced sampling design was used that builds on the IMBCR program, which is a broad scale partner-based monitoring program administered by Bird Conservancy of the Rockies. CFLRP monitoring was initiated in 2014 and is ongoing, but for the first analysis we looked at the first 3 years of data.

- Restoration treatments intend to improve habitat, and it is expected that forest heterogeneity would maintain species diversity, but there is limited empirical study of this. It is important to understand which habitat relationships can explain treatment responses and whether the relationships are consistent with expectations.
- For this study, bird surveys were conducted between 2014 and 2016, and there was data from 92 untreated grids and 54 treated grids. Six-minute morning field surveys were conducted by trained surveyors during breeding season (May – early July). They recorded all species within 125 meters.
- A multi-scale community occupancy model was used to jointly analyze species occupancy and species richness.
- Researchers ran two models: one estimated habitat relationships at the grid level with three treatment metrics and treatment status/years since treatment at the point level. The second model estimated the landscape structure at the grid level and measured nine vegetation covariates at the point level.
- Overall, there was a positive relationship for 18 species and positive treatment relationships between open forest, ponderosa pine, Douglas fir, and canopy height. Treatment relationships varied locally, but there were only positive relationships across landscapes. In terms of management implications, this shows that treatments can promote avian diversity and it may help inform how much to treat. It would be helpful to identify several habitat mechanisms that could inform the design of treatments to meet habitat objectives.

UPDATE-Watershed Health Monitoring

- Discussions began in 2016 to initiate development of watershed health monitoring protocols. However it continues to be slow to develop. The expertise and time commitment needed to run fire behavior and hydrological models has been an obstacle in developing useful watershed health metrics.

UPDATE-Fire Effects Monitoring

- As the use of prescribed fire has increased on both Forests, monitoring has also increased.
- The anticipation is that as we move more into the use of prescribed fire within the CFLRP areas a fire monitoring team will support the USFS in their efforts to return fire to the Front Range landscape.

UPDATE-Social and Economic

- Last monitoring was completed in 2015, due to turnover.
- Work has started again in 2018 to get back to this monitoring, expect results in the near future.

UPDATE-Social and Economic

- The LRT has done a great job completing the implementation monitoring but has not created many opportunities to provide feedback on the big, overarching questions. A lot of time and effort has been spent building data about results for fire-adapted ecosystems at landscape and site scales.
- The next step is to understand where each of us sees ourselves in the adaptive management process, who else should be involved, when the large questions should be asked, and what pieces in the process

should be changed. One piece of the framework that could change is the explicit focus on federal lands; it should be an all-lands approach.

CHALLENGES

One challenge for the Front Range CFLRP collaborative monitoring is that wildlife and watershed lacked active representation and consideration until half-way through the project performance period. Until that point and throughout the project, the monitoring was heavily tilted towards fine-scale forest structural patterns. As a result, representation and participation by subject matter experts and stakeholders from wildlife, watershed, and other disciplines were sporadic or often absent. Relating to lesson #1 above, the LR Team would have benefited from more intentional, active recruitment and retention of a broader diversity of participants contributing to the monitoring program.

Additionally, the LR Team's monitoring and adaptive management activities and products were not consistently and transparently connected to US Forest Service's landscape- and project-scale planning, analysis, and forest vegetation, fuels, and fire programs of work. A notable exception was the development of the Upper Monument Creek Landscape Restoration Initiative. The connection relied heavily on the motivation, goodwill, and participation of individual USFS line and staff, which changed with personnel turnover. A greater commitment to instituting a process for transparent and consistent linkage between the multi-party monitoring and USFS management planning and implementation systems remains an ongoing need and challenge.

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	1,153	$300/acre
Acres of forest vegetation improved FOR-VEG-IMP	Acres	1,695	$800/acre
Acres of terrestrial habitat restored or enhanced HBT-ENH-TERR	Acres	2,363	
Volume of timber sold TMBR-VOL-SLD	CCF	4,508	$60/CCF
Acres of wildland/urban interface (WUI) high priority hazardous fuels treated to reduce the risk of catastrophic wildland fire FP-FUELS-WUI	Acres	4,368	$1,300/acre
Please also include the acres of prescribed fire accomplished	Acres	2,140	$500/acre

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

7. **FY 2019 accomplishment narrative** – Summarize key accomplishments and evaluate project progress *not already described elsewhere* in this report. ***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 three pages.)

PIKE AND SAN ISABEL NATIONAL FORESTS

The PSICC was able to complete 974 of acres of restoration and WUI fuels treatments in the CFLRP area.

- Mechanical completion of 974 acres with CFLR funding.

Timber volume was sold on one stewardship contract that totaled 1,695 CCF of sawtimber and other products. Also two service contracts for fuels reduction were completed. Reforestation efforts in the Hayman burn area continued with over 900 acres planted with ponderosa pine seedlings, funded in part through an ongoing partnership with the Arbor

Day Foundation and other partners. Also, prescribed fire took place in the fall of 2017 completing 601 acres of restoration.

The PSICC awarded three stewardship and one service contract totaling 1,179 acres of restoration/fuels reduction, within the CFLRP area. The objectives of these projects primarily emphasis the retention of older trees in the ponderosa pine and dry mixed conifer types, opening up densely closed stands of mid to late seral classes, creating a more open forest environment and improving shrub and grass diversity, and increasing resilience to disturbances such as wildfire. Upper Monument Creek area.

Continued work with water provider partnerships contribute significantly to matching treatments within the CFLRP area in 2018. With 1,330 acres of acres of fuels reduction (mechanical and prescribed fire) funded by partnerships, contributions are an important component in being able to fund activities within the CFLRP area. The combined contribution of partnership funds in FY19 to fund treatments on NFS lands was a little over $2.5 million. Partners provided approximately 50 percent of the total matching funds.

Other items include new contractors that will be performing restoration work. This not only helped to keep costs down but indicates there may be more capacity within the market area to be able to accomplish more acres, or at least create economic efficiencies. NEPA accomplishments include the Lake George Vegetation Management Project designed to The purpose of the LGAVMP EA is to improve forest health and resiliency to high severity wildfire, insect infestations, and disease. This would come about by altering the density and pattern of vegetation on the landscape, which is outside of historical conditions. The continued growth of dense vegetation further reduces forest resiliency and function and increases threats to neighboring values.

ARAPAHO AND ROOSEVELT NATIONAL FORESTS

The ARP was able to accomplish 3,388 acres of restoration and WUI fuels treatments through the award of integrated resource service contracts and service contracts as well as with Forest Service personnel conducting prescribed fire operations.

- Accomplished 614 acres of mechanical fuels reduction
- Accomplished 634 acres of manual fuels reduction
- Accomplished 2,140 acres of prescribed fire

Timber volume was sold on one stewardship contract, totaling 2,858 CCF of sawtimber and other products. In total, the ARP awarded one integrated resource service contract and one service contract, accomplishing 1,248 acres of restoration work. Emphasis for the mechanical fuels reduction treatments are in alignment with ponderosa pine, dry mixed-conifer restoration objectives and were designed with whole tree removal specifications to meet fuels reduction objectives in a single entry. The mechanical treatments will also serve as critical containment areas to support future prescribed fire projects in the area. The manual treatments were designed with the same management prescriptions, however fuels are treated on site due to lack of road access and will require follow up prescribed burning of piles and surface fuels. Prescribed burning was also accomplished on 2,140 acres in 2019. Prescribed burning projects were primarily broadcast burning operations, however there were a few project areas that were initial entries, which focused on burning of piles and larger fuels to prepare for second entry broadcast burns.

Partnerships and other initiatives contributed significantly to matching treatments in the CFLRP footprint in 2019. Partnerships with water providers, focused on watershed health and fuels reduction, contributed $449,210 to accomplish 1,302 acres of restoration work and an additional $60,000 to accomplish 749 acres of noxious weed

treatments. The ARP was also awarded a Joint Chiefs' Landscape Restoration Project in 2019. The forest received $888,110 and was able to accomplish 1,854 acres of prescribed burning, 3 miles of streambank improvement, and 1,513 acres of wildlife habitat improvement. The forest was also able to capture some of the funding into agreements with local county governments for future noxious weed treatments. Funding was also placed in agreements to accomplish reconnaissance and planning for future road decommissioning of unauthorized routes as well as monitoring of forest restoration treatments.

8. **The WO (EDW) will use spatial data provided in the databases of record to estimate a treatment footprint for your review and verification**. This information will be posted here on the internal SharePoint site for verification *after the databases of record close October 31*.

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

Fiscal Year	Footprint of Acres Treated (without counting an acre of treatment on the land in more than one treatment category)
FY 2019	4,362 acres
Estimated Cumulative Footprint of Acres (2010 or 2012 through 2019)	31,834 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?

The footprint acres were derived from projects (awarded stewardship and service contracts and the prescribed burns on both forests that were funded with CFLRP program funds (CFLN/R and "in lieu of funds").

FOREST	PROJECT	FY	TOTAL ACRES	FOREST	PROJECT	FY	TOTAL ACRES	TOTALS BY FY
PSICC	Phantom #1 LTSC TO	2010	597	ARP	Taylor	2010	391	988
PSICC	Ryan Quinlan #1 LTSC TO	2011	356	ARP	Estes Valley-Walker Black	2011	903	
PSICC	Phantom #2 LTSC TO	2011	871	ARP	Walker Red	2011	682	
PSICC	Phantom #3 LTSC TO	2011	656	ARP	Thompson River 2	2011	679	4,147
PSICC	Phantom #4 LTSC TO	2012	507	ARP	West Mag	2012	286	
PSICC	Catamount 1 LTSC TO	2012	351	ARP	Redfeather 1	2012	586	
PSICC	Long John LTSC TO	2012	304	ARP	Boulder Heights	2012	115	
PSICC	Buffalo Creek LTSC 1 TO	2012	478	ARP	Kelly Dahl	2012	172	2,799
PSICC	Messenger Gulch LTSC 2 TO	2013	425	ARP	Gold Hill	2013	50	
PSICC	Broken Wheel LTSC TO	2013	406	ARP	Redfeather 2	2013	1,456	
PSICC	Crystal Creek TO	2013	412	ARP				

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FOREST	PROJECT	FY	TOTAL ACRES	FOREST	PROJECT	FY	TOTAL ACRES	TOTALS BY FY
PSICC	Ponderosa #1 TO	2013	229	ARP				2,978
PSICC	Big Elk TO	2014	221	ARP	Creedmore	2014	167	
PSICC	Ridge TO	2014	745	ARP	Ward Jam	2014	406	
PSICC	Little Scraggy TO	2014	425	ARP	Gross	2014	450	
				ARP	Magic Sky	2014	394	2,808
PSICC	717 Service Contract	2015	784	ARP	No sales	2015	0	784
PSICC	PPRD Rx Burn (force acct)	2016	301	ARP	Deobligated Greenridge	2016		
PSICC	Deobligated-Little Scraggy	2016	-425	ARP	Deobligated Gold Hill	2016	-50	
PSICC	Painted Rocks IRSC	2016	151	ARP	Redfeather 3	2016	609	
PSICC	Phantom 5 IRSC	2016	246	ARP	Redfeather 4	2016	1,105	
PSICC	Hybrook IRSC	2016	537	ARP	Ridge (RFB)	2016	205	
PSICC	Eco Beaver IRSC	2016	582	ARP	Burnt-Blue Creek	2016	220	
PSICC	Tornado IRSC	2016	221	ARP				3,702
PSICC	Little Morrison	2017	197	ARP	Elkhorn IRSC	2017	165	
PSICC	Round Mountain	2017	250	ARP	Elkhorn Manual	2017	245	
PSICC	Skelton	2017	368	ARP	Matoons	2017	325	
PSICC	Payne Gulch	2017	431	ARP	Horse Creek IRSC	2017	135	
PSICC	Wilson RX Burn	2017	359	ARP	Redfeather RX Burn	2017	1,513	
PSICC	Trout Creek RX Burn	2017	166	ARP				4,154
PSICC	Badger Gulch	2018	224	ARP	Glen Haven	2018	188	
PSICC	Raleigh Peak TO	2018	665	ARP	Magic Sky 2	2018	304	
PSICC	Carrol Lakes	2018	380	ARP	Cottonwood/Glacier	2018	378	
PSICC	Trout Creek RX Burn	2018	140	ARP	Redfeather North Rx Burn	2018	1,702	
PSICC	Wilson Rx Burn	2018	49					
PSICC	Wagon Tongue Rx Burn	2018	451					
PSICC	O'Brien Rx Burn	2018	280					
PSICC	PPRD Force Acct thinning	2018	351					5,112
PSICC	Mothball Springs	2019	370	ARP	Elkhorn 2019	2019	614	
PSICC	Hatch Fuels	2019	303	ARP	Magic Sky 3	2019	634	
PSICC	Road Gulch Fuels	2019	301	ARP	Pingree Hill Rx Burn	2019	1,315	
					Elkhorn Rx Burn	2019	268	
					James Creek Rx Burn	2019	434	
					Elkhorn Rx Burn	2019	123	4,362

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).

Colorado Front Range CFLRP cumulative accomplishments 2010-2019 per annual reports.

Performance Measure	Code	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	TOTALS	PROJECT EXPECTED OUTPUTS	% ACCOMP-LISHED
CFLR/N funded acres (mechanical or manual fuels reduction)	None	988	4,147	2,799	2,978	2,808	784	3,702	4,154	5,112	4362	**31,834**	**31,600**	**100%**
Green tons from small diameter and low value trees removed from NFS lands and made available for bio-energy production	BIO-NRG	5,514	1,128	459	260							**7,361**	**24,000**	**31%**
Acres of forest vegetation established	FOR-VEG-EST		1,047	1,100	1,564	1,199	996	1,347	934	2,228	1,153	**11,568**	**10,000**	**115%**
Acres of forest vegetation improved	FOR-VEG-IMP		5,562	2,181	5,758	5,414	3,095	4,105	2,516	5,261	1,695	**35,587**	**41,300**	**86%**
Acres of wildland/urban interface (WUI) high priority hazardous fuels treated to reduce the risk of catastrophic wildland fire	FP-FUELS-WUI	3,224	6,922	5,506	9,625	6,530	2,438	9,994	3,946	6,697	4,368	54,882	**59,250**	**93%**
Acres of hazardous fuels treated outside the wildland/urban interface (WUI) to reduce the risk of catastrophic wildland fire	FP-FUELS-NON-WUI								171			171	**NA**	**NA**
Number of acres treated to reduce the risk of catastrophic wildland fire	FP-FUELS-ALL	3,224	6,922	5,506	9,625	6,530	2,438	9,994	4,117	6,745		**55,101**	**63,800**	**86%**
Miles of stream habitat restored or enhanced	HBT-ENH-STRM					5			1			6	**N/A**	**N/A**
Acres of terrestrial habitat restored or enhanced	HBT-ENH-TERR		1,402	6,615	1,414	4,163	4,540	10,198	3,568	**3,224**	**2,363**	**37,487**	**11,666**	**321%**
Manage noxious weeds and invasive plants	INVPLT-NXWD-FED-AC	100		625	429	477	529	7,570	1,534	**2,533**		**13,797**	**5,600**	**249%**
Miles of property line marked/maintained to standard	LND-BL-RK-MAINT		21									**21**	**21.25**	**99%**
Miles of unauthorized road decommissioned	RD-DECOM			5		7			4			**16**	**5**	**318%**

Performance Measure	Code	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	TOTALS	PROJECT EXPECTED OUTPUTS	% ACCOMP-LISHED
Miles of closed and high clearance system roads receiving maintenance	RD-HC-MAINT		2	33	8	69						**112**	**36**	**311%**
Miles of passenger car system roads improved	RD-PC-IMP			1								**1**	**18**	**6%**
Miles of passenger car system roads receiving maintenance[3]	RD-PC-MAINT		9	52		243						**304**	**61**	**497%**
Acres of water or soil resources protected, maintained or improved to achieve desired watershed conditions	S&W-RSRC-IMP		43	9,763	3,003	881		196	2,820	**2,266**		**21,792**	**9,805**	**222%**
Number of stream crossings constructed or reconstructed to provide for aquatic organism passage	STRM-CROS-MTG-STD			1								**1**	**1**	**100%**
Miles of system trail maintained	TL-MAINT-STD			110	9							**119**	**113**	**105%**
Acres of forestlands treated using timber sales	TMBR-SALES-TRT-AC			20	256				995	250		**1,521**	**NA**	**NA**
Volume of Timber sold (CCF)	TMBR-VOL-SLD		6,678	11,889	6,175	5,141	8,108	7,150	2,771	5,216	4,508	**45,270**	**62,000**	**73%**

[3] Expected miles of passenger car system roads improved should have been designated as passenger car system roads receiving maintenance (497%).

10. *Project selected in 2012 and 2013 ONLY* - Planned FY 2020 Accomplishments

NA.

11. ***Project selected in 2012 and 2013 ONLY* -** Planned accomplishment narrative and justification if planned FY 2020 accomplishments and/or funding differs from CFLRP project work plan (no more than 1 page):

NA.

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

The primary collaborative group for the Colorado Front Range CFLR Project is the Front Range Roundtable. The Roundtable is a coalition of individuals from state and federal agencies, local governments, environmental and conservation organizations, the academic and scientific communities, and industry and user groups, all with a commitment to forest health and fire risk mitigation along Colorado's Front Range. The Roundtable's focus area encompasses 10 Front Range counties: Boulder, Clear Creek, Douglas, El Paso, Gilpin, Grand, Jefferson, Larimer, Park and Teller. There are over 300 members of the original collaborative with a core participating group of over 100 individuals.

Below is a list of the Landscape Restoration Team and their affiliation. This team is responsible for CFLR Project monitoring:

Rob Addington	The Nature Conservancy
Greg Aplet	The Wilderness Society
Tony Auciello	Jefferson County Open Space
Kevin Barrett	Colorado Forest Restoration Institute
Mike Battaglia	USFS, RMRS
Teagan Blakey	Magnolia Forest Group
Jenny Briggs	US Geological Survey
Peter Brown	Rocky Mountain Tree-Ring Research
Cheyenne Brown	Colgate University Student
Mike Caggiano	Colorado State University
Jeff Cannon	Colorado Forest Restoration Institute
Marin Chambers	Colorado Forest Restoration Institute
Tony Cheng	Colorado State University
Sallie Clark	El Paso County
Diana Trujillo	USFS, Forest Supervisor- Pike San Isabel National Forests
Monte Williams	USFS, Forest Supervisor-Arapaho Roosevelt National Forests
Michelle Connelly	Coalition for the Upper South Platte
Casey Cooley	Colorado Parks & Wildlife
Marc Dettenrieder	Teller County
Jennifer DeWoody	US Forest Service, Pikes Peak RD
Cindy Domenico	Boulder County
Marla Downing	USFS, ARP
Carol Ekarius	Coalition for the Upper South Platte
Deanna Engelmann	USFS, Pikes Peak RD
Cory Ashby	USFS, Pikes Peak RD
Jonas Feinstein	Natural Resources Conservation Service
Jim Gerleman	USFS - Pike and San Isabel National Forests
Joe Huck	USFS - Pike San Isabel National Forests
Chad Julian	Private citizen
Joe Sean Kennedy	USFS – Pike and San Isabel National Forests
Kathleen Krebs	Clear Creek County
David Laskey	Sugarloaf Fire Protection District
Lyle Laverty	Society of American Foresters
Jason Lawhon	USFS, R2
Larry Lempka	Big Thompson River Coalition
Mike Lester	Colorado State Forest Service
Kevin McLaughlin	USFS, ARP
Mike McHugh	Aurora Water
Ken Morgan	Colorado Parks & Wildlife
Andy Perri	Denver Mountain Parks
Brad Piehl	JW Associates
Joe Reale	City of Westminster
Kathleen Roman	Landowner
Tanner Scott	Student (Oregon State University)
Samantha Sherwood	Aurora Water
Nick Stremel	Boulder County Parks and Open Space
Rick Truex	USFS, R2
Megan Lowell	USFS, R2
Susan Wagner	Magnolia Forest Group

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.

Media Releases

Magic Feather Collaborative Forest Restoration Project Decision Signed

Elkhorn-Pingree Hill Prescribed Burn Could Begin Next Week

Pingree Hill Prescribed Burn Completed

Red Feather Prescribed Burn could resume later this week

Forest Service to provide information on planned prescribed fire near Empire

South Platte Ranger District to Continue Prescribed Fire Projects in Douglas, Jefferson, and Park Counties

Journal Articles

Jeffery B. Cannon 1,2,*,†, Wade T. Tinkham 2, Ryan K. DeAngelis 1, Edward M. Hill 2 and Mike A. Battaglia 3 Variability in Mixed Conifer Spatial Structure Changes Understory Light Environments (Forests 2019)

Barrett, KJ, Cannon, JB, Cheng, A. (2019).Effects of Collaborative Restoration and Adaptive Management on Forest Structure and Composition in the Colorado Front Range. Cultivating Pyrodiversity: 8th International Fire Ecology and Management Congress, Association for Fire Ecology, November 2019, Tuscon, AZ.

Caggiano, MD (2019). Collaboratively Engaging Stakeholders to Develop Potential Operational Delineations. CFRI-1908.

Cannon, JB, Gannon BM, Wurtzebach, Z (2019). Application of CFLRP monitoring to Forest Plan Monitoring of the Arapaho Roosevelt National Forest. CFRI-1909.

Cannon, JB, Gannon BM, Wurtzebach, Z, Cheng, AS (2019). Report on potential application of landscape-scale analyses for assistance with Forest planning. CFRI-1910.

Signatures:

Recommended by (Project Coordinator(s)):_____

Approved by (Forest Supervisor: Arapaho-Roosevelt National Forest): _____
Monte L. Williams

Approved by (Forest Supervisor: Pike and San Isabel National Forest): _____
Diana Trujillo

Draft reviewed by (collaborative chair or representative): _____