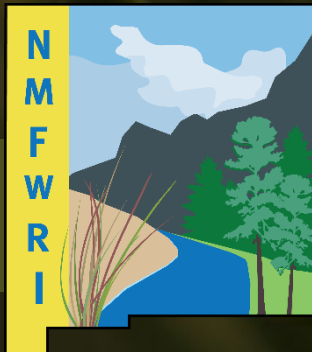


Geospatial Tools for Wildfire Mitigation and Preparedness: NM Post -Fire Hub and TWIG : Treatment and Wildfire Interagency Geodatabase



New Mexico Forest & Watershed Restoration Institute

www.nmfwri.org

Agenda

- NMFWRI & SWERI
- GIS at NMFWRI
- NM Post-Fire Hub Templates & Grant County Incident Hub
- 5-minute Break
- TWIG and TWIG Demo
- Time to explore TWIG



Introductions

New Mexico Forest and Watershed Restoration Institute (NMFWRI)



Patti Dappen

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GIS Specialist

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Terence Garcia

Digital Content & Outreach

Specialist

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nmfwri.org



Southwest Ecological Restoration Institutes

WHO ARE WE?

A COLLABORATION BETWEEN

3 UNIVERSITY-BASED
RESTORATION INSTITUTES



October 2004

Established by Congress via the Southwest Forest Health and Wildfire Prevention Act (SWERI Act)

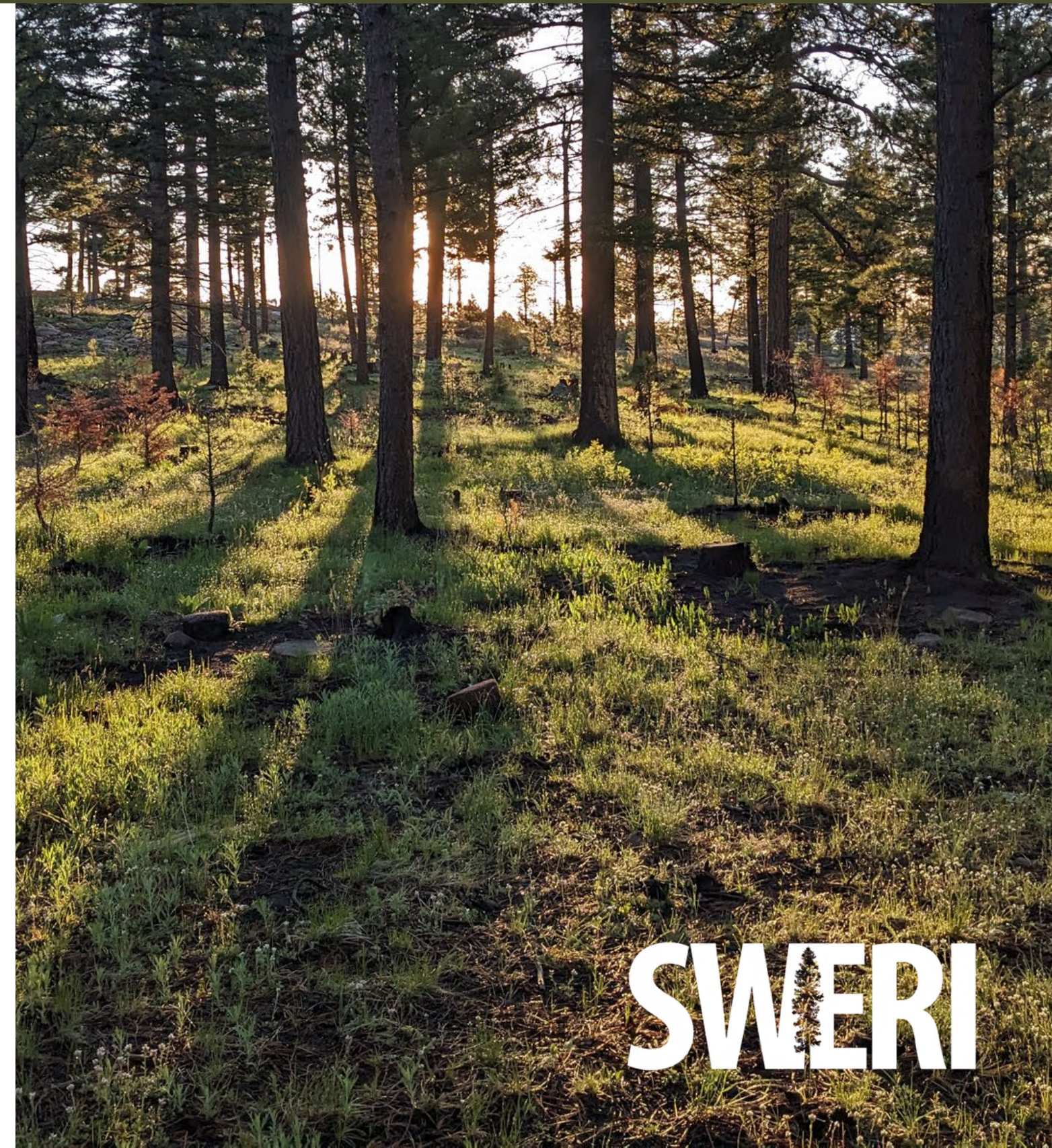
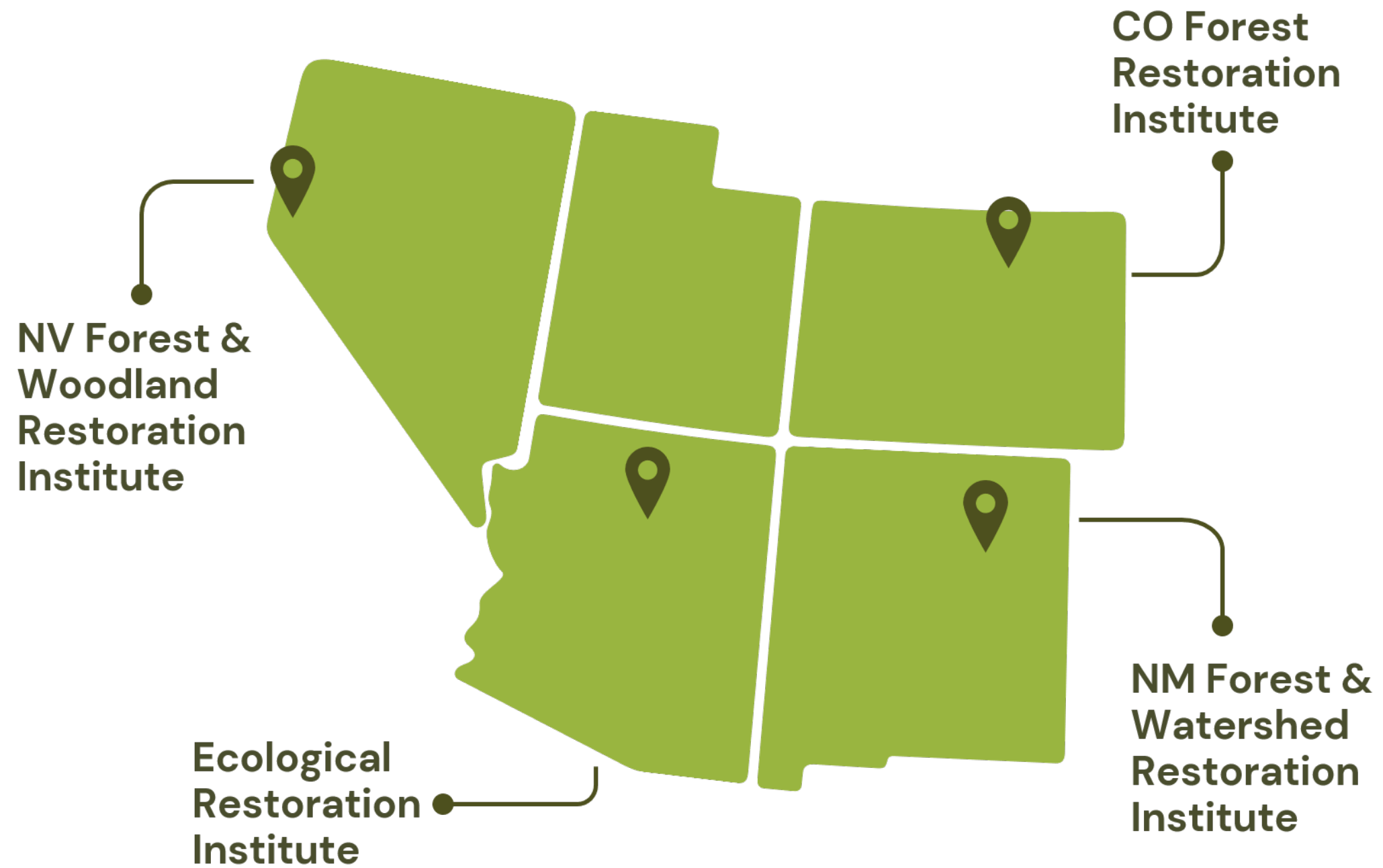
February 2005

Designated by US Forest Service

June 2005

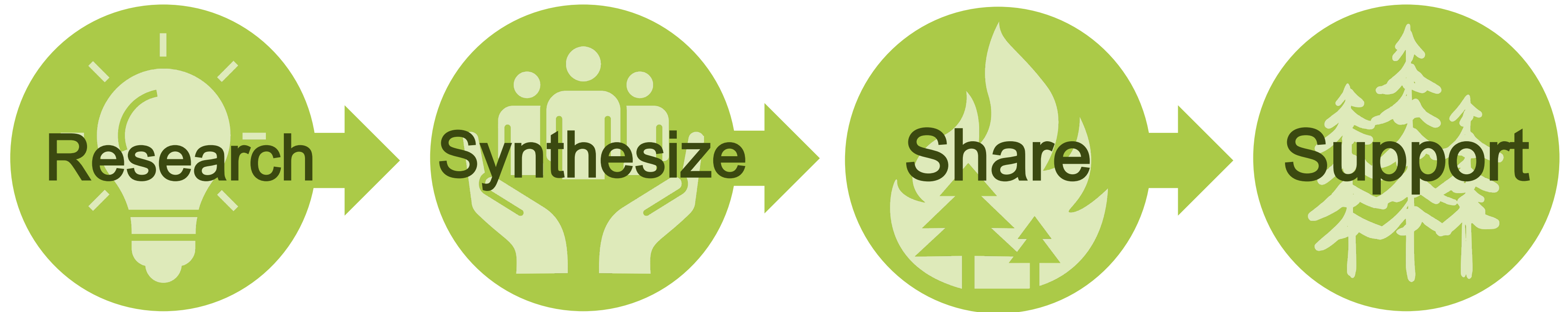
NM Governor and NMHU President solidified support through a Charter that established the SWERIs as a federal-state partnership

The Southwest Ecological Restoration Institutes



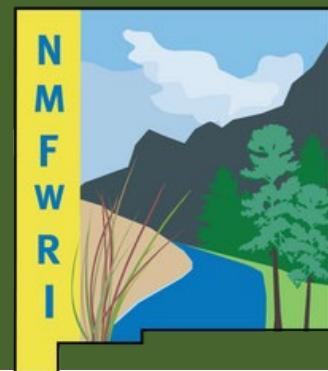
SWERI

Southwest Ecological Restoration Institutes



Together we develop, translate, and apply interdisciplinary and actionable knowledge, in collaboration with forest land managers and partners, for ecologically sound and socially responsible forest stewardship.

What We Do



New Mexico
Forest and Watershed
Restoration Institute

New Mexico Highlands University

H NEW MEXICO
HIGHLANDS
UNIVERSITY



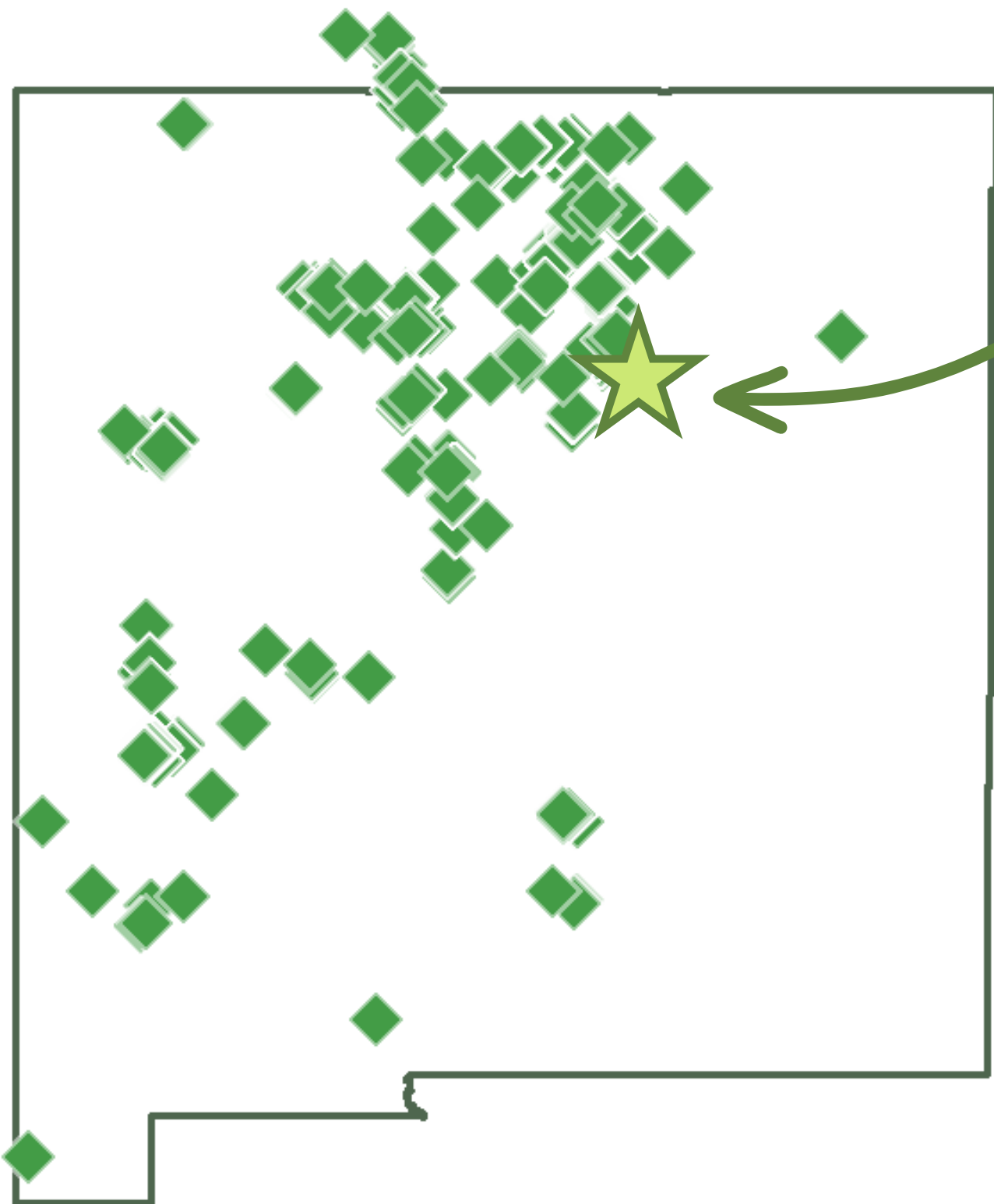
Collaboration



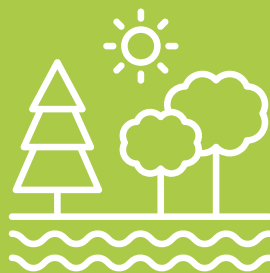
GIS



**Conservation
& Restoration
Education**



*Based at NMHU in Las
Vegas, NM with
projects across the
state*



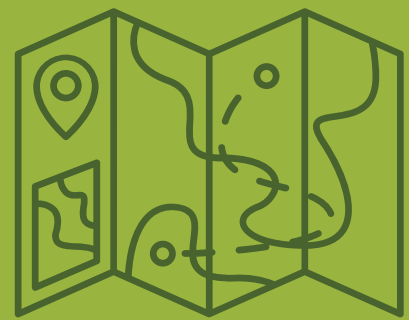
**Ecological
monitoring**



Research

GIS at NMFWRI

NMFWRI uses GIS to support reducing the risk of wildfire and encourage effective land and forest management in New Mexico.



Mapping



Post-fire support



Making data accessible



Vegetation Monitoring



Web Apps



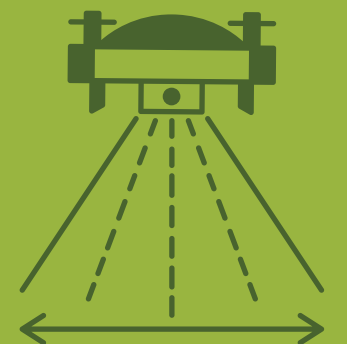
Field Work Apps



Data Analysis

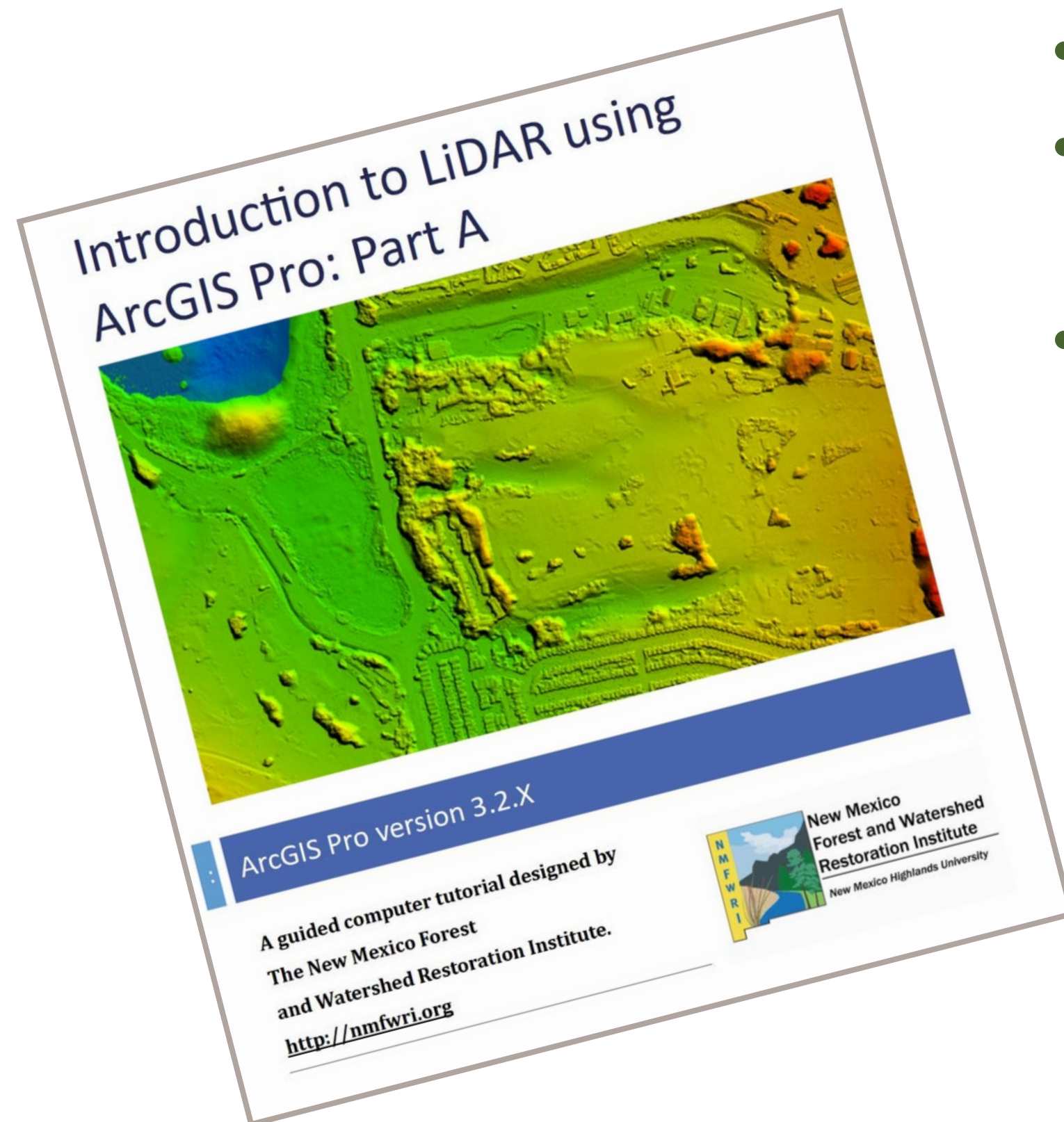


Training and Education

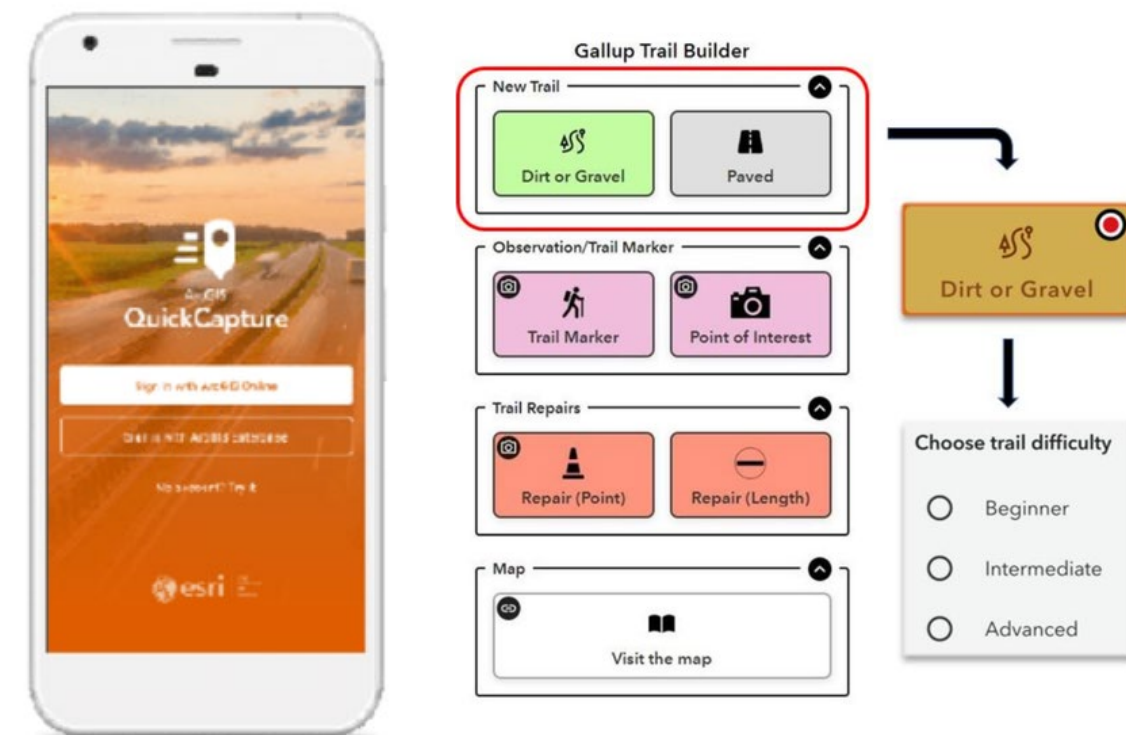


Drones

GIS Training Support to Partners



- LiDAR training ArcGIS Pro Tutorial
- QuickCapture app development for trail collecting
- Annual free live online ArcGIS Pro training



New Mexico Fire Viewer

nmfireviewer.org

Bringing critical fire information to New Mexicans

- Developed during the Hermit's Peak/ Calf Canyon (HP/CC) Fire
- Combines information from several separate sources into one website and map
- Includes fire boundaries, satellite imagery hot spot detections, smoke forecasts, building footprints, post-fire burn severity, and more



New Mexico Fire Viewer

nmfireviewer.org

Website views



Hermit's Peak/Calf Canyon

300,000

South Fork / Salt

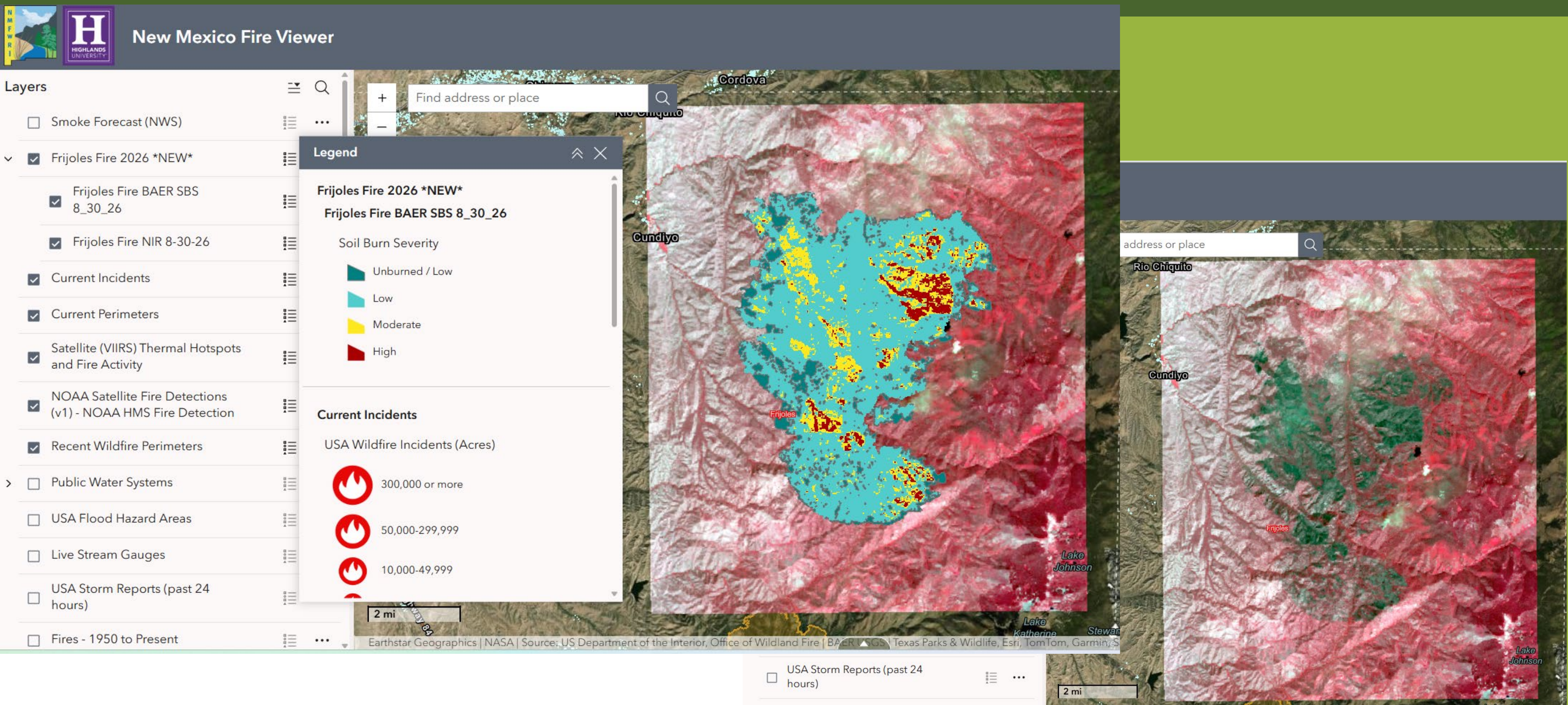
175,000+

Los Frijoles Fire

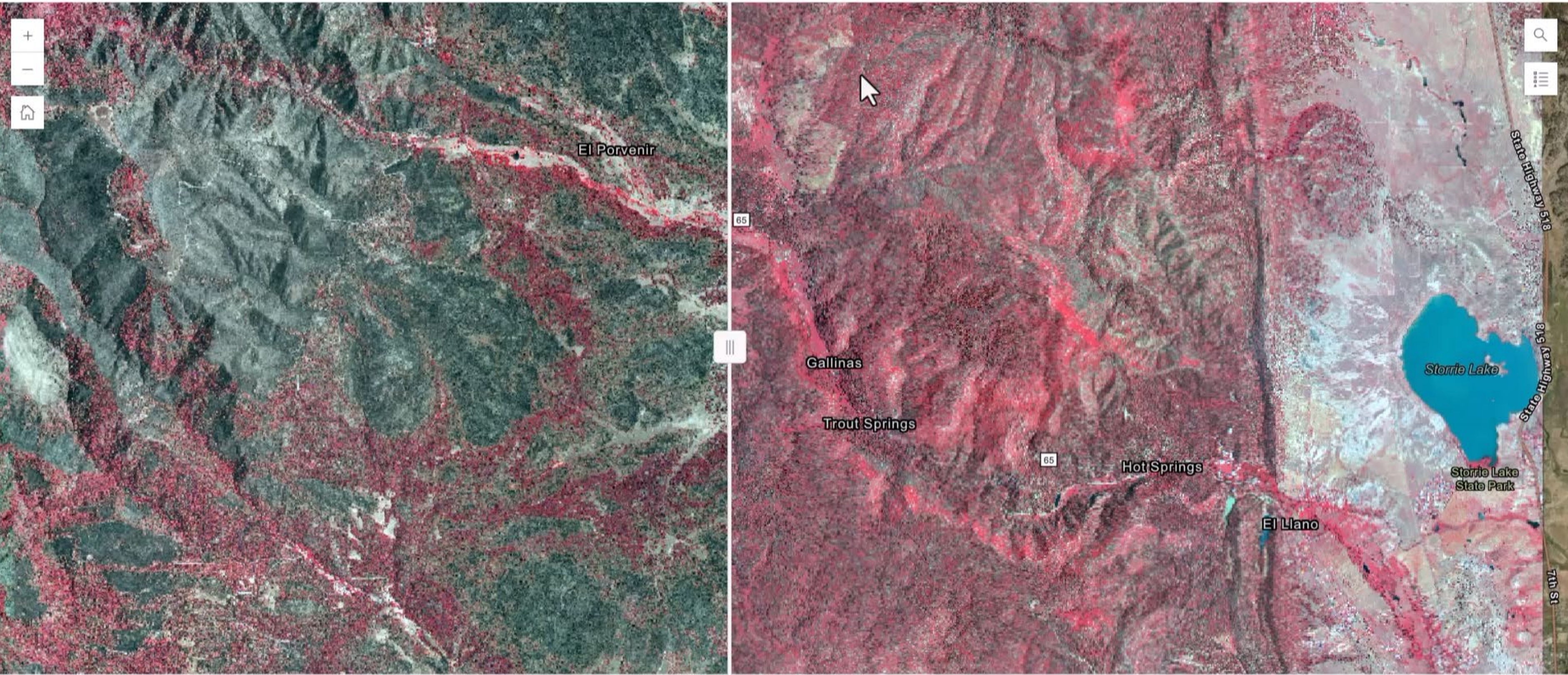
30,000+

Los Frijoles Fire

nmfireviewer.org



HPCC Burn Scar 2022 vs 2024 NAIP Color Infrared Imagery



Texas Parks & Wildlife | Earthstar Geographics | Esri | TomTom | Garmin | SafeGraph | GeoTechnologies, Inc | METI/NASA | USGS | EPA | NPS | USDA | USFWS

Powered by Esri



Contact



New Mexico Forest and Watershed Restoration Institute

We engage government agencies, academic research institutions, land managers, and the public in the areas of forest and watershed management.

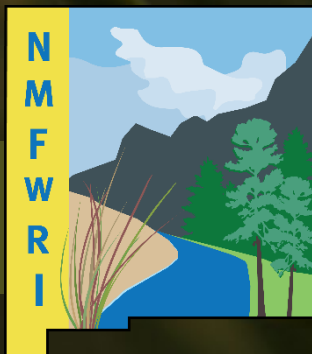
Learn more about NMFWR

nmfwri.org

H NEW MEXICO
HIGHLANDS
UNIVERSITY

Geospatial Tools for Wildfire Mitigation and Preparedness

NM Post-Fire Hub Templates & Grant County Incident Hub



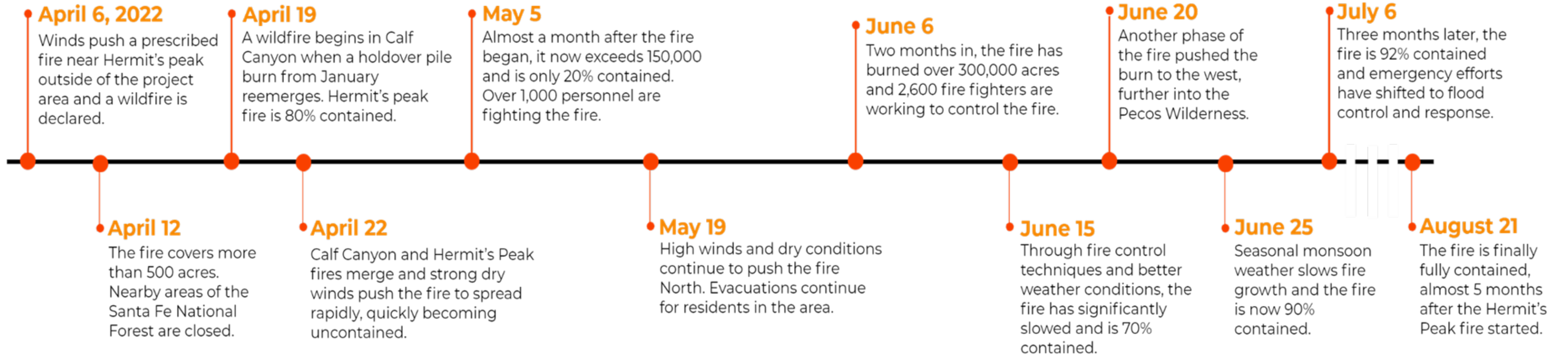
New Mexico Forest & Watershed Restoration Institute

ArcGIS Online Hub

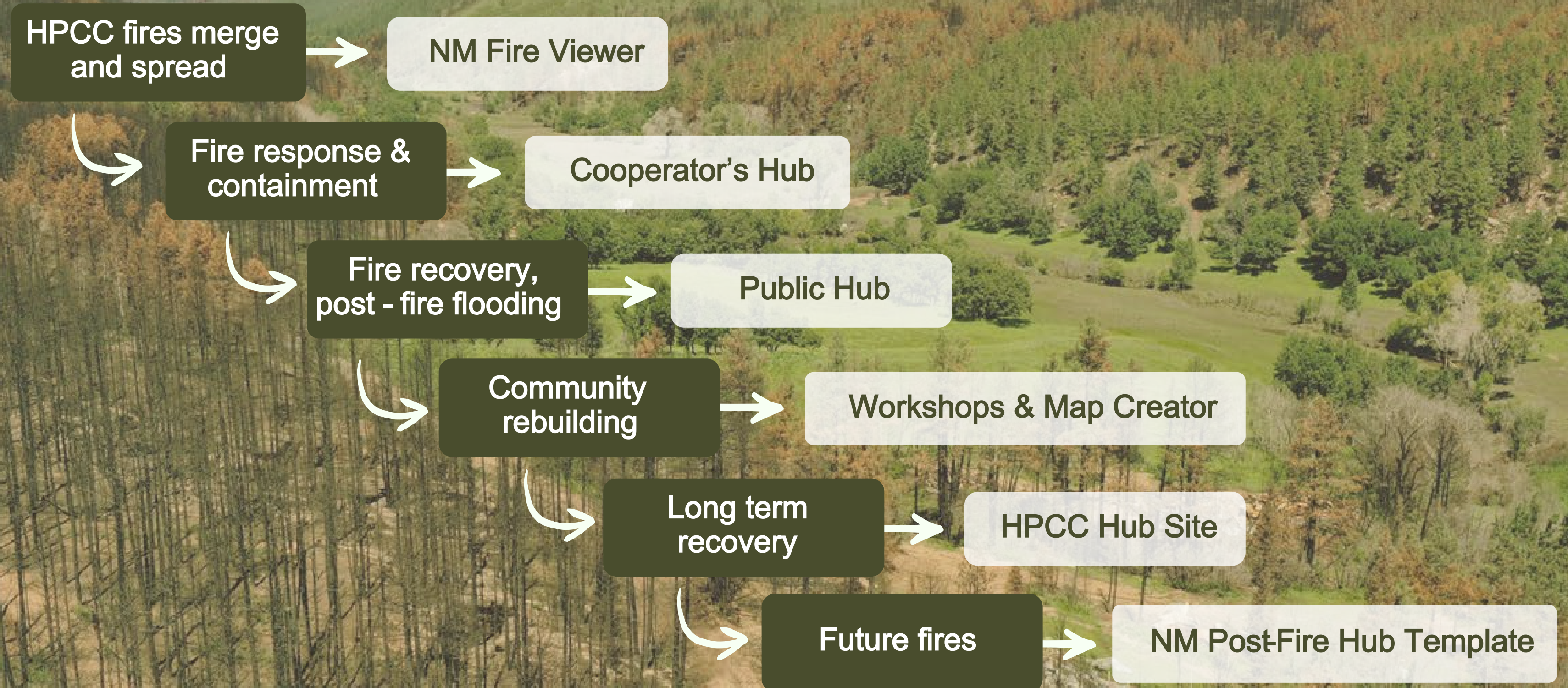


- Esri's community engagement and collaboration platform
- Widget-based website builder
- Uses NMHU's ArcGIS Online Premium community members to control permission-based access (view vs. edit)
- Supports data, web maps, web apps, Survey123 forms, calendars, images, links/embeds, content creation and maintenance

First Post -fire Hub: HPCC Fire



HPCC Hub Site Timeline



Connecting Cooperating Agencies

- USFS & LV NMFD ask for mapping support
- Static maps → web map from EDAC
- Still need to share restricted info & data
- NMFWRI & SWCA (contractors) build hub
- Web maps, photo viewer for post-fire flooding damage, screening tool, Survey123 forms, and more.

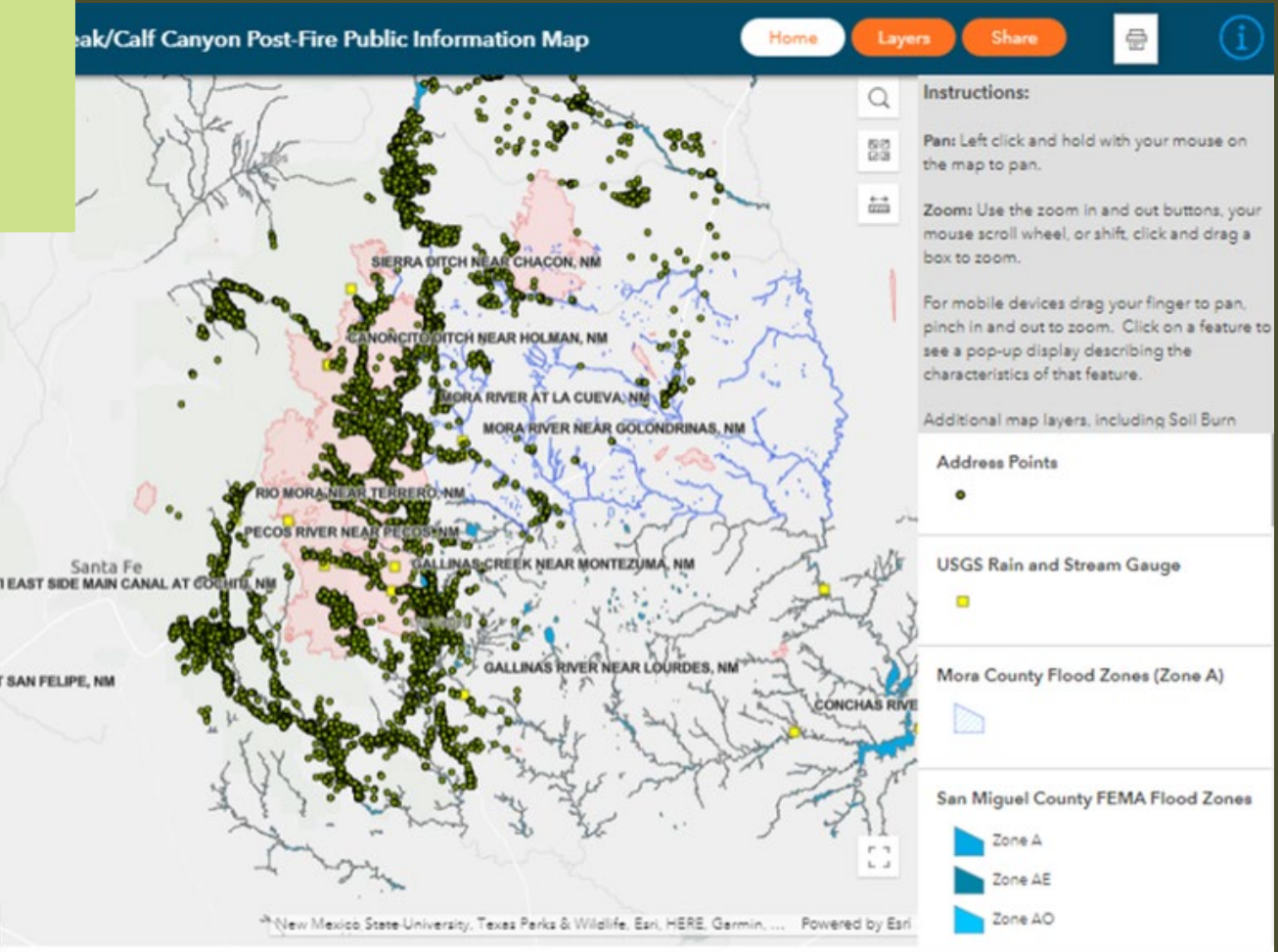


Restricted (account - controlled)
page for local, state, and federal
groups to collaborate

Publicizing Community Support



Public pages for communities impacted by HPCC fire and post - fire flooding. Now focused on long - term recovery



Includes info on community events (resource fairs and post - fire land restoration workshops), emergency alerts, claims processes, mapping resources, and served as website for Mora - San Miguel Long Term Recovery Group



Hermit's Peak/Calf Canyon Post-fire Resource Hub

This Hub Site provides support and recovery resources and information for communities impacted by the Hermit's Peak/Calf Canyon fire and post-fire flooding.

In case of emergency, please call 911

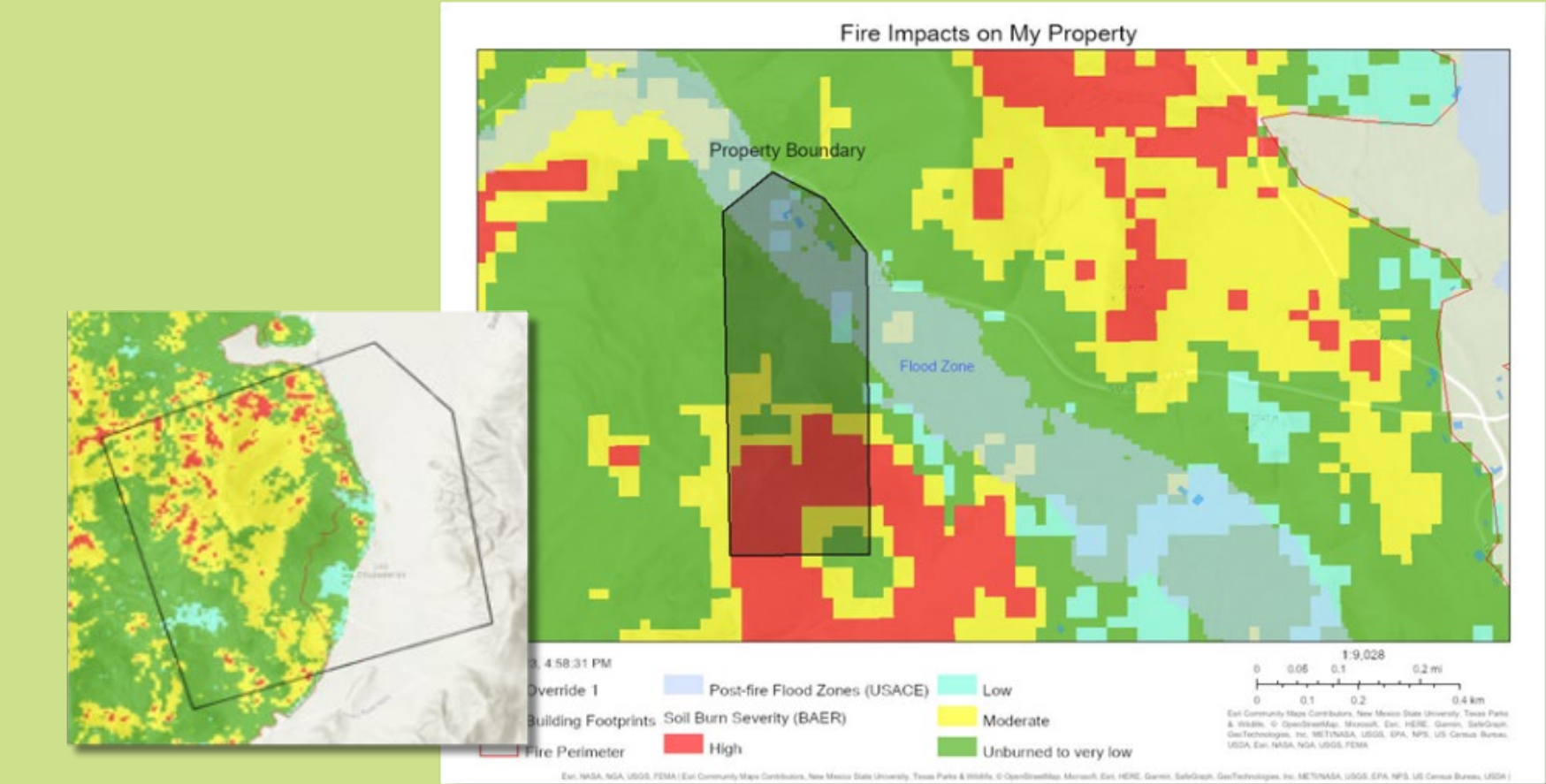
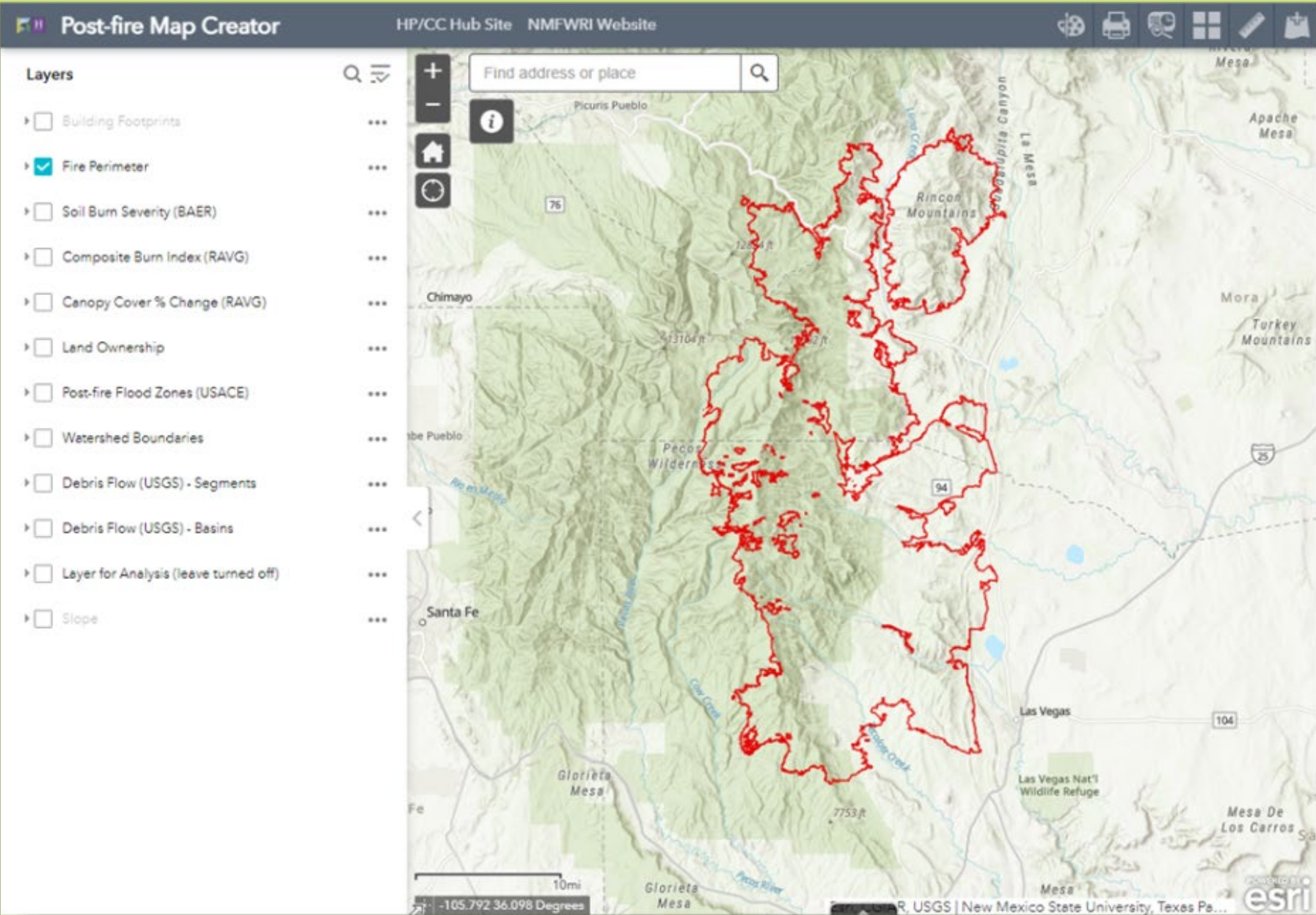
View Wildfires & Floods in Your Area

Quick Resources

- > Register for Emergency Alerts
- > Important Information
- > Claims, Surveys, and Upcoming Events
- > Weather Warnings and Preparedness Information

Community -informed Tool: Map Creator

The Post - fire Map Creator was built for those impacted by the HPCC fire to create maps and generate reports showing the impacts the fire had on their property.



Summary

Name	Count	Area(acres)	Length(mi)
Soil Burn Severity	341	2,355.18	N/A
No Fire / Fire not reported	1	1,262.31	N/A

Soil Burn Severity

#	Soil Burn Severity	Area(acres)
1	Low	109.29
2	High	126.93
3	Moderate	1,028.16
4	Unburned to very low	1,090.80

Lessons Learned from HPCC Hub



Effective
Collaboration Tool



Spokesperson/
POC for groups



Access control facilitated
agency use



Build off existing
networks



ArcGIS Hub Premium
vs. Basic



Web design skills were
helpful



Think about changing
needs

Lessons Learned from HPCC Hub



Effective
Collaboration Tool



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ArcGIS Hub Premium
vs. Basic



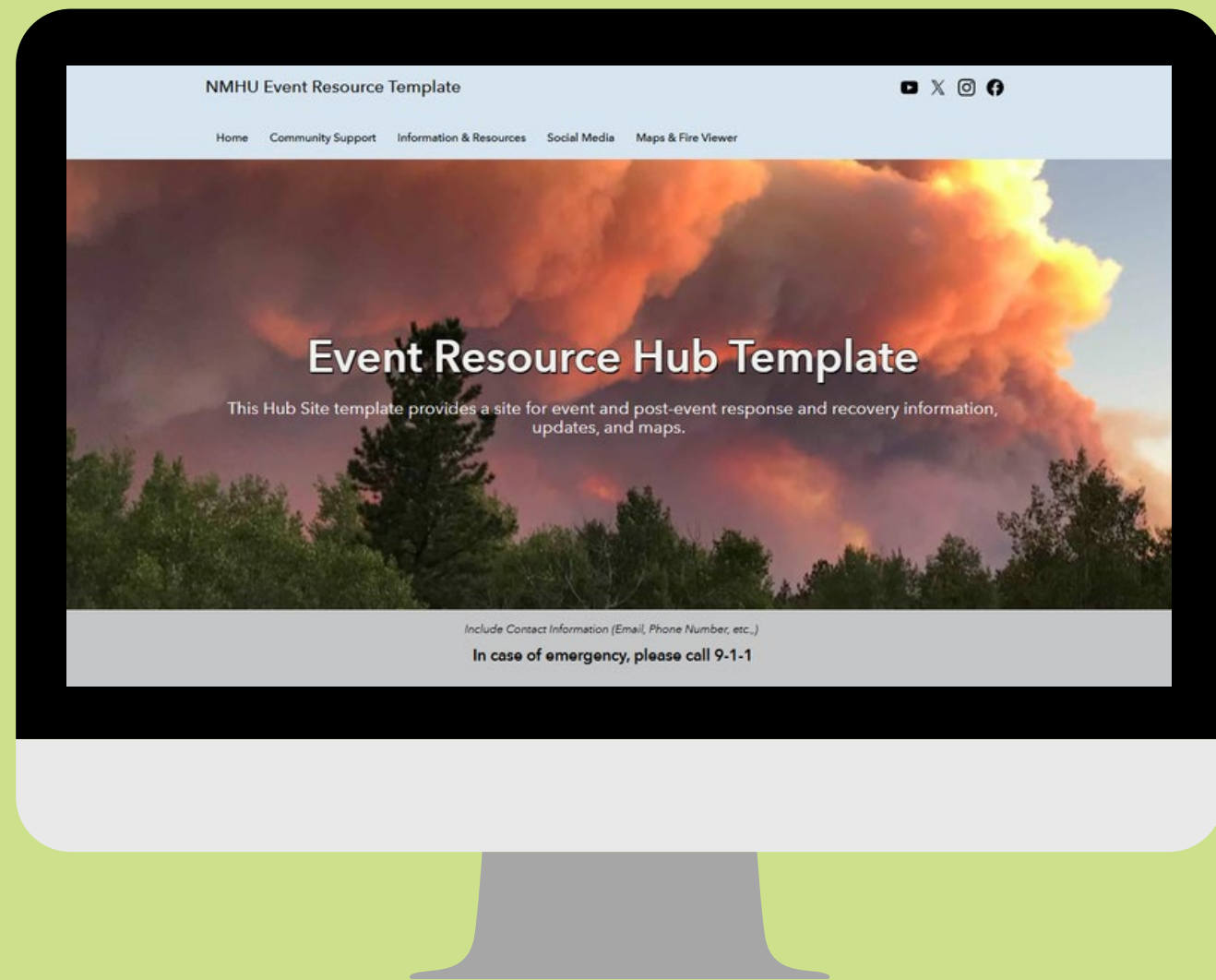
Web design skills were
helpful



Think about changing
needs

PLAN AHEAD

Planning Ahead: NM Fire Hub Templates



Supporting County Officials,
Forest Districts, Emergency
Managers, and Fire Recovery
Groups across New Mexico

- Community support page listing local, State, Tribal, and Federal resources
- Information and resources for before, during, and after a fire
- Emergency alerts, quick resources, videos, and social media links
- NM Fire Viewer as default map
- Calendar to add community events
- Optional restricted page
- Links to set up instructions & tutorials

How to Get a Template

www.nmfirehubs.org



Staci Matlock
Public Information
Specialist



Terence Garcia
Digital Content &
Outreach Specialist



Dana Heusinkveld
GIS Specialist



We will get a few pieces of information to set up a Hub website and create Hub accounts for edit access. Then we will send the link to your new website with an instructional packet.

NM Fire Hubs

Welcome to the home page for NMFWR's Post-Fire Hub Site Template resource

These templates are a free resource that is offered from NMFWR and NMHU for fire and post fire events in New Mexico. Based on the success of the HPCC hub site as a community support tool during and after the fire, NMFWR has built a hub template for similar events that can quickly be stood up to begin sharing critical information affected communities and agency partners.

The template contains relevant information and resources - including maps, data, links, videos, and calendars - for fire related events in New Mexico. It is accompanied by an instructional document that steps through how to set up and edit the hub, as well as suggestions for content as applicable to the event and communities impacted. NMFWR and NMHU will continue to host these hub sites for free. NMFWR will manage accounts to control editing permissions and access to restricted pages.



[Click here to view the Post-Fire Hub Template](#)

Hub Template Example: Grant County

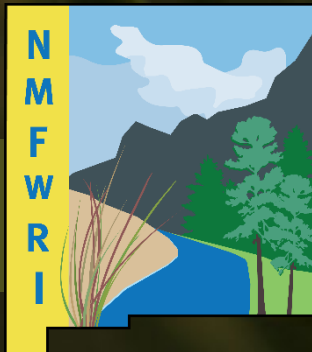




Questions?

Geospatial Tools for Wildfire Mitigation and Preparedness

TWIG, the Treatment and Wildfire Interagency Geodatabase



New Mexico Forest & Watershed Restoration Institute

www.reshapewildfire.org

The Background

Wildfires

have become larger, more widespread, and more frequent than in previous decades.

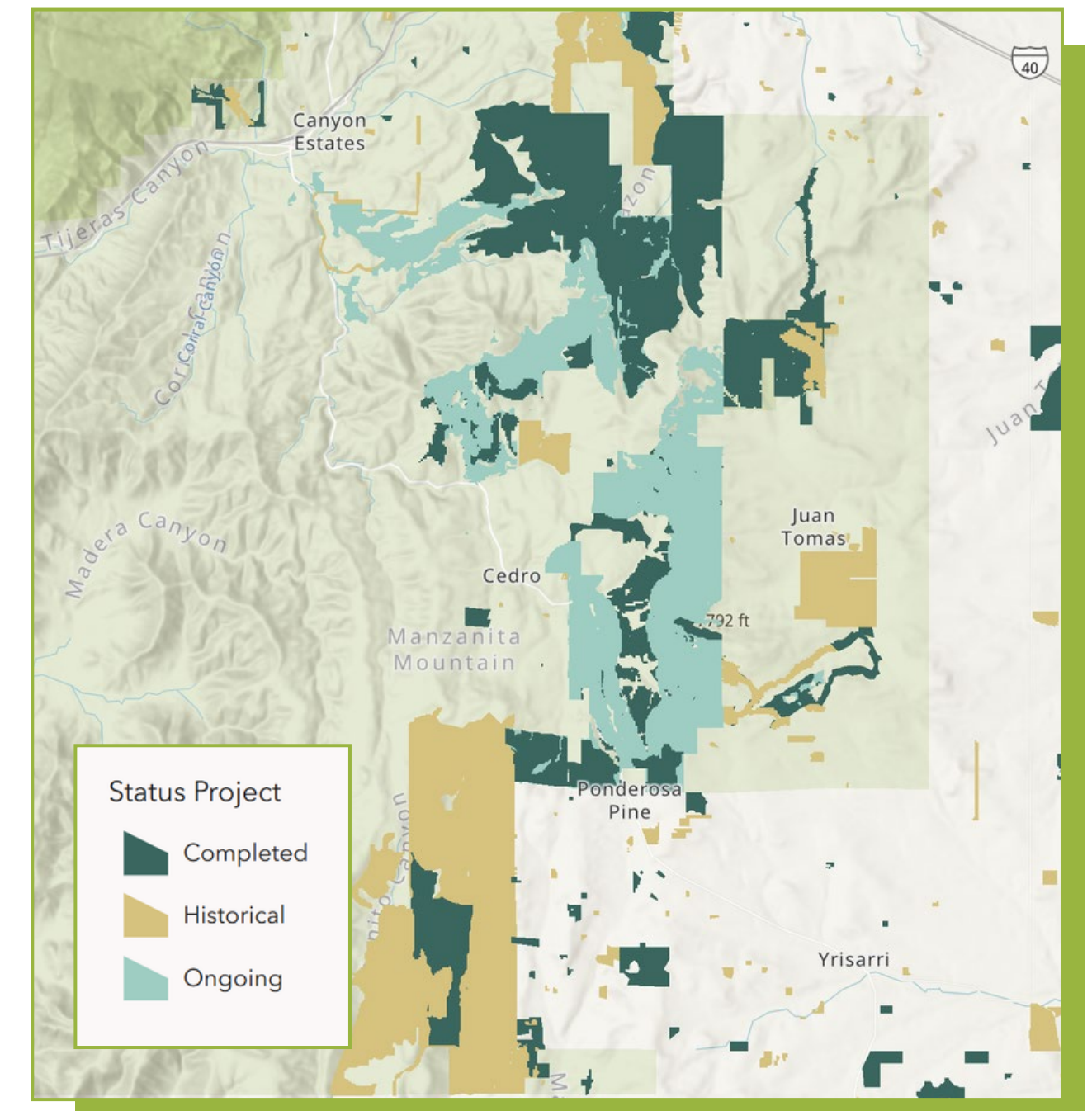
Fuel Treatments

such as thinning and burning have become tools for reducing the severity of wildfires



Empowering effective land management across New Mexico

- Free and accessible geospatial tool for understanding the larger landscape to prioritize funding of treatments
- Developed in 2014 - present by NMFWRI
- Maintained with quarterly updates
- Contains completed, in progress and historical vegetation treatments
- Includes projects for forest, rangeland, riparian and noxious weed management

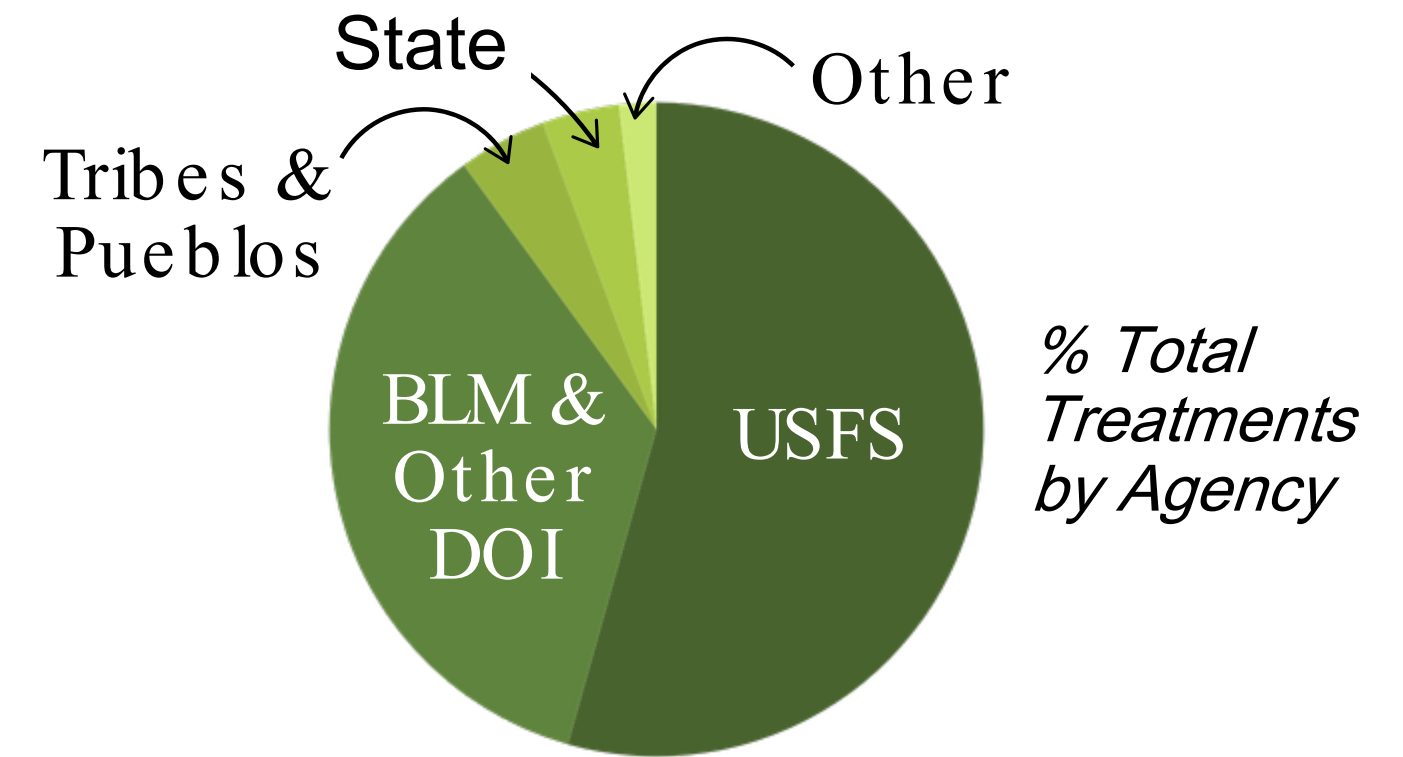


NM Vegetation Treatments Features <http://vegetationtreatments.org>

- Download Data
- Upload Tool to contribute data
- Basic Searching
- Basic Reporting
- Open Access

Data Paper:

<https://doi.org/10.1016/j.dib.2024.110680>

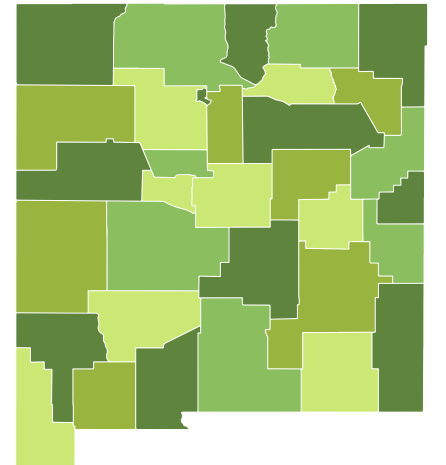


53,000 treatments
10 Million acres
21 Agencies

NM Vegetation Treatments Geodatabase

Helping New Mexican Land Managers

- Agency staff (USFS, NM State Forestry, etc)
- Community Wildfire Protection Plans (CWPP)
- USGS – treatment planning and tracking for Bandelier Nat'l Monument
- Santa Clara Pueblo – post fire restoration planning
- Greater Santa Fe Fireshed Coalition – project planning and tracking



Success of the NM Vegetation Treatment Geodatabase led funding to provide a similar product at national scale

ReSHAPE is a program to compile **national fuel treatment and wildfire data** in a centralized place in order to:

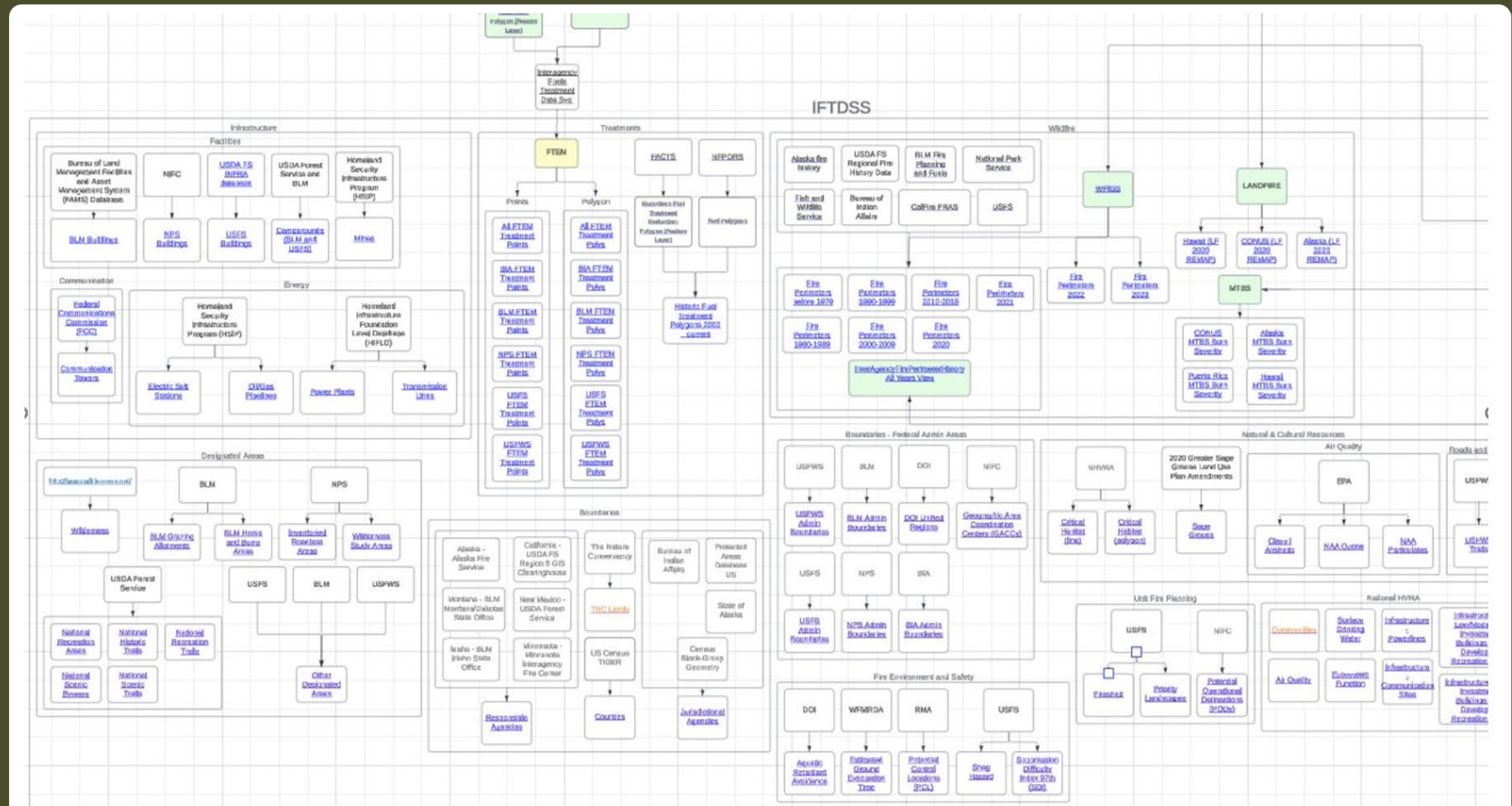
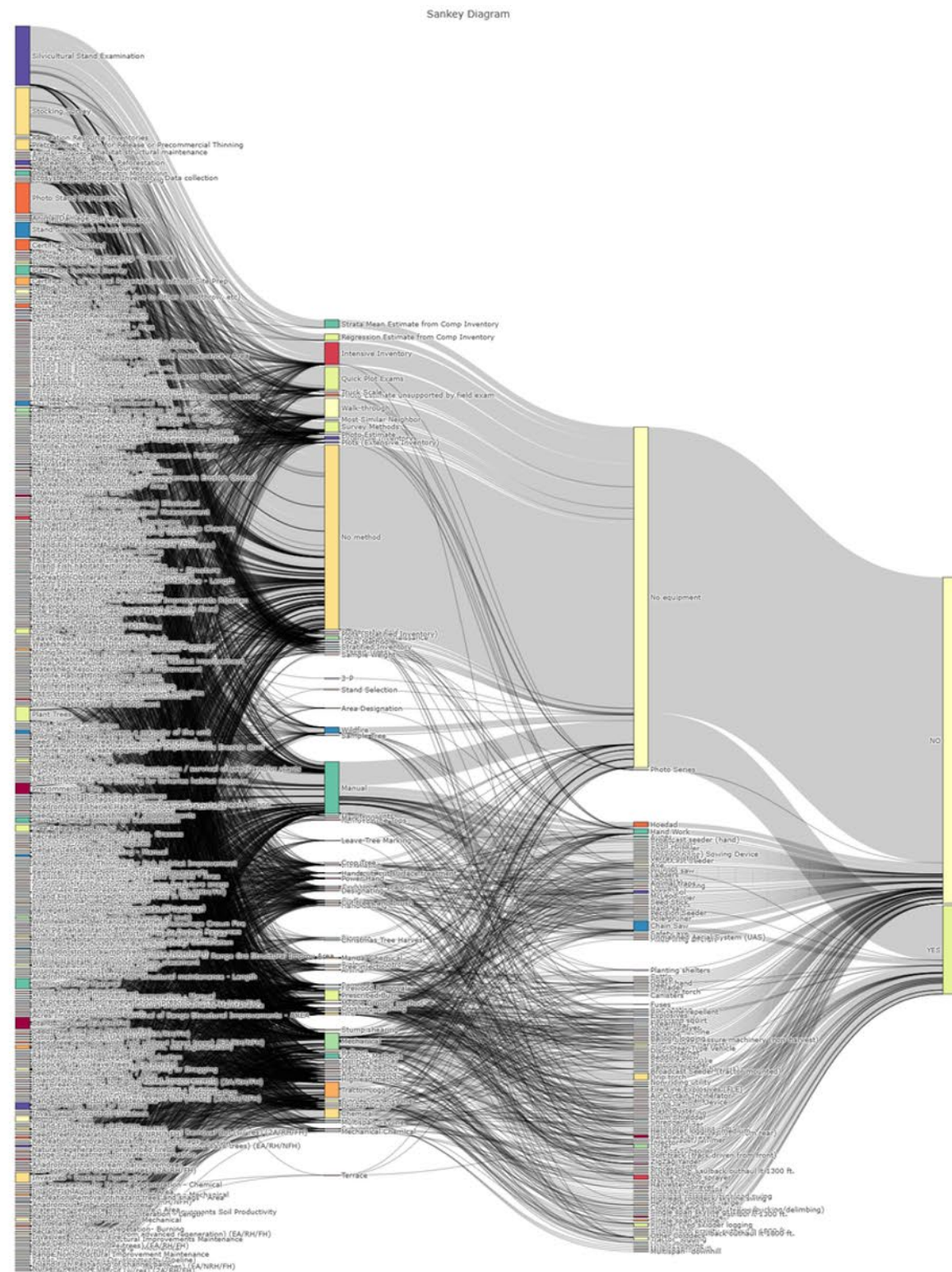
- Better understand the impacts fuel treatments have on wildfire behavior
- Support the planning and implementation of future treatments
- Encourage the collaborative, landscape-scale approach to manage our forests and protect communities



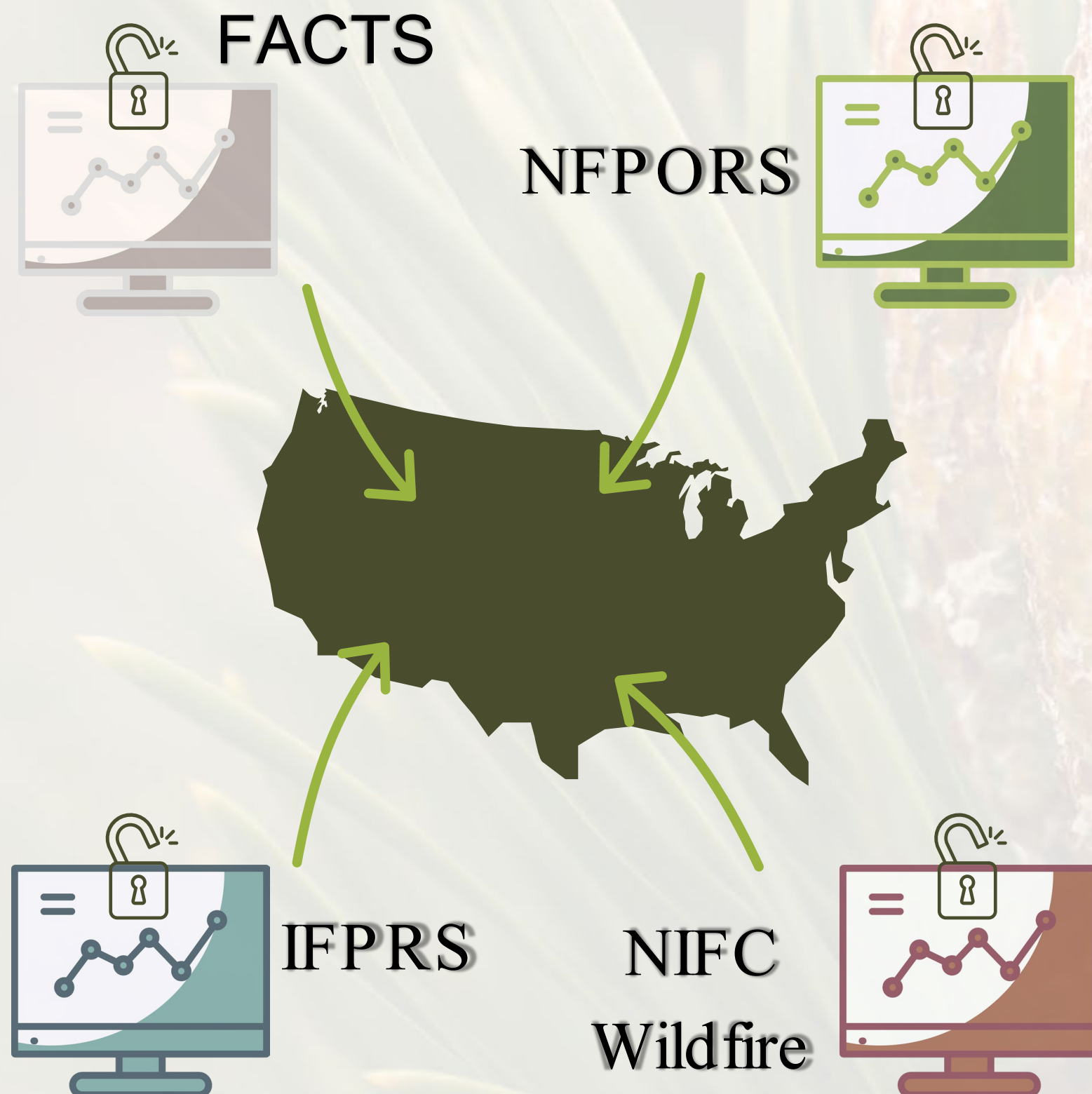
ReSHAPE Teams:

- TWIG
- CONNECT
- Biophysical Effects
- Economics

Data Landscape



The Treatment & Wildfire Interagency Geodatabase (TWIG)



TWIG

All 50 states + 9 territories | open access | no login

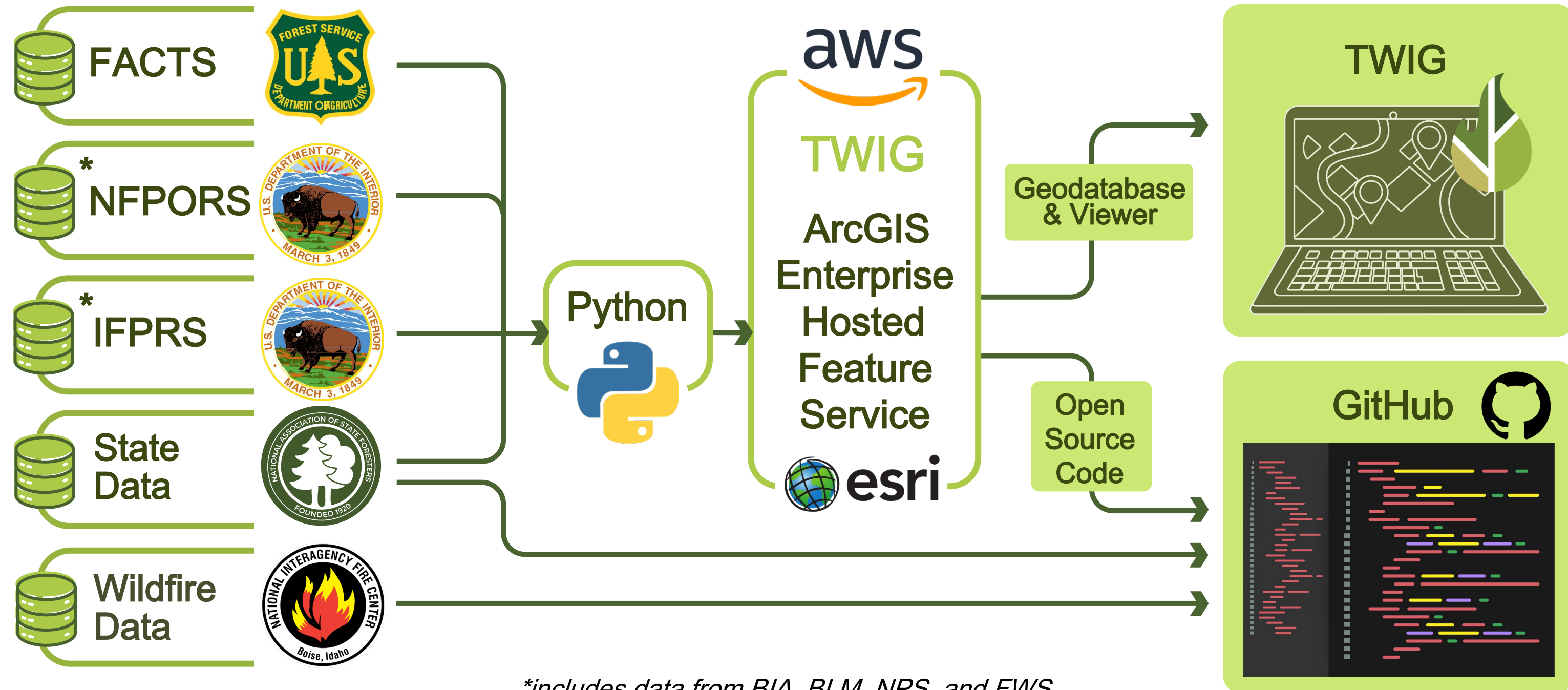
What we do to the Data

- Crosswalk attributes and metadata
- Identify and flag errors
- Intersect treatments with fire perimeters
- Apply consistent categorization
- Make it queryable and downloadable

Additional Layers

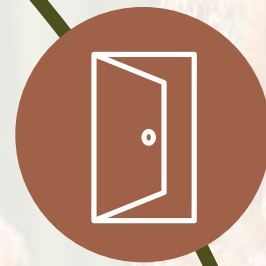
- Wildfire final perimeters
- MTBS burn severity
- BETA: Wildfire progressions
- Upload your own

TWIG System Design



**includes data from BIA, BLM, NPS, and FWS*

Unique Features



Open Access



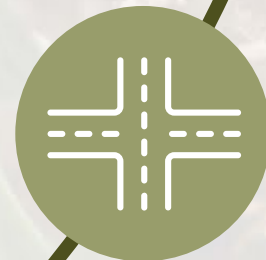
Ready to Use



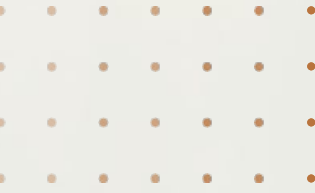
Iterative Development



Cross - Boundary



Built for Intersections





A nationwide initiative by the Southwest Ecological Restoration Institutes (SWERI)

Reshaping Wildfire & Fuel Treatment Data

[TWIG Viewer](#)

Access the Treatment and Wildfire Interagency Geodatabase (TWIG)

TWIG is an open-access tool connecting fuel treatment and wildfire information that historically lived in silos across land management agencies. Designed for everyone, with no login or accounts required, TWIG makes data accessible to foster cross-boundary collaboration among partners.

The TWIG Viewer and Geodatabase

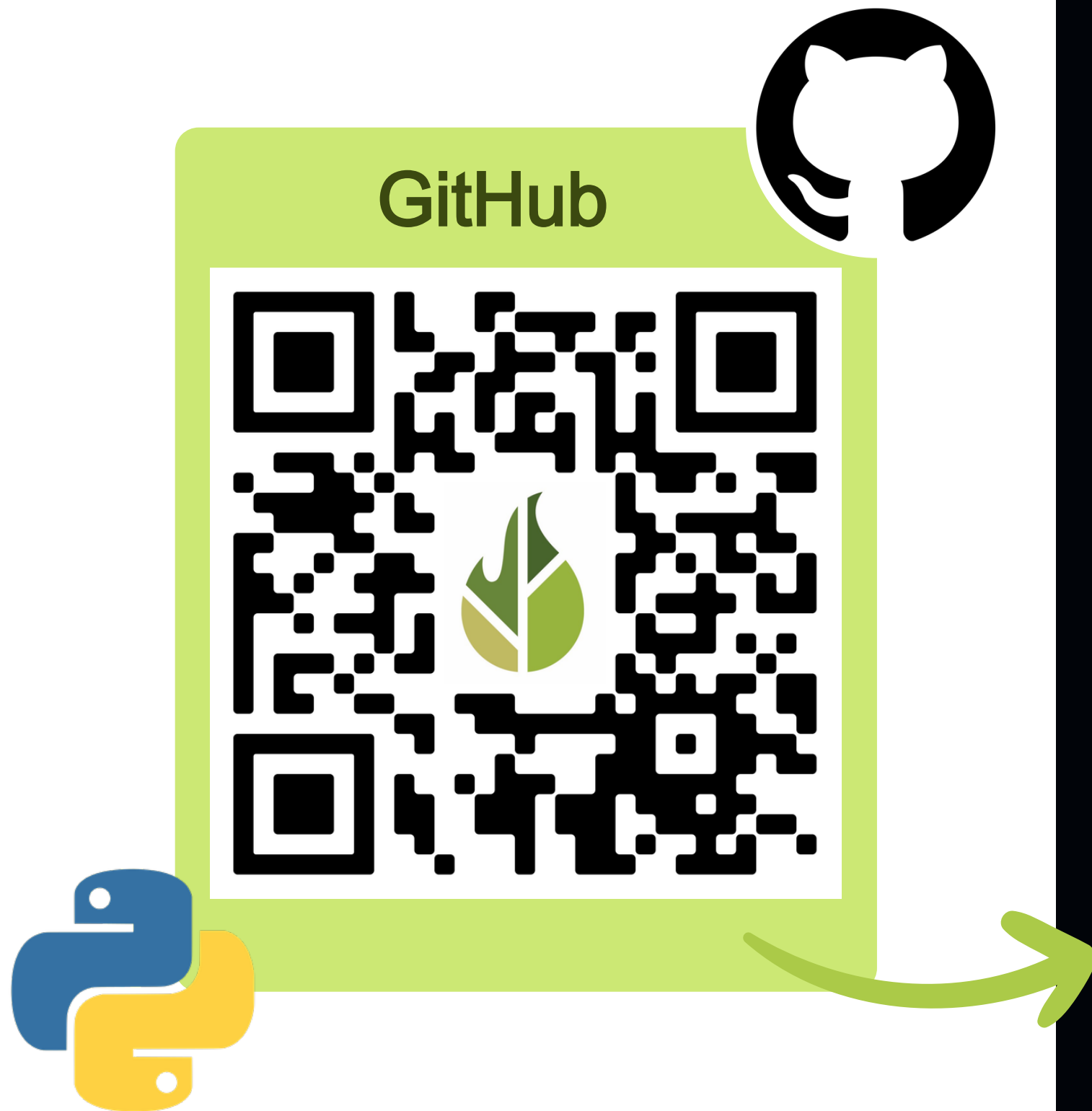


Using and Decoding the Data

- Research informs TWIG development
 - Biophysical effects, data science, economics, and social science
- TWIG data supports and informs management and research



TWIG Open Source



Innovate-Inc / sweri-data-tools

Code Issues Pull requests 4 Actions Projects 1 Security Insights

sweri-data-tools Public Watch 3 Fork 0 Star 1

main 51 Branches 1 Tag Go to file Add file Code

tbock	Merge pull request #40 from Innovate-Inc/docker-aws-updates	212a323 · 20 hours ago	284 Commits
.github/workflows	restrict ecr publish to pushes to main, update docker-comp...	3 weeks ago	
analysis	Update sankey.R with new rules for common attributes	6 months ago	
docker	restrict ecr publish to pushes to main, update docker-comp...	3 weeks ago	
gp_tool	add api_url param to gp_download.atbx, remove hardcoded ...	2 weeks ago	
load_testing	scripting code from main SWERI repo	6 months ago	
shell_scripts	add docker, gp_tool, shell scripts, GH actions, load testing, a...	last month	
sweri_utils	Merge branch 'main' into gp-tool-fixes	2 weeks ago	
.gitignore	add docker, gp_tool, shell scripts, GH actions, load testing, a...	last month	
LICENSE	Create LICENSE	last month	
README.md	Update README.md	last month	
init.py	scripting code from main SWERI repo	6 months ago	
daily_progression.py	scripting code from main SWERI repo	6 months ago	
error_flagging.py	uncommented watchtower in error flagging and updated th...	2 months ago	
intersections.py	update to remove coded value domains	last month	
package-list.txt	scripting code from main SWERI repo	6 months ago	
requirements.testing.txt	merge with CA branch	2 months ago	
treatment_index.py	Merge branch 'main' into treatment_index_remove_cycling	last month	

README GPL-3.0 license

About SWERI Data Tools

SWERI Data Tools contains the code used to compile the Treatment Index - the core database at the heart of TWIG. TWIG is a project of [ReSHAPE](#).

Contents

```
.github/workflows # Utility for unit testing pull requests
analysis          # Visualization of FACTS Activity attributes
```

About

Sweri ReShape TWIG Data Tools

- Readme
- GPL-3.0 license
- Activity
- Custom properties
- 1 star
- 3 watching
- 0 forks

Report repository

Releases 1

Sweri Data Tools v1.0.0 Latest last month

Packages

No packages published

Contributors 7

7 contributors

Deployments 19

production 20 hours ago

+ 18 deployments

Languages

Python 99.9% Other 0.1%

On the Horizon

- Daily fire perimeters
 - Expanded visualizations
 - Downloads
- TWIG mobile version
- TWIG User Forum
- Check our website for the latest updates!

reshapewildfire.org





About ▼

Resources ▼

News & Events

Research

Contact

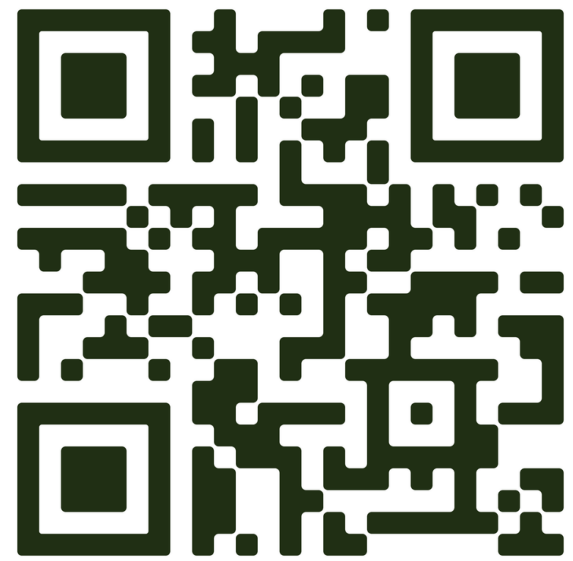
TWIG Viewer



A nationwide initiative by the Southwest Ecological Restoration Institutes (SWERI)

Reshaping Wildfire & Fuel Treatment Data

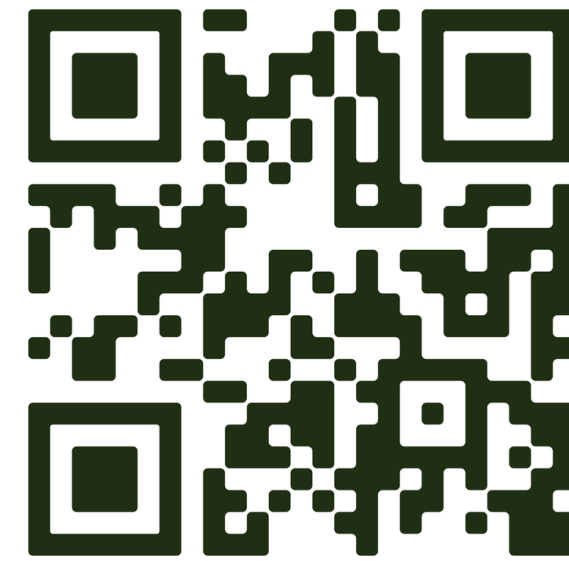
TWIG Viewer



TWIG Viewer



Data Resources



Data Paper



SWERI GitHub

Have feedback? Want to inform TWIG? Let us know!



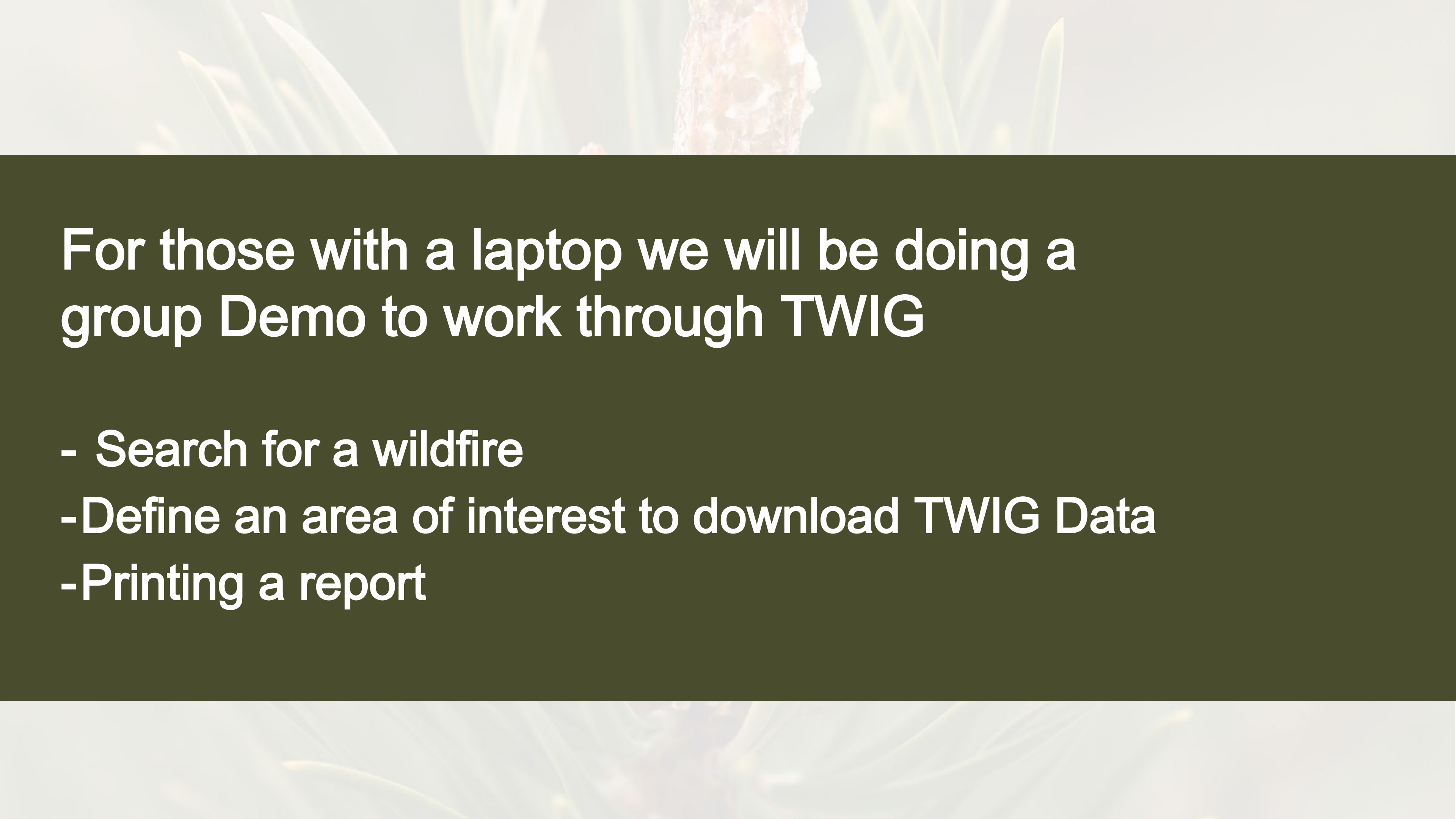
prdappen@nmhu.edu



www.reshapewildfire.org



Questions?

The background of the slide features a close-up photograph of a tree trunk with rough, textured bark, surrounded by long, thin blades of grass. The image is slightly blurred and has a warm, golden-brown color palette. A dark green horizontal band is overlaid across the middle of the image, containing white text.

For those with a laptop we will be doing a group Demo to work through TWIG

- Search for a wildfire**
- Define an area of interest to download TWIG Data**
- Printing a report**