

Alpine County Wildfire Risk Mitigation Plan

Public Workshop #1

February 2020



Presentation Overview

01 Introduction to the Project

02 Fuel Management Activities

03 Risk Assessment

04 Identifying Projects

05 Question/Answer Session



01 Wildfire Risk Mitigation Plan

Introduction of Wildfire Risk Mitigation Plan

Purpose and Need

- Approximately 67% of residential units in Alpine County are located in high or very high wildfire hazard severity zones
- Fire trends across the West show longer fire season with larger fires
- Wildfire Risk Mitigation Plan will build off existing fire hardening efforts in the county and expedite the process of implementing projects to protect communities

Plan Goals & Objectives

- **Goal:** Reduce wildfire risks and protect important resources throughout the County.
- **Objectives:**
 - Identify important resources and assets
 - Identify the high fire hazard areas
 - Define and prioritize projects

Project Overview

- **CAL FIRE awarded a Community Fire Prevention Grant**
- **Five Major Communities**
 - Woodfords
 - Hung-a-lel-ti
 - Markleeville
 - Bear Valley
 - Kirkwood
- **Project Team**
 - County Steering Committee
 - Panorama Environmental
 - Spatial Informatics Group



02 Fuel Management Activities

Fuel Treatment Types and Methods

Mechanical

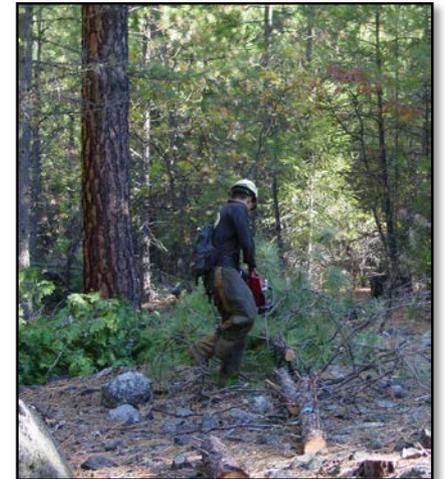
- Used for larger scale vegetation management
- Requires heavy machinery
- Two Main Types:
 - Mechanical thinning/ whole -tree harvest
 - Mastication



Fuel Treatment Types and Methods

Hand Thinning

- Used for thinning stands of small-diameter trees and shrubs
- Requires hand tools
 - Powered: chainsaws and brush cutters
 - Non-powered: loppers and hand saws



Fuel Treatment Types and Methods

Prescribed Burn

- Used for burning of ladder fuels in a predetermined area under the supervision of trained fire personnel



Existing Fuel Management Efforts

Federal Lands

- USFS and BLM
 - Fuels reduction projects on public lands adjacent to communities and recreation sites

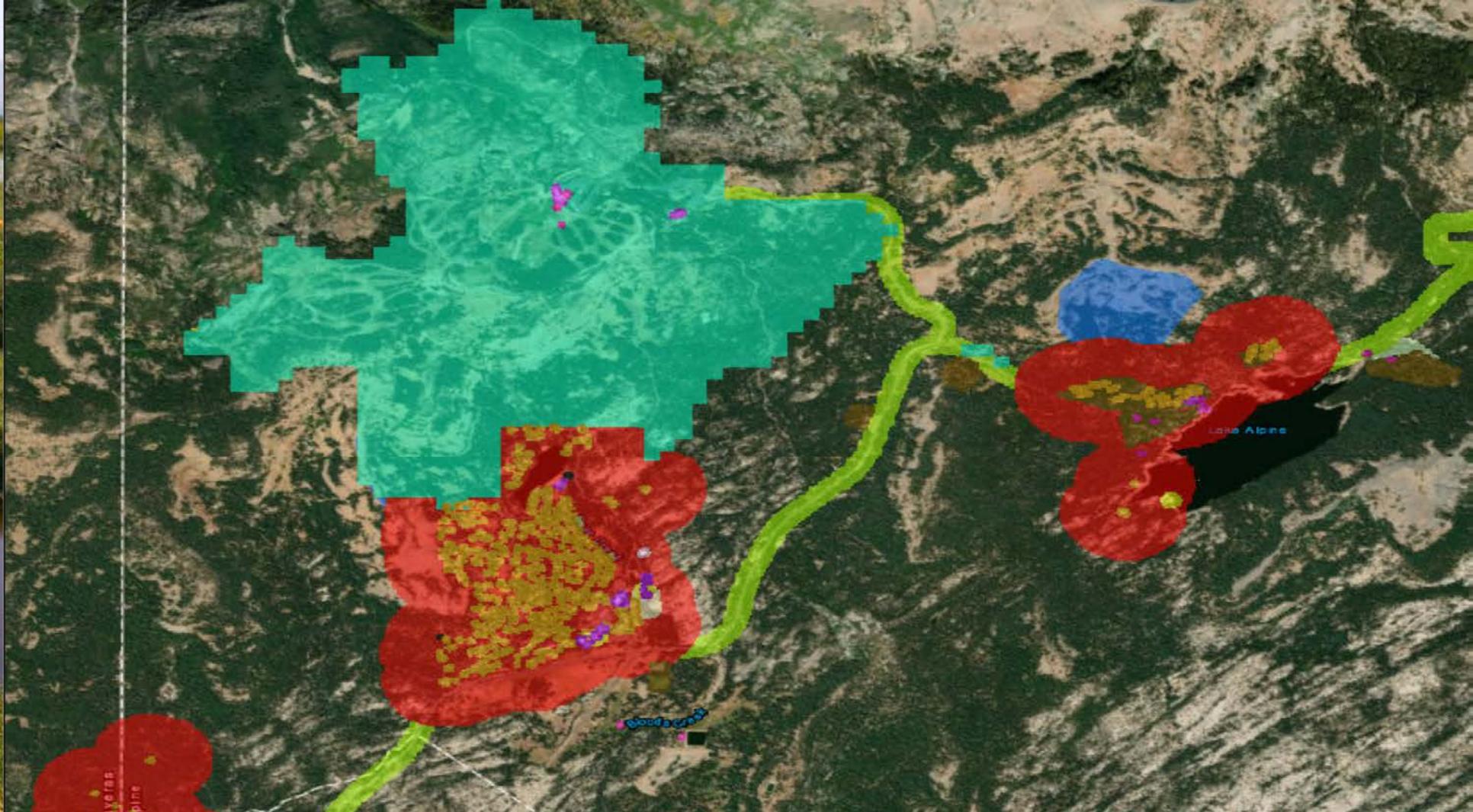
County

- Alpine County Hazardous Fuels and Healthy Watersheds project
- Biomass Pile/Fuels Reduction Program
- Cooperative fuels reduction projects with local community groups

Existing Fuel Management Efforts

Non-Governmental Organizations

- Alpine Fire Safe Council
- Alpine Biomass Collaborative
- Alpine Watershed Group
- Sierra Nevada Conservancy
- Eastern Alpine Volunteer Fire Department
- Calaveras Fire Safe Council
- Bear Valley Residents, Inc.
- Amador Calaveras Consensus Group
- Calaveras Healthy Impact Product Solutions



03 Risk Assessment

**Alpine County Fire Hazards Mitigation Plan – Risk
Assessment**

SYLLABUS

- Conway Credentials
- Integrated Hazard Modeling
- Wildfire Risk Assessment
- Risk and Opportunity Outputs
- Appropriate Application



Scott Conway Qualifications

- Extensive Wildland Fire Experience
 - Red Carded for 14 years
 - Dozer Boss
 - Type 1 Fire Fighter
 - Public Information Officer
 - GIS Specialist
- Fuels Reduction Project Expert
 - 16 years of assessment, planning, implementation, and monitoring experience
 - Mechanical removal
 - Mastication
 - Manual lop scatter and/or pile
 - Prescribed fire
- Spatial Ecologist
 - Remote Sensing and spatial data specialist
 - Trained in forest and fire ecology
 - Proficient fire and vegetation growth modeler

Scott Conway

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Project Experience

Mr. Conway is a proficient forest and fire ecologist with extensive project assessment, analysis, planning, implementation, and monitoring experience in the western United States. He has also pioneered project level application of remote sensing datasets, like LiDAR.

Education

Colorado State University – 1998
BS, Natural Resource Management with a focus in Remote Sensing and GIS

Areas of Expertise

- Applied Forest & Fire Ecology
- Remote Sensing
- Modeling & GIS
- Forest Mensuration
- Contract Administration
- Project Planning & Prioritization

Locations of Experience

- Western US
- Baja, MX
- Pacific Islands

Experience

- 2019-Present **Forest Ecologist** – Spatial Informatics Group, LLC, Pleasanton, CA
- 2019-Present **Adjunct Forest Ecology Professor** – Sierra Nevada College, Incline Village, NV
- 2019 **District Ranger** – Tahoe National Forest, Truckee, CA
- 2016-2018 **Spatial Ecologist** – USFS Pacific Southwest Region, CA and Pacific Islands
- 2008-2016 **Vegetation Management Officer** – Tahoe National Forest, Truckee, CA
- 2004-2008 **Forester and Wildland Fire Fighter** – Tahoe National Forest, Sierraville, CA
- 2000-2004 **Harvest Inspector** – Tahoe National Forest, Sierraville, CA
- 1998-2000 **Lead Forestry Technician** – Arapaho-Roosevelt National Forest, Fort Collins, CO
- 1996-1998 **Timber Cruiser** – Private Contractor, CO, WY, SD, ID
- 1995 **Nature and Ecology Director** – Worth Ranch, Palo Pinto, TX
- 1992 **Trail Crew Leader** – Philmont Scout Ranch, Cimarron, NM

Publications

"LITIDA: a cost-effective non-parametric imputation approach to estimate LiDAR-detected tree diameters over a large heterogeneous area." 2019 *Forestry: An International Journal of Forest Research*, Volume 92, Issue 2.

"Cover of tall trees best predicts California spotted owl habitat." 2017. *Forest Ecology and Management*. 405, 166-178

"Managing Sierra Nevada Forests." 2012. *Pacific Southwest Research Station General Technical Report* 237.

Integrated Hazard Modeling

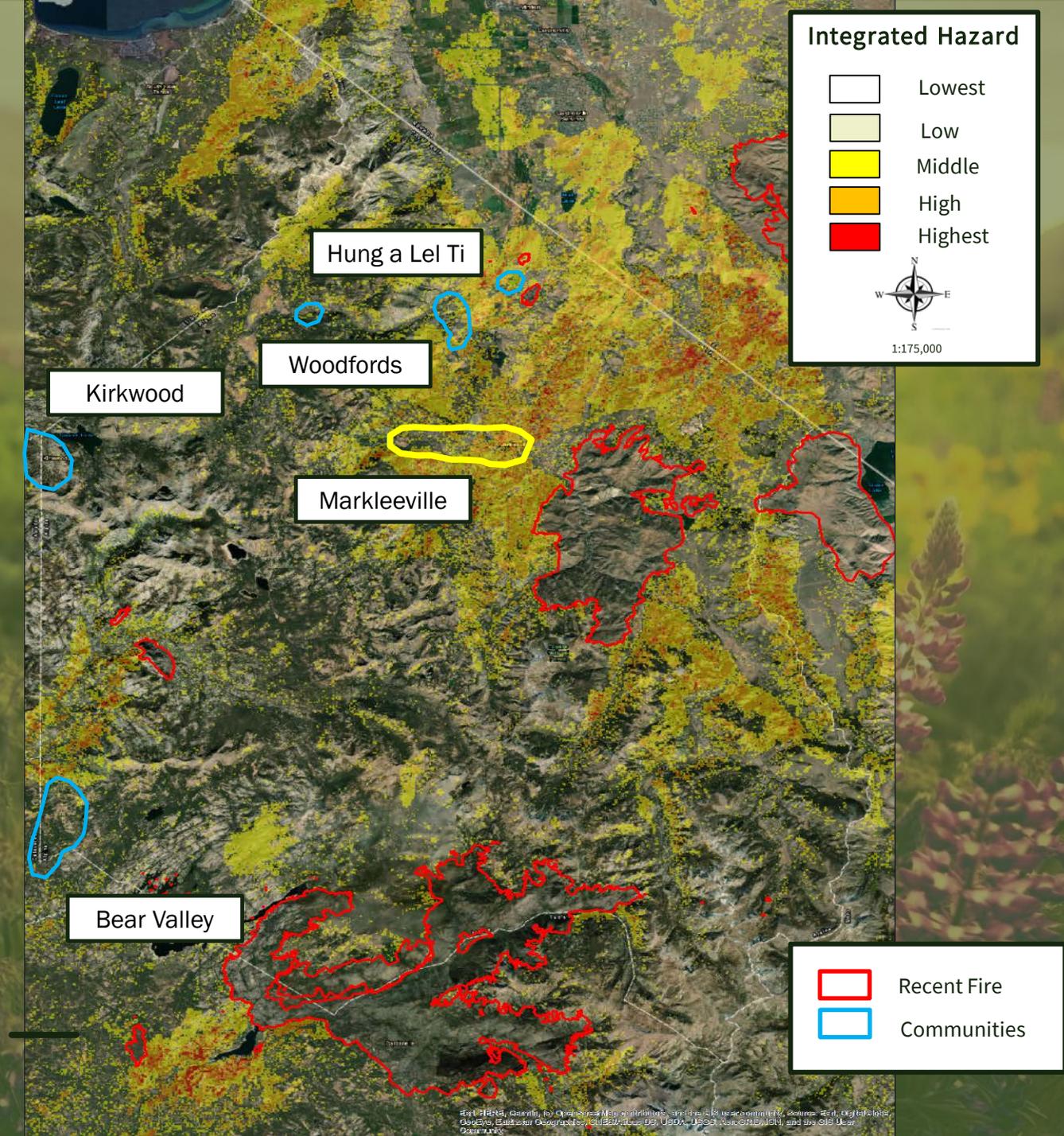
- Integrated Hazard
 - Creates a single characteristic

		Burn Probability Classes				
Cond. Flame Length Classes		Lowest 0-20% of max	Lower 20-40% of max	Middle 40-60% of max	Higher 60-80% of max	Highest 80-100% of max
	> 12 ft					
	> 8 - 12 ft					
	> 6 - 8 ft					
	> 4 - 6 ft					
	> 2 - 4 ft					
	> 0 - 2 ft					

Lowest Hazard	Lower Hazard	Middle Hazard	Higher Hazard	Highest Hazard
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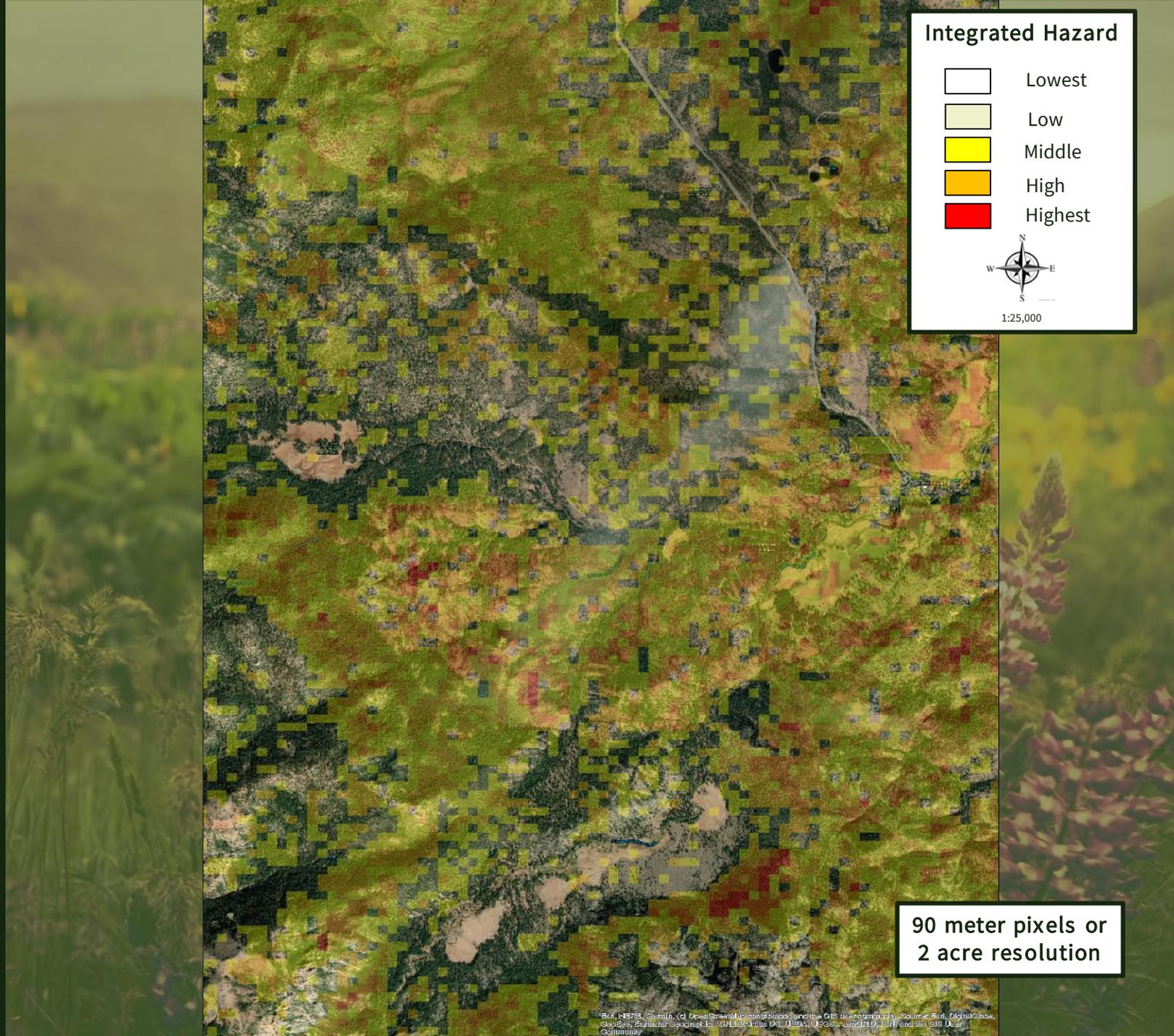
Integrated Hazard Modeling

- Integrated Hazard
 - Creates a single characteristic
 - Easily mapped



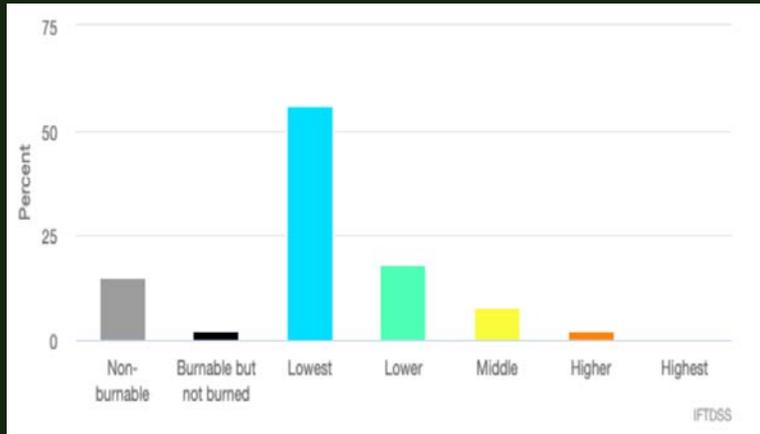
Integrated Hazard Modeling

- Integrated Hazard
 - Creates a single characteristic
 - Easily mapped
 - Scalable

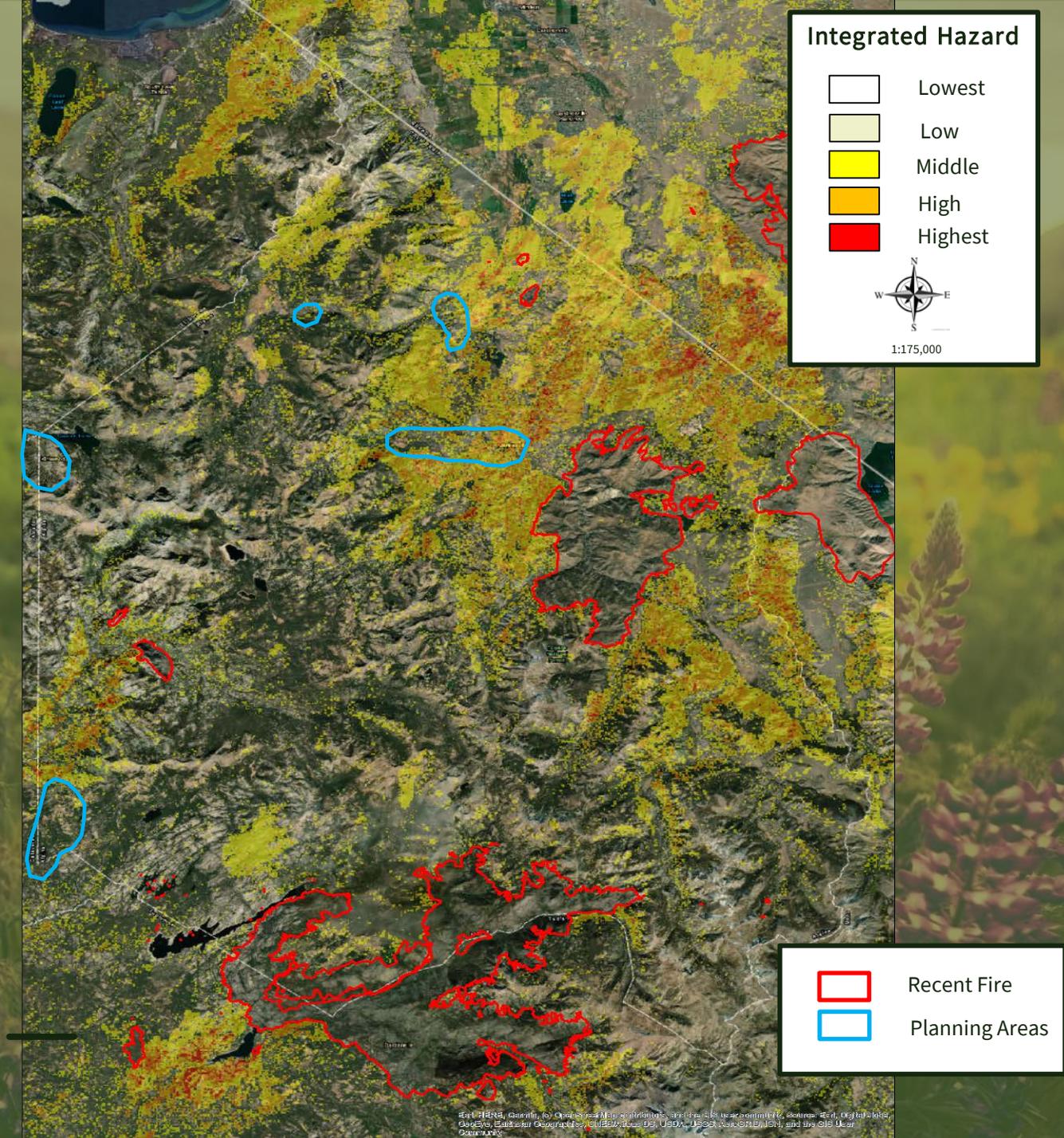


Integrated Hazard Modeling

- Integrated Hazard
 - Creates a single characteristic
 - Easily mapped
 - Scalable
 - Straight forward Information



- Middle, Higher, and Highest ~ 50,000 acres
- 40 – 60 million \$



Wildfire Risk Assessment

A Wildfire Risk Assessment Framework for Land and Resource Management (Scott et al. 2013)

- Likelihood = burn probability
- Intensity = flame length (Integrated Hazard)
- Susceptibility = High Valued Resource and Asset Analysis



High Valued Resources and Assets (HVRA)

In coordination with the steering committee

- Account and map
- Relative Importance survey
 - 8 Responses
 - Water district
 - USFS
 - Alpine County staff
 - CALFIRE
 - Fire Safe Council
 - Resident

HVRA	Uniqueness/Rarity/Endemism	Replaceability	Safety/Critical Infrastructure	Total Score
Residential Structures	2.13	3.63	3.25	9.01
Education Facilities (Daycare/Schools/Colleges)	2.63	4.38	3.5	10.51
Recreational Facilities - campgrounds, rv parks (non ski area)	3.25	3.63	2.38	9.26
Business and Public Structures	2.63	4	4	10.63
Places of Worship	2.13	3.67	2.71	8.51
Non Habitable/Unknown Structures (barns/sheds)	1.71	2.57	1.71	5.99
Health and Elder Care Facilities	2.17	4	4.14	10.31
High Hazard Buildings	3	3.83	3.33	10.16
Airport/Helibase	2.57	3	4	9.57
communication infrastructure (cell towers, microwave towers, etc)	3.13	3.88	4.5	11.51
Potable water storage (e.g., tanks); snow making infrastructure	3.13	4.13	4.5	11.76
Major Evacuation corridors (ingress and egress routes)	3.13	4	4.25	11.38
Minor Evacuation corridors (ingress and egress routes)	2.88	3.13	3.88	9.89
Community Evacuation/Refuge/Safe Zones/Areas	3.25	2.86	4.13	10.24
Cemeteries or significant resource buildings, areas	3.25	4.5	n/a	7.75
Watersheds of special significance	3.25	4	n/a	7.25
Wildland Urban Interface Defense	5.0	5.0	n/a	10.00
Ski Area Terrain	3.14	4	n/a	7.14

High Valued Resources and Assets (HVRA)

In coordination with the steering committee

- Account and map
- Relative Importance survey
- Response Function survey
 - 6 Responses
 - USFS
 - Alpine County staff
 - CALFIRE
 - Resident

HVRA	Flame Length 0-2ft	Flame Length 2-4ft	Flame Length 4-6ft	Flame Length 6-8ft	Flame Length 8-12ft	Flame Length 12+ft
Residential Structures	neg 1.17	neg 2.17	neg 2.67	neg 3.00	neg 3.00	neg 3.00
Education Facilities (Daycare/Schools/Colleges)	neg 1.17	neg 2.33	neg 2.67	neg 3.00	neg 3.00	neg 3.00
Recreational Facilities - campgrounds, rv parks (non ski area)	neg 0.50	neg 1.50	neg 2.33	neg 2.83	neg 2.83	neg 2.83
Business and Public Structures	neg 1.17	neg 2.17	neg 2.50	neg 3.00	neg 3.00	neg 3.00
Places of Worship	neg 1.17	neg 2.17	neg 2.67	neg 3.00	neg 3.00	neg 3.00
Non Habitable/Unknown Structures (barns/sheds)	neg 0.67	neg 1.83	neg 2.50	neg 2.83	neg 2.83	neg 3.00
Health and Elder Care Facilities	neg 1.33	neg 2.67	neg 2.67	neg 3.00	neg 3.00	neg 3.00
High Hazard Buildings	neg 1.80	neg 2.40	neg 2.80	neg 3.00	neg 3.00	neg 3.00
Airport/Helibase	0.00	neg 0.67	neg 2.00	neg 2.83	neg 3.00	neg 3.00
communication infrastructure (cell towers, microwave towers, etc)	neg 0.83	neg 1.83	neg 2.50	neg 2.83	neg 3.00	neg 3.00
Potable water storage (e.g., tanks); snow making infrastructure	neg 0.17	neg 1.33	neg 2.33	neg 2.83	neg 3.00	neg 3.00
Major Evacuation corridors (ingress and egress routes)	pos 0.40	0.00	neg 1.40	neg 1.80	neg 2.40	neg 2.80
Minor Evacuation corridors (ingress and egress routes)	pos 0.50	neg 0.17	neg 1.33	neg 1.83	neg 2.50	neg 2.83
Community Evacuation/Refuge/Safe Zones/Areas	neg 0.17	neg 0.83	neg 1.83	neg 2.17	neg 2.50	neg 2.50
Cemeteries or significant resource buildings, areas	neg 0.50	neg 1.33	neg 2.17	neg 2.67	neg 3.00	neg 3.00
Watersheds of special significance	pos 2.50	pos 1.67	pos 0.67	neg 1.17	neg 2.17	neg 2.83
Wildland Urban Interface Defense	pos 2.00	pos 1.33	neg 0.17	neg 1.00	neg 2.17	neg 2.67
Ski Area Terrain	pos 1.50	pos 0.83	neg 0.50	neg 1.50	neg 2.33	neg 2.83

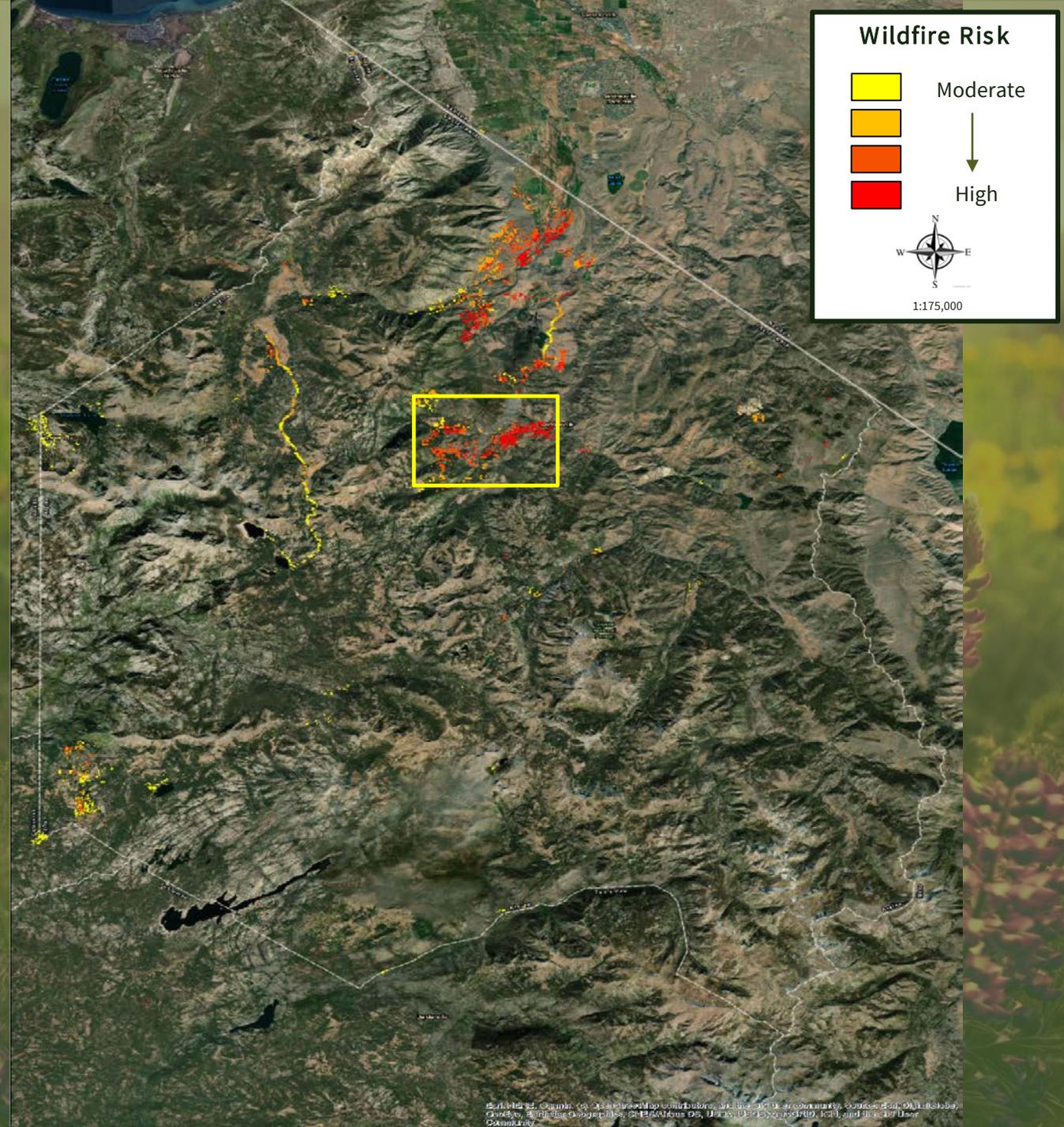
Wildfire Risk

Calculate expected net value change (eNVC) at each pixel = Fire Risk

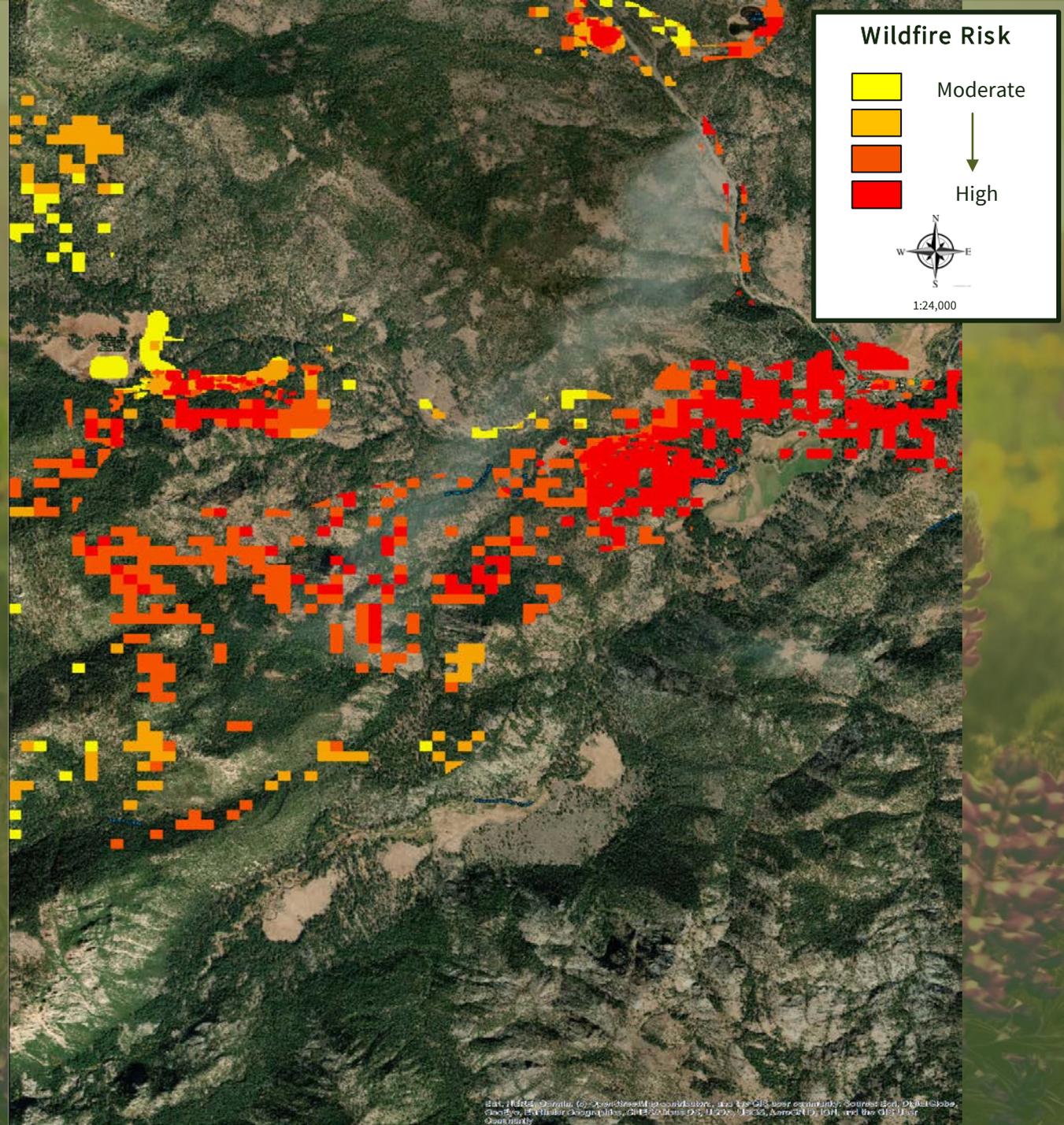
$$cNVC_j = \sum_i^n FLP_i * RF_{ij} * WF_j$$

$$cNVC = \sum_j^m cNVC_j$$

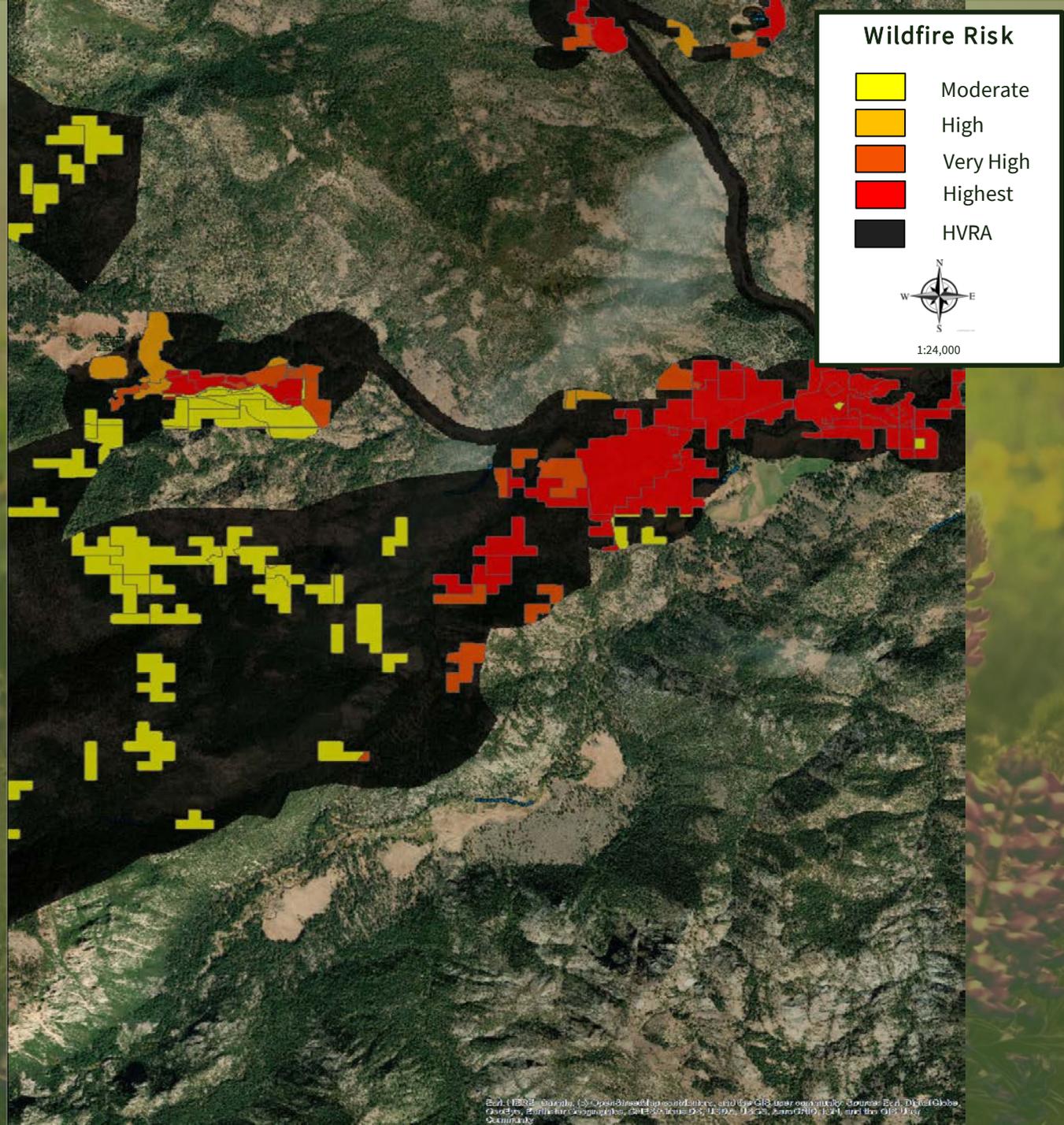
$$eNVC = cNVC * BP$$



Wildfire Risk



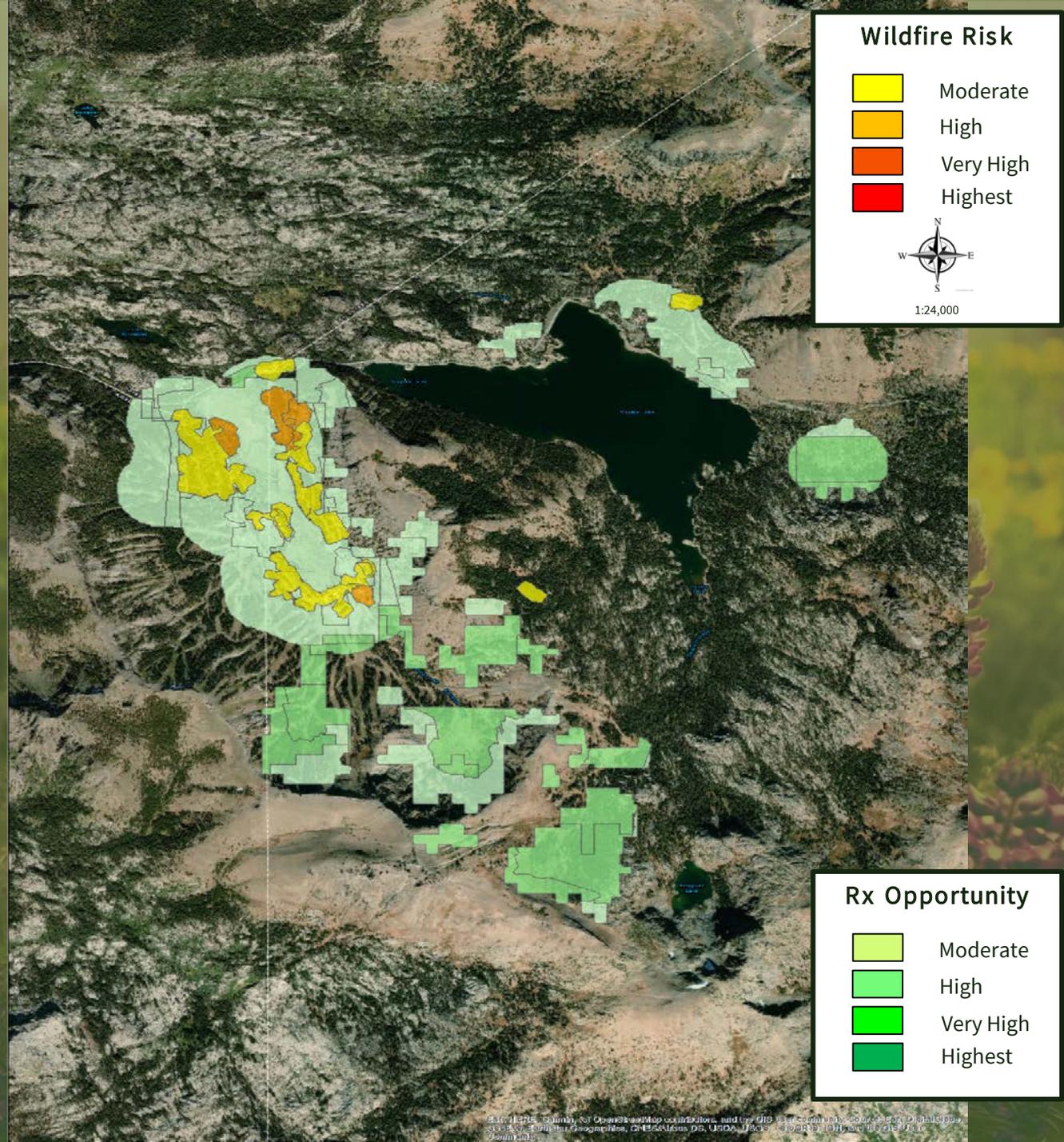
Wildfire Risk – Unit Builder



Wildfire Risk – *Unit Builder*

Rx Fire Opportunity Areas

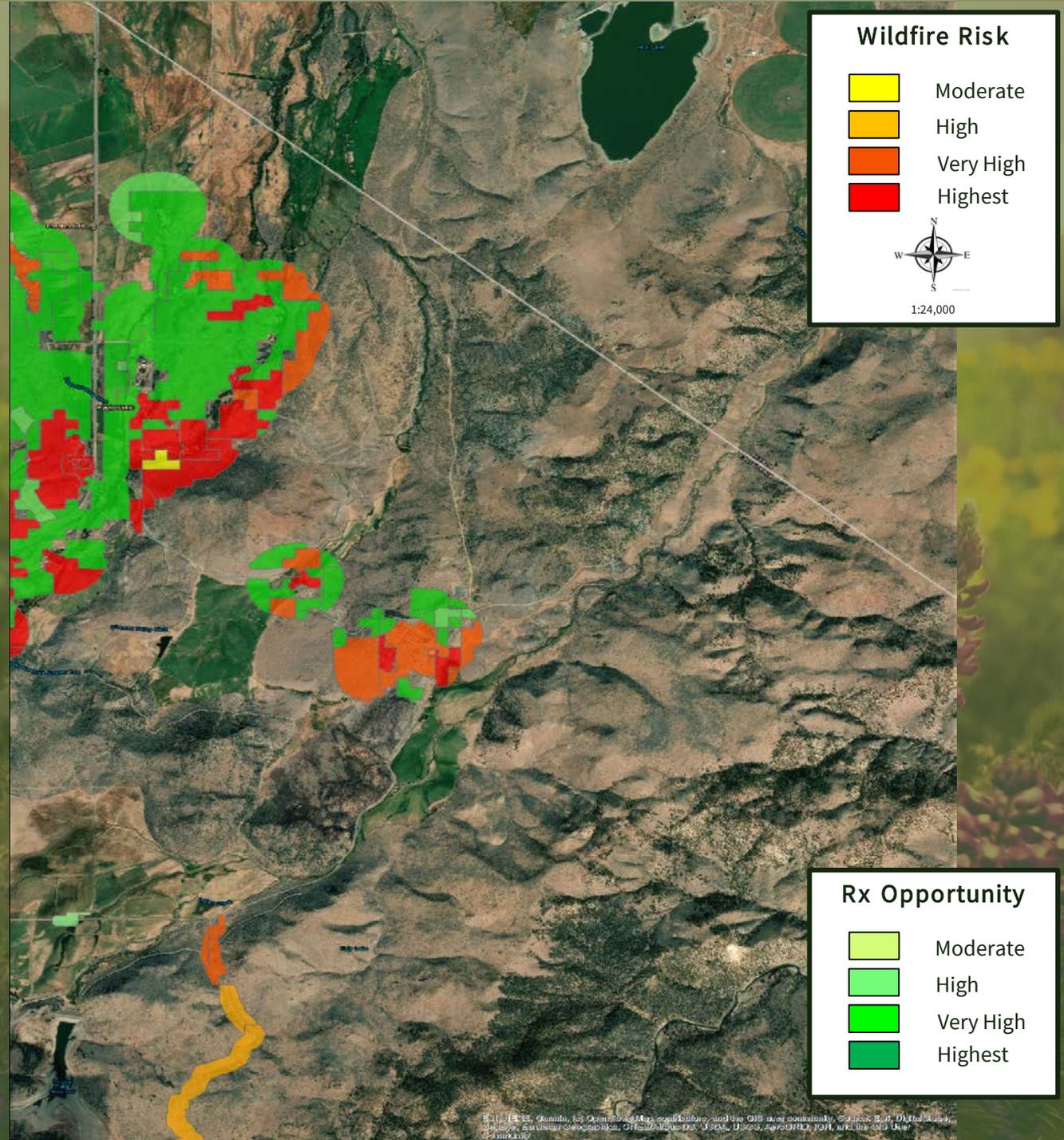
- Higher opportunity = most value gained from Rx burning
- Bear Valley
- Kirkwood



Wildfire Risk – Unit Builder

Rx Fire Opportunity Areas

- Higher opportunity = most value gained from Rx burning
- Bear Valley
- Kirkwood
- Woodfords
- Hung a Lel Ti



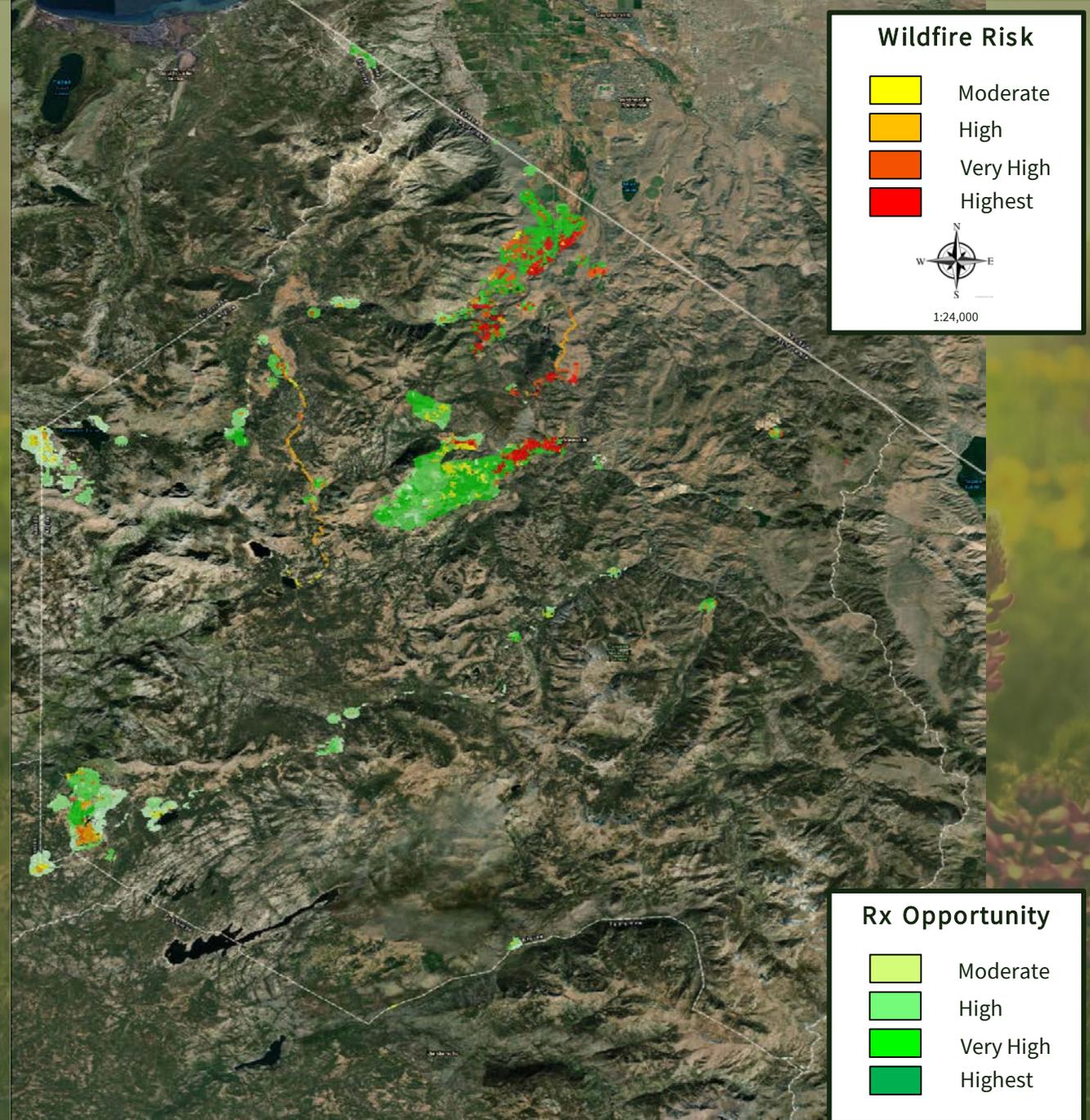
Wildfire Risk & Rx Opportunity

What it is:

- Helps triage limited resources
- Can account for anything with value – real or intrinsic
- Comprehensive planning tool
 - Project Identification
 - Attractive Proposals

What it isn't:

- Inventory data
- Only input for decisions
- Contract grade



Alpine County Fire Hazards Mitigation Plan – Risk Assessment



04 Identifying Projects

Identify Projects

- Grant allows for up to three projects
- County to identify priority projects
 - Project size
 - Land ownership
 - Fuel treatment methods
 - Cost
- CEQA/NEPA analysis will be conducted for the projects

Schedule

Step	Timing
Identify Priority Projects	March/April 2020
Draft WRMP	March/April 2020
Second Public Workshop	April 2020
Finalize WRMP	Spring 2020
Conduct Environmental Studies and Review	Spring – Fall 2020
Draft Initial Study/Mitigated Negative Declaration	Winter 2021
Third Public Workshop	Winter 2021
Final Initial Study/Mitigated Negative Declaration	Spring 2021

Project website: <http://www.alpinecountyca.gov/index.aspx?NID=504>

Direct email questions to Zach Wood, Alpine County Planner: zwood@alpinecountyca.gov



05 Question & Answer / Workshop

Questions?



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