

# **Cultural Resources Compliance & Community Assistance Projects**

**Nelson Siefkin, National Park Service  
Dr. Gerrit Fenenga, Cal Fire**

***Strategic Environmental Compliance  
for FSC and CWPP Projects  
Workshop***

**Sacramento, CA**

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# Objectives

- The importance of cultural resources
- Effects of fire and fire management actions on cultural resources
- The cultural resource compliance process
- Recommendations for Fire Safe Councils and agencies

# Most Sites Are Not Plainly Visible



Before Cleaning off Rock/After Duff Swept Off

# Cultural Resource Values

- Symbolic
- Aesthetic
- Economic
- Scientific Research
- Educational
- Public Interest
- Public Relations

# Public Expectations

- **Identify and Protect Sites**
- **Balance Conflict Between Disclosure and Confidentiality**
- **Consult with Native Americans**
- **Inform an Interested Public Regarding Program Activities**

# National Historic Preservation Act (NHPA)

- Enacted in 1966 as part of broader national environmental movement ...
  - America's spirit and direction are reflected in its historical and cultural resources
  - Historical and cultural resources are irreplaceable and worth preserving
  - Historical and cultural resources are disappearing
  - Federal agencies lack adequate historic preservation programs

# National Historic Preservation Act

- Authorized creation of a National Register of Historic Places (NRHP) “composed of districts, sites, buildings, structures and objects significant in American history, architecture, archeology, engineering and culture.”

AND

- Established criteria for resources to be included on the NRHP

# Historic Properties

- Cultural resources listed or eligible for listing on the NRHP are called historic properties



# Historic Properties

- Achieved significance >50 years ago
- Must meet one or more of these criteria...
  - A. Associated with events that have made significant contributions to broad patterns of our history
  - B. Associated with lives of persons significant in our past
  - C. Embody distinctive characteristics of construction type, works of a master, high artistic value
  - D. Have yielded, or be likely to yield, information important in prehistory or history

# Historic Properties

- Must possess integrity of
  - Location
  - Design
  - Setting
  - Materials
  - Workmanship
  - Feeling
  - Association

# Forest Practice Rules for the Protection of Archaeological Sites

Significant archaeological or historical site means a specific location which may contain artifacts, or objects and where evidence clearly demonstrates a high probability that the site meets one or more of the following criteria:

- (a) Contains information needed to answer important scientific research questions.
- (b) Has a special and particular quality such as the oldest of its type or the best available example of its type.
- (c) Is directly associated with a scientifically recognized important prehistoric or historic event or person.
- (d) Involves important research questions that historical research has shown can be answered only with archaeological methods.
- (e) Has significant cultural or religious importance to Native Americans as defined in 14 CCR # 895.1.

# Section 106 of NHPA

- 36 CFR 800—Protection of Historic Properties
  - Requires Federal agencies to take into account the effects of their undertakings on historic properties
  - The Section 106 process must be completed before Federal funds can be expended on undertakings

# Undertakings

- Project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out
  - by or on behalf of a Federal agency;
  - with Federal financial assistance;
  - with requirement of a Federal permit, license, or approval

# Who is Responsible?

- Unless otherwise delegated, the funding Federal agency assumes the legal and financial responsibility for Section 106 compliance
  - Done through the Agency Official, e.g., Park Section 106 Coordinator in National Park Service
- Speaks to the critical importance of early and frequent collaboration

# Who does the work?

- Agency personnel
- Contracted personnel
  - Agency official or designee can assist with selection of qualified contractors, provide subject-matter expertise and technical review
  - Benefits of project adjacency to Federal lands

# The Section 106 Process

- Initiation
- Identification and Evaluation
- Assessment of Effects

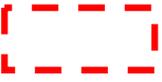
# Initiation of Section 106

- Establishing an undertaking
  1. Grant funded with Federal assistance?
    - Yes, go to #2
  2. Does the activity have the potential to cause effects on historic properties?
    - No, Section 106 obligations are completed
    - Yes, continue with Section 106 process



# Identification of Cultural Resources

- Document the Area of Potential Effects (APE)
  - Geographic area(s) within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties
  - May be different for different kinds of effects caused by the undertaking

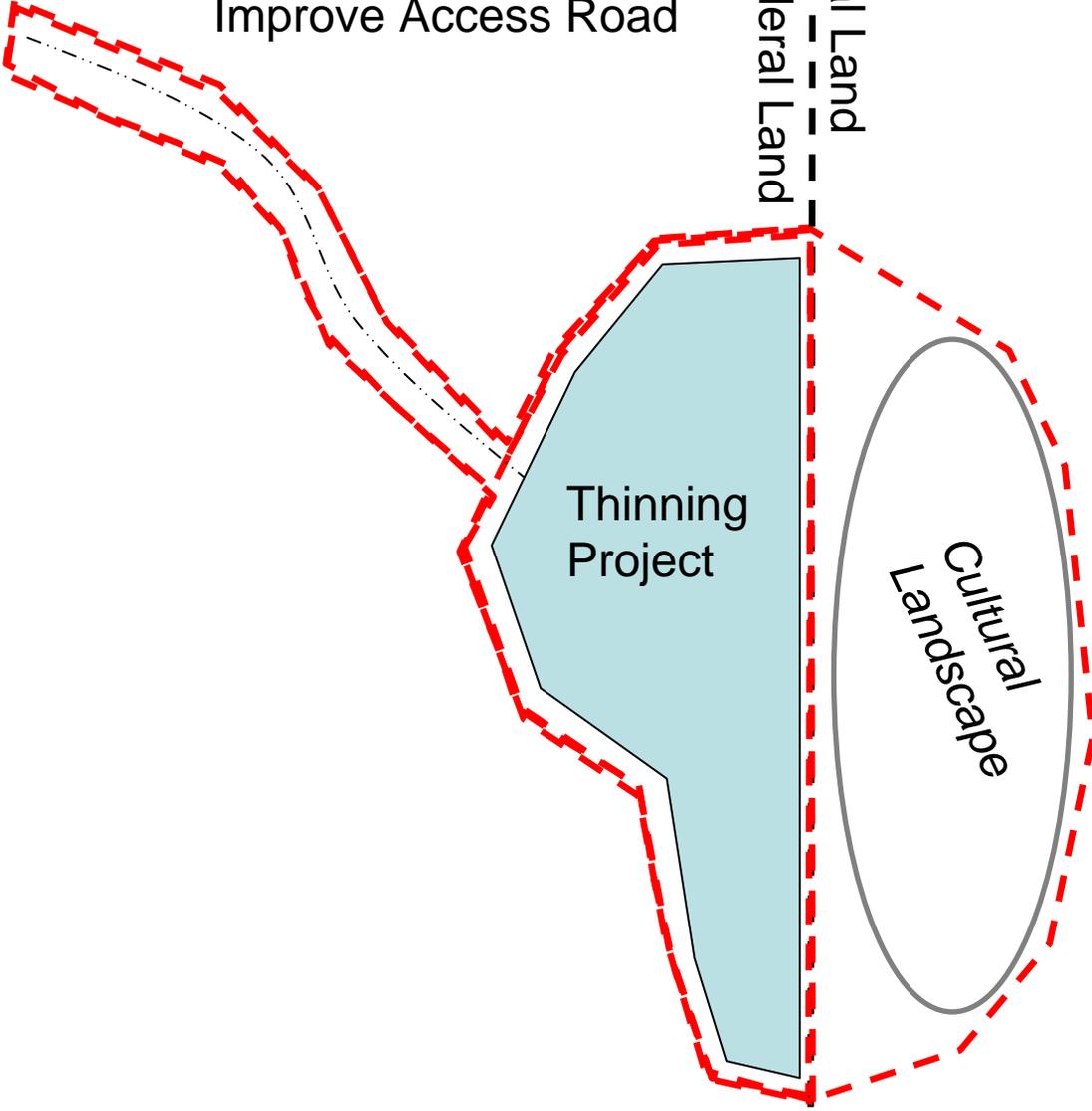
APE= 

Federal Land  
Non-Federal Land

Improve Access Road

Thinning  
Project

Cultural  
Landscape



# Identification of Cultural Resources

- The agency official must insure a “reasonable and good faith effort” is made to identify historic properties within the APE
- Pre-field research and field survey

# Identification of Cultural Resources

- Gather existing information on cultural resources within the APE
  - Has the APE been surveyed for cultural resources?
  - Are cultural resources known within the APE? Have any been determined to be historic properties?
  - What is the potential for the APE to contain historic properties?
  - Do Native Americans or other interested parties have information about the APE?

# Identification of Cultural Resources

- California Historical Resources Information System—Information Centers
  - Maintain archeological and historical resources information for the State...survey coverage, cultural resources, list of contractors, etc.

# Identification of Cultural Resources

- Agency personnel...
  - Should be knowledgeable about cultural resource distribution and potential on Federal lands and, by extension, adjacent project areas
  - Often have established relationships with Native American groups and other interested parties

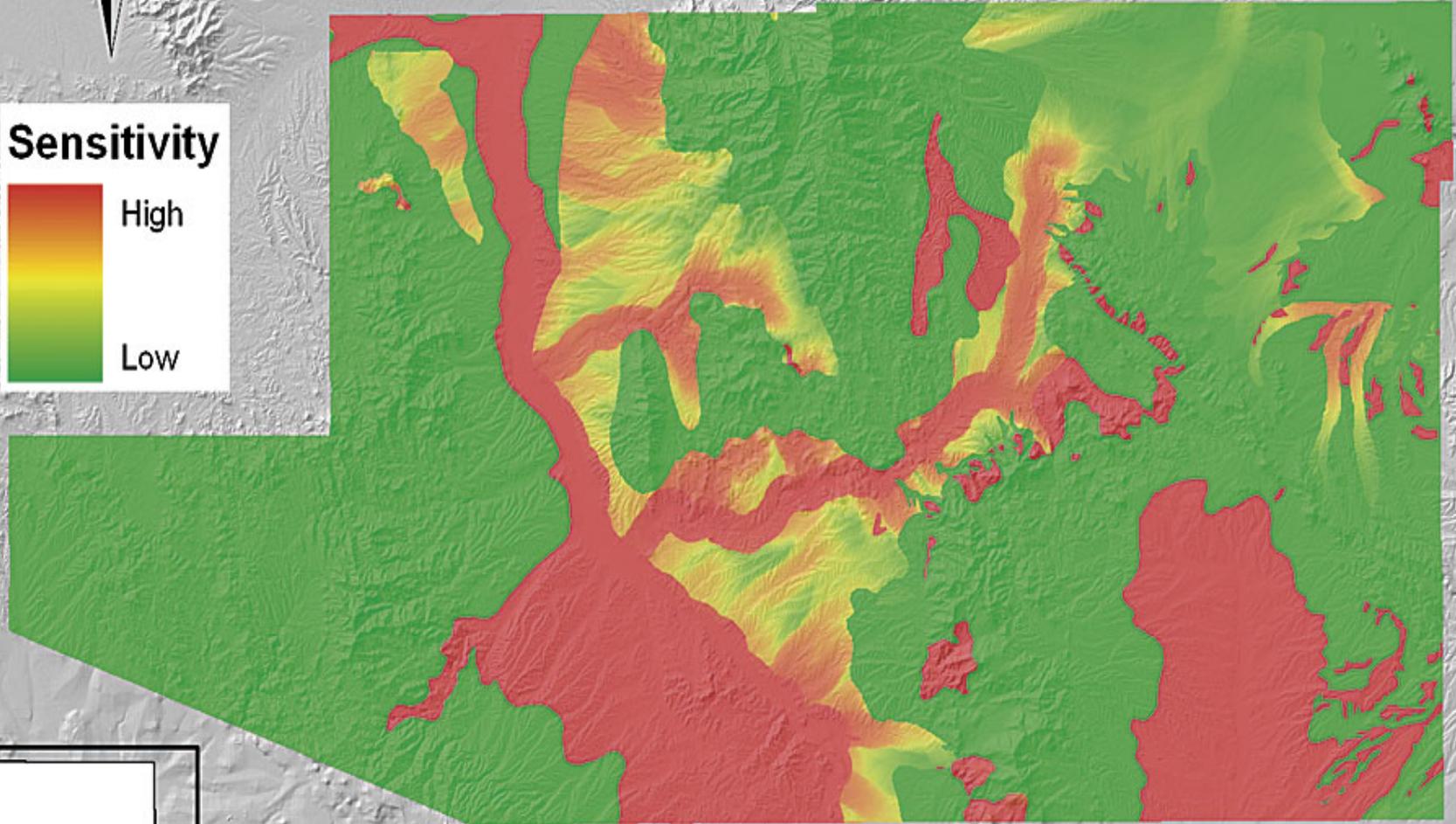
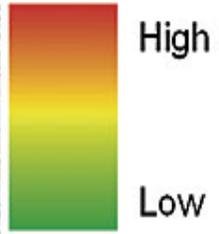




# Archaeological Sensitivity in Santa Cruz County, Arizona



## Sensitivity



Location of  
Santa Cruz  
County, AZ

0 10 20



Kilometers

# Identification of Historic Properties

- Field survey
  - None needed based on low potential for historic properties in APE
  - Sample survey in highest probability areas
  - Full survey of entire APE

# Evaluate Cultural Resources

- Apply National Register criteria to any cultural resources not previously evaluated
- Determine whether a cultural resource is eligible (i.e., is it a historic property?)

# Evaluate Cultural Resources

- As you might anticipate, evaluation can be a time-consuming and expensive process...you don't want to go here

# Evaluate Cultural Resources

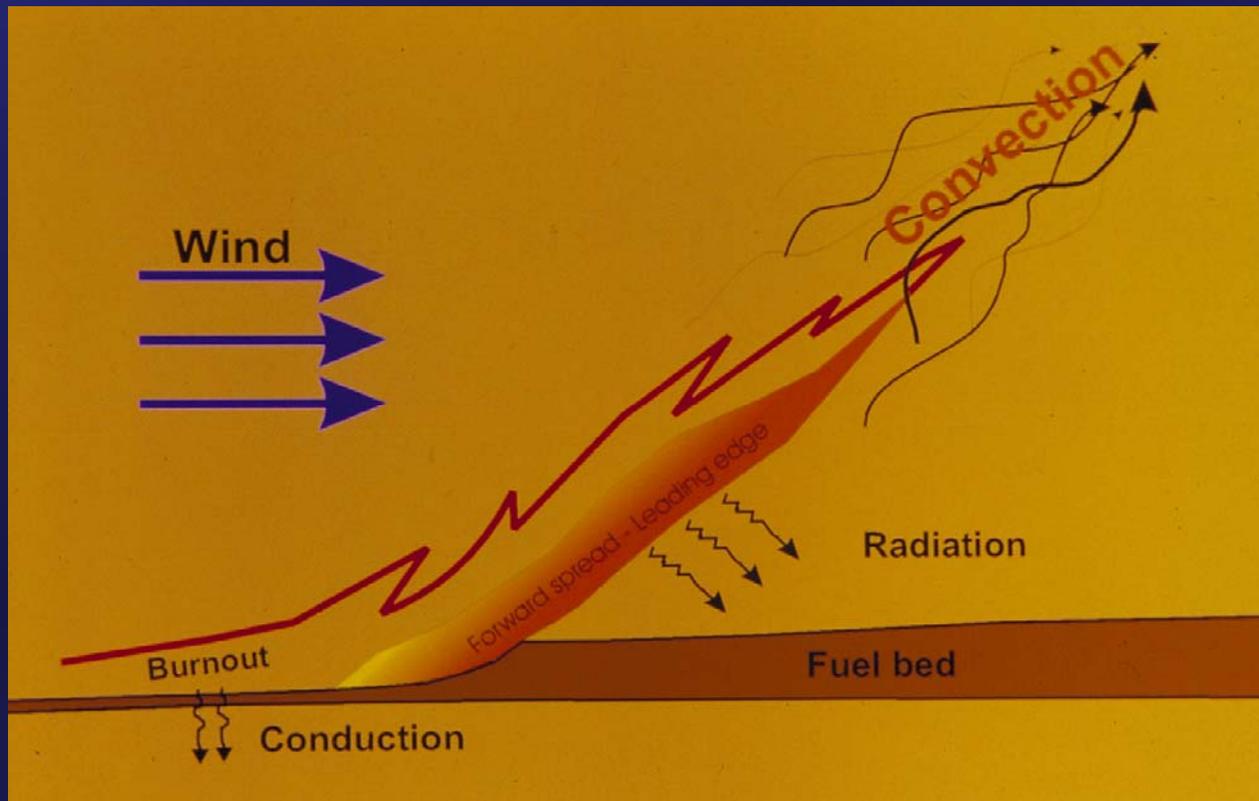
- In many cases, it is best to assume that any cultural resources present are historic properties and plan accordingly

# Assessment of Effects

- Will the undertaking affect any historic properties within the APE?
- Effects refer to alteration of resource integrity
- It is useful to conceptualize three categories of impacts related to fire management actions—direct, operational and indirect

# Direct Impacts

- Fire and its byproducts (e.g., smoke) are the cause of impacts



# Direct Impacts

- Rules of Thumb
  - Higher temperatures usually result in greater effects
  - Longer fire residence times result in increased effects
  - Surface resources are altered more than subsurface ones
  - Effects generally increase as fuel loads increase
  - Effects generally increase as duff and soil moistures decrease

<b>Fuel Type</b>	<b>Peak Temp (Surface)</b>	<b>Residence Time</b>	<b>Sustained Heating</b>	<b>Fire Impact (Artifacts)</b>
<b>Mixed Grass</b>	100-300°C	10-20 sec	>50°C 3-6 min	Limited
<b>Grass/Mixed Conifer</b> (Grass) (Grass/Litter) (Log)	100-300°C 250-500°C 450-600°C	10-20 sec 5-15 min 5-20 min	>50°C 2-4 min >200°C 10-20 min >450° 10-20 min >200°C 1-2 hrs	Limited Moderate Significant
<b>Riparian</b> (Grass) (Willow Sm.) (Willow Lg.)	100-200°C 100-300°C 300-500°C	10-20 sec 1-2 min 2-8 min	>50°C 1-3 min >50°C 5-10 min >100°C 5-30 min	Limited Limited Moderate
<b>Sagebrush</b> (Small-Med) (Large)	150-300°C 250-500°C	1-3 min 2-4 min	>100°C 5-10 min >200°C 10-15 min	Moderate
<b>Mixed Conifer</b> (Duff/Litter) (Log)	200-400°C 400-800°C	1-2min 5-20 min	>100°C 3-10 min >300°C 20-40 min 100-200°C 2-4hrs+	Moderate Significant
<b>Piñon-Juniper</b> (Large Litter)	700-800°C	2-4 min	200-400°C 1hr+	Significant

# Direct Impacts

- Some historic properties, like wooden structures, are flammable and highly vulnerable to direct impacts



# Direct Impacts

- Non-flammable resources vary with respect to vulnerability

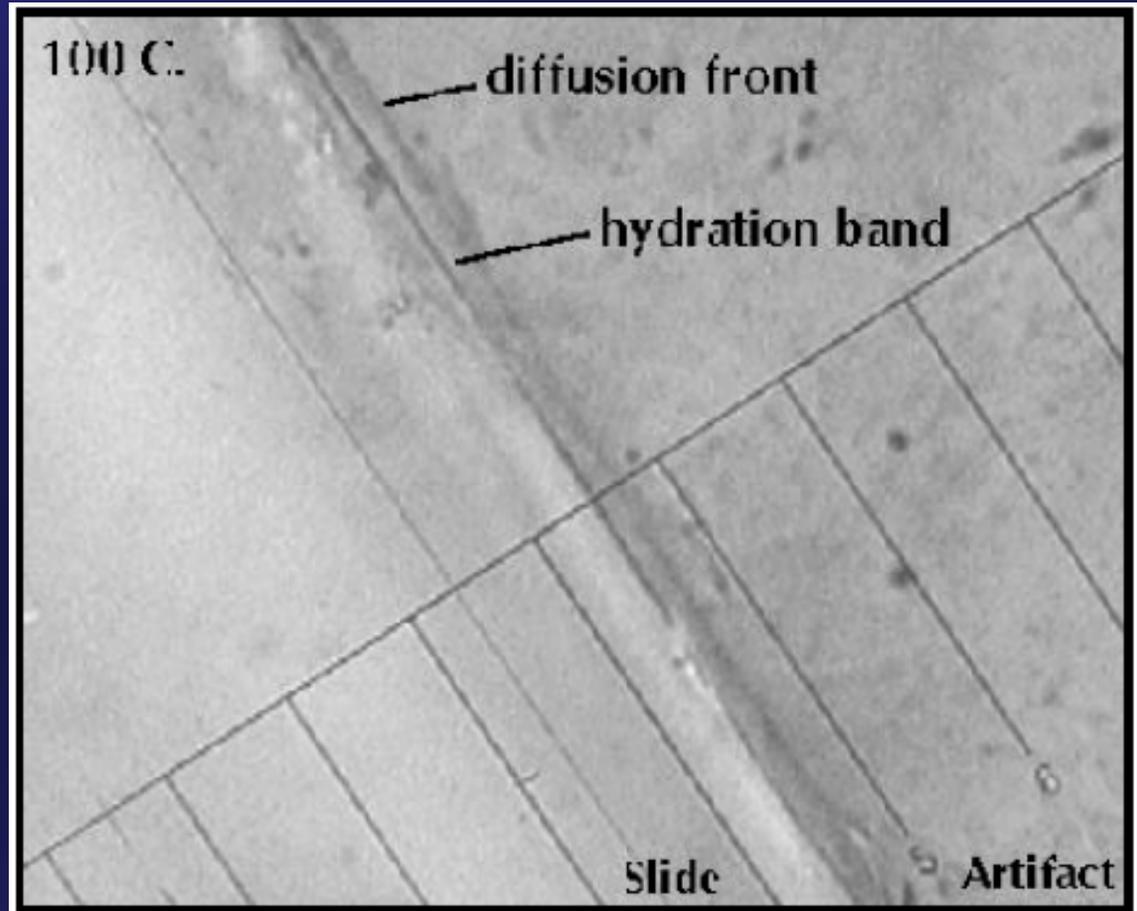
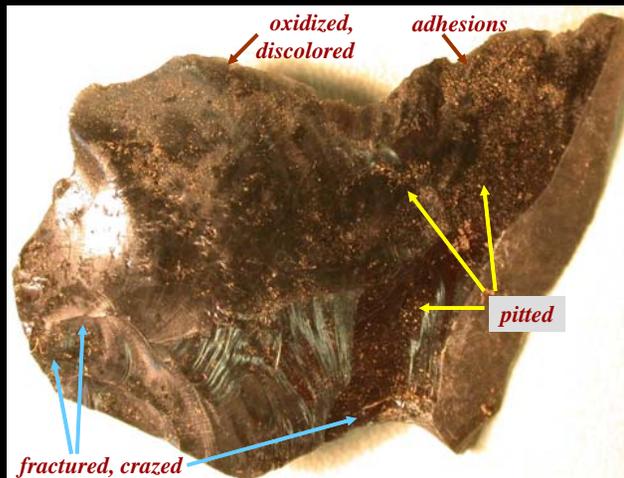
**Melting Points of Materials Commonly Found on Historic Sites**  
(Derived in part from NFPA 1998:28)  
Temperatures are Approximate

MATERIAL	TEMP. (F)	TEMP. (C)	ARTIFACTS
Plastics	167-509	75-265	Disposable containers, toys
Solder (tin-alloy)	275-350	135-177	Patch repair work on brass and iron objects
Tin	449	232	Kitchenwares, toys, can lining, building materials
Pot Metal (copper-lead alloy)	572-752	300-400	Flatware, pots, faucets
White Pot Metal	572-752	300-400	Kitchenwares
Lead	621	327	Bullets
Zinc	707	375	Plating for iron objects, e.g., cans
Glass	1100-2600	593-1427	Bottles, window pane
Unrefined Earthenware	1112-1832	600-1000	Flowerpots, some marbles, prehistoric ceramics
Aluminum	1220	660	Kitchenwares
Brass (yellow)	1710	932	Cartridge cases, military buttons and insignia
Silver	1760	960	Coins, jewelry
Stoneware	1832-2192	1000-1200	Crocks, jugs, ale bottles
Gold	1945	1063	Coins, jewelry
Copper	1981	1082	Kitchenwares, building materials, coins
Refined Earthenware	2192-2912	1200-1600	Dinnerware Ceramics
Cast Iron	1920-2550	1350-1400	Kettles, Dutch ovens, wood stoves
Steel (stainless)	2600	1427	Eating utensils, kitchenwares
Nickel	2651	1455	Plating
Steel (carbon)	2760	1516	Heavy machinery parts
Iron	2795	1535	Tools, nails, horseshoes, cans, corrugated roofing
Porcelain	2822	1550	Dinnerware Ceramics

*from Haecker*

# Direct Impacts

- Obsidian hydration rinds can be compromised at 400-500° F



# Direct Impacts

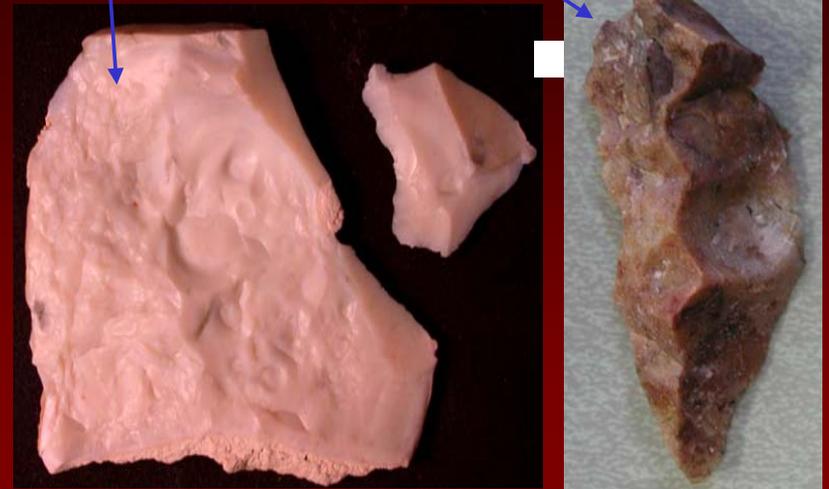
- Cherts undergo physical alterations at 450-1500°F

*Chert: crazing, cracking and potlidding*



*crizzling*

*crenulated breaks*



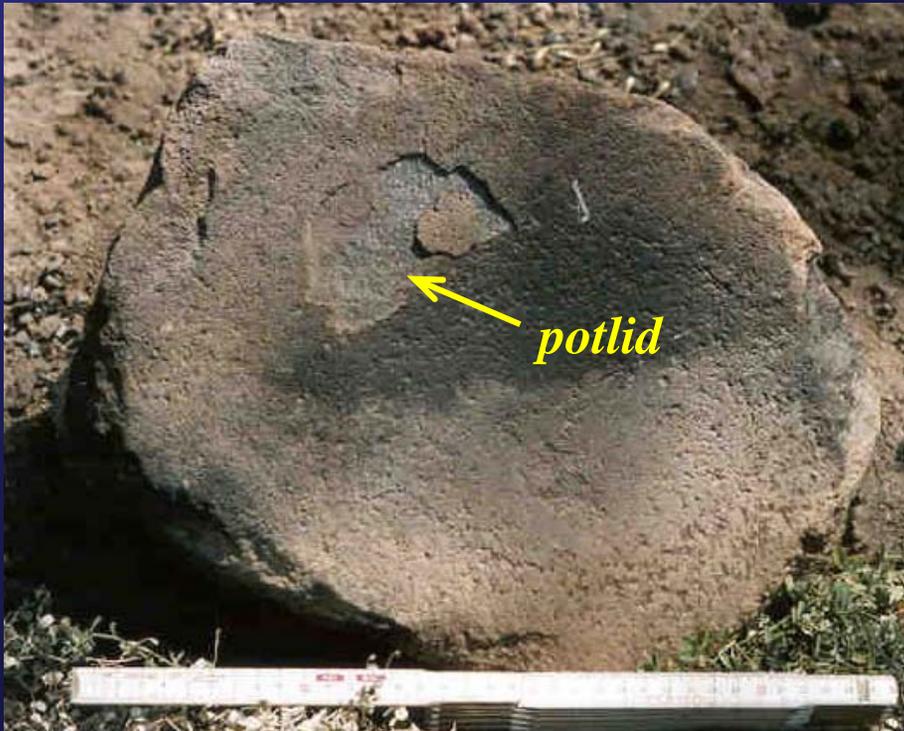
# Direct Impacts

- Basalts begin to break and fracture at  $>575^{\circ}\text{F}$



# Direct Impacts

- Physical alterations such as discoloration and pottlidding and loss of residues on groundstone tools



# Direct Impacts

- Spalling and smoke damage to bedrock and boulders containing milling features and rock art



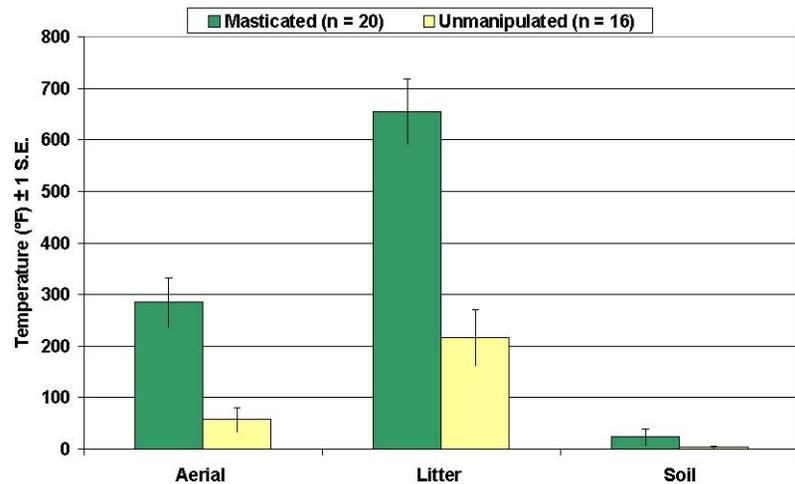
# Pile Burning



# Broadcast Burning



Average Maximum Temperature by Strata During Spring Burn



# Operational Impacts

- Impacts that result from fire management operations such as fireline construction, mechanical thinning, road construction and improvement, etc.

# Operational Impacts

- Ground disturbance, ranging from foot traffic to heavy equipment, can impact historic properties



# Operational Impacts

- Cultural resources can be looted or vandalized by fire management personnel



# Indirect Impacts

- Post-treatment impacts that occur as a result of fire or fire management operations, e.g., erosion, tree mortality, looting, carbon contamination

# Post-fire erosion on archeological site



# Tree Mortality



**Shorty Lovelace at Crowley Cabin  
Pre-1940**

**Shorty Lovelace Historic District  
Crowley Cabin  
Sequoia-Kings Canyon NP**



**1997  
Sugarloaf WFU**



**Burned Snag**

**2003  
Williams WFU**

# Looting



# Carbon contamination



# Determination of Effect

- No Historic Properties Affected
  - No historic properties are found within the APE or historic properties are present and will not be affected by the undertaking
  - This is where you want to be
- No Adverse Effect
  - Historic properties are present in the APE, will be effected by the undertaking, but the effect is not adverse (i.e., still retains integrity)
- Adverse Effect
  - Historic properties are present in the APE and will be adversely effected by the undertaking (i.e., integrity compromised)

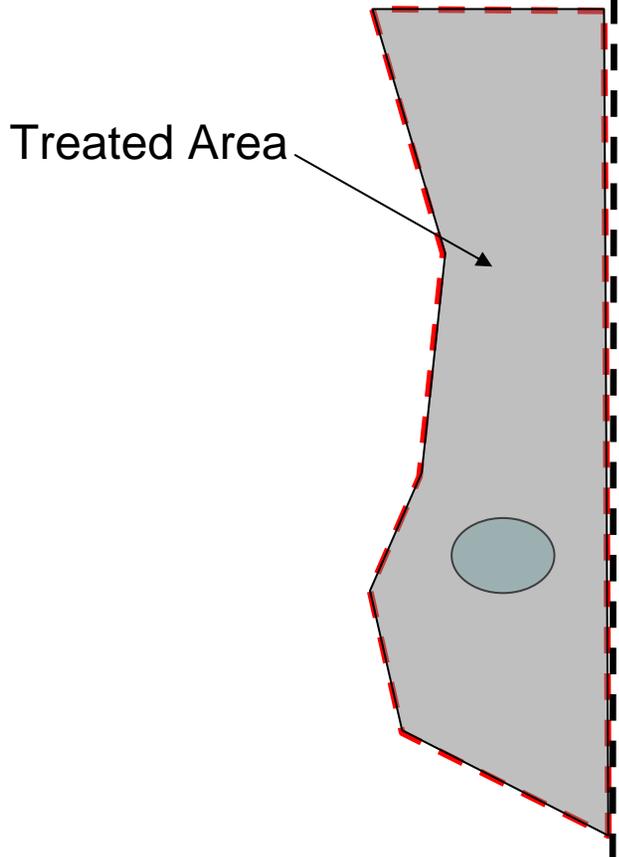
# No Historic Properties Affected

- Two common ways to get this determination when historic properties are present...resource vulnerability and “flag and avoid”
- Resource vulnerability
  - Evaluate resource relative to the undertaking and determine that it is not vulnerable to direct, operational and indirect impacts...carry out project as planned in time and space
  - e.g., conduct broadcast burn over stone foundation, perform mechanical thinning without ground disturbance

APE= 

Historic Property= 

Federal Land  
Non-Federal Land



# No Historic Properties Affected

- Resource vulnerability
  - Pros
    - Historic properties are included in the areas treated...fuels reduced, seamless transitions
    - Easier to plan and implement
    - Increased treatment effectiveness
  - Cons
    - What you can't see can hurt you
    - Historic properties potentially exposed to direct, operational and/or indirect effects
    - More field time for resources personnel

# No Historic Properties Affected

- “Flag and Avoid”
  - Create buffers around cultural resources within which no activities will occur



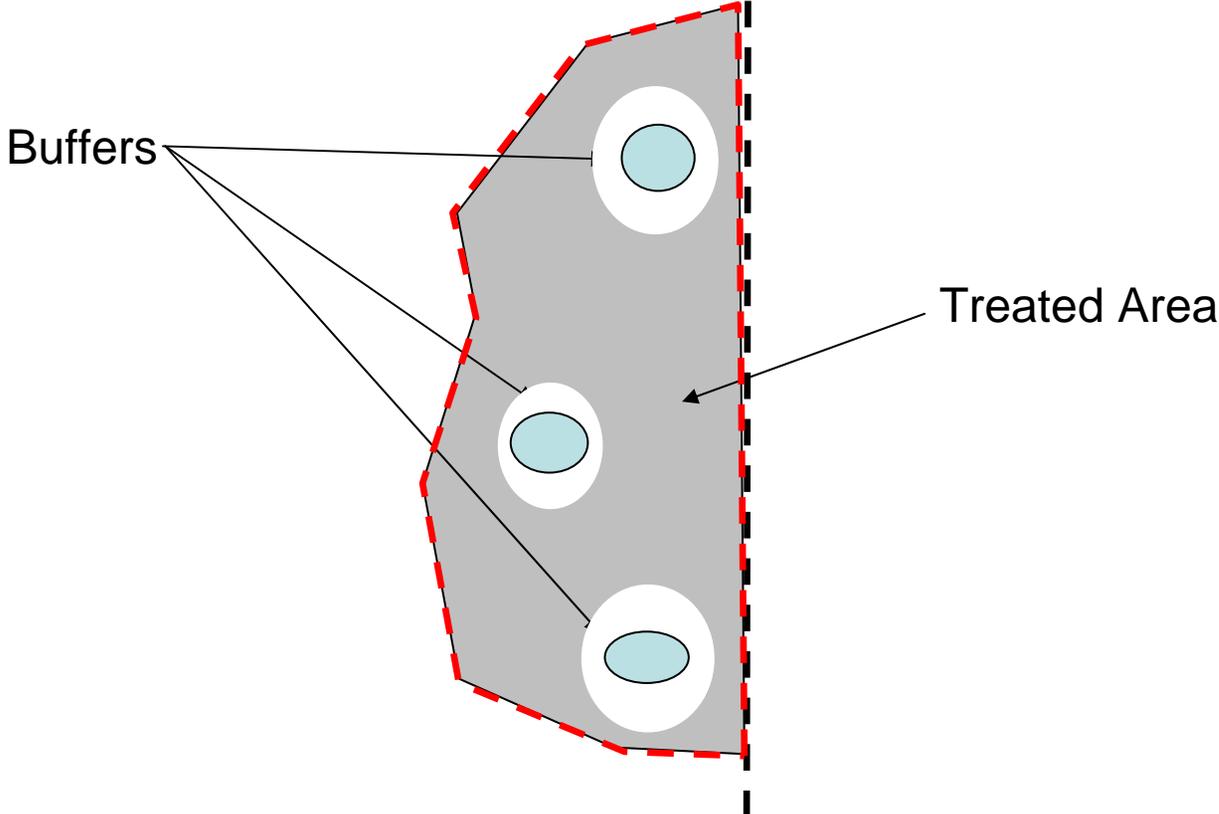
APE= 

Historic Property= 

Federal Land  
Non-Federal Land

Buffers

Treated Area



# No Historic Properties Affected

- “Flag and Avoid”
  - Pros
    - Resource will not be subject to direct, indirect, and operational impacts
    - May require less personnel time during implementation
  - Cons
    - Is the buffer big enough?
    - Leaves cultural resources in fuel “islands”
    - Creating buffers may require a lot of disturbance, e.g., line construction
    - Too much buffer can reduce treatment effectiveness

# Section 106 Timelines

- Typical 50-100 ac. fuel treatment unit...
  - Identification & Assessment of Effects
    - 30 days consultation with Native Americans, etc.
    - 1-2 days pre-field research
    - 1-3 days field survey (assume 60-80 ac./person)
  - Prepare documentation
    - 1-3 days
  - State Historic Preservation Office (SHPO) Consultation
    - 30 days to concur/not concur with determination

# Section 106 Alternatives

- 800.14
  - Agency may propose a program or category of undertakings that can be exempted from review if...
    - The potential effects...upon historic properties are foreseeable and and likely to be minimal and not adverse
  - Negates need for SHPO review, but not Section 106 process...intended to expedite, not circumvent

# Examples of Exemptions

- From Cal Fire Programmatic Agreement...
  - Timber stand improvement
  - Mulching
  - Shaded fuel breaks
  - Disposal of piled brush (except burning)
  - Diseased oak removal
  - Hand lines
  - Road maintenance
  - Previously surveyed areas

**Recommendations  
for  
Fire Safe Councils**

# Plan Early and Often

- Engage agency cultural resources specialists in programmatic and project planning
  - Include cultural resources in CWPP and submit for SHPO review
  - Include community assistance projects in agency Fire Management Plans and submit for SHPO review

# Provide Good Project Descriptions

- Where treatments will occur...think APE
- What treatments will occur in which places...limbing, piling, broadcast burning
- Fuel models, fuel loads, burn prescriptions, etc.
- Location of known cultural resources...full disclosure
- Planning early and often results in good understanding of project specifics among agency personnel

# Ensure Compliance is Covered

- Negotiate with agency to determine how compliance obligations will be met
- If necessary, determine (in consultation with the agency) the amount of cultural resource compliance funding required and include in grant proposal

# **Recommendations for Agencies**

# Win-Win Situation

- What happens beyond your boundaries has an influence on what occurs within them
  - Want good land management practices on your margins
  - Fuels treatments within communities can lessen burden of boundary defense...more ability to do own projects elsewhere