Phytophthora impacts to Pallid Manzanita

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Pallid Manzanita

- Overview
- *Phytophthora*
- Huckleberry

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Why?

People!

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Ecological function

Gudrun Kleist photos

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Pallid Manzanita

- *Arctostaphylos pallida*

Lech Naumovich

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Pallid Manzanita

- *Arctostaphylos pallida*
- Perennial shrub in maritime chapparal

Lech Naumovich

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Pallid Manzanita

- *Arctostaphylos pallida*
- Perennial shrub in maritime chapparal
- Ridge tops, slopes in poor soils, fog important

Lech Naumovich

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Pallid Manzanita

- *Arctostaphylos pallida*
- Perennial shrub in maritime chapparal
- Ridge tops, slopes in poor soils, fog important
- December – January blooms

Gudrun Kleist

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Pallid Manzanita

- *Arctostaphylos pallida*
- Perennial shrub in maritime chapparal
- Ridge tops, slopes in poor soils, fog important
- December – January blooms
- Rare: State endangered and Federally threatened

Gudrun Kleist

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Pallid Manzanita

Location:

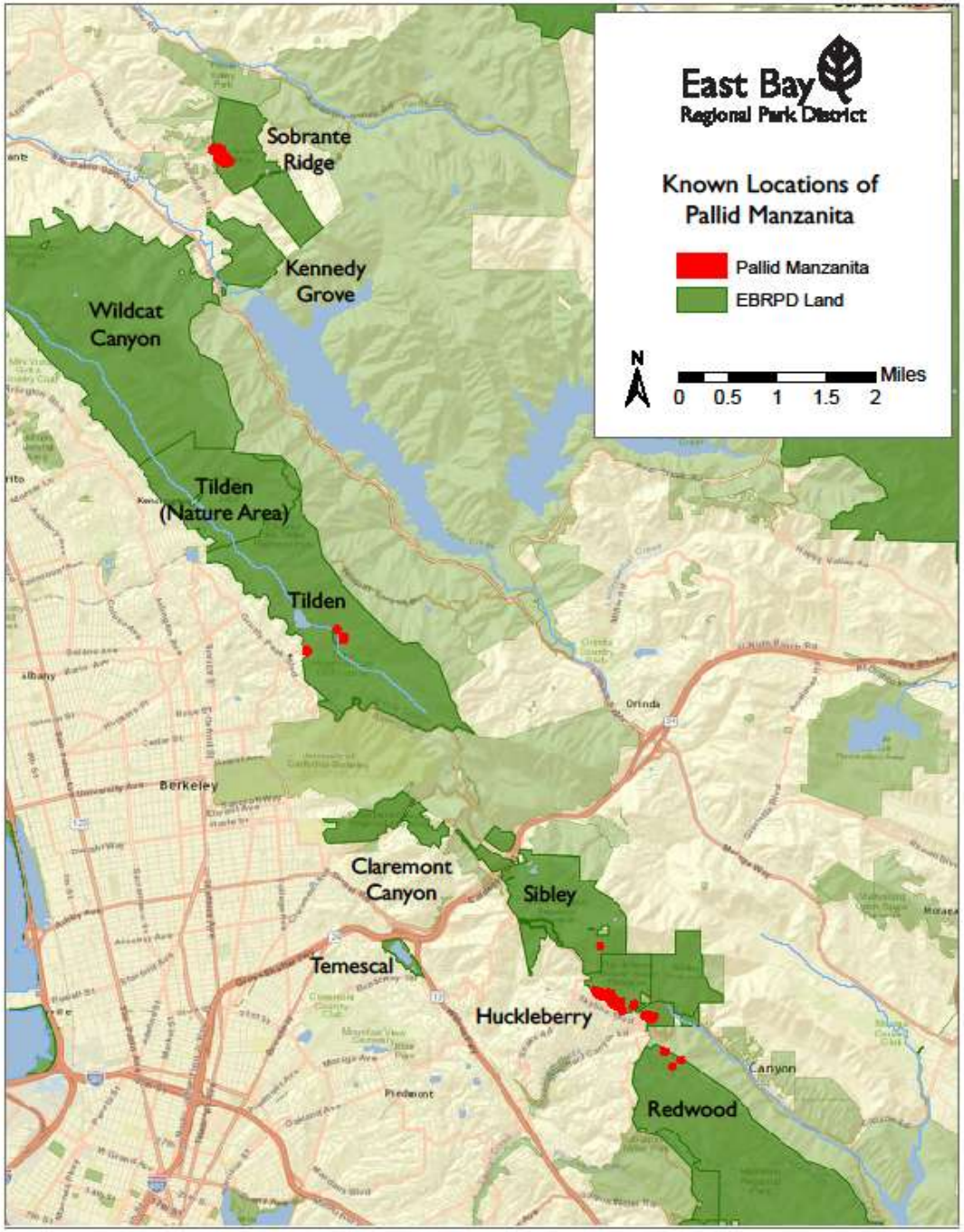
Sobrante Ridge

Tilden

Sibley

Huckleberry

Redwood

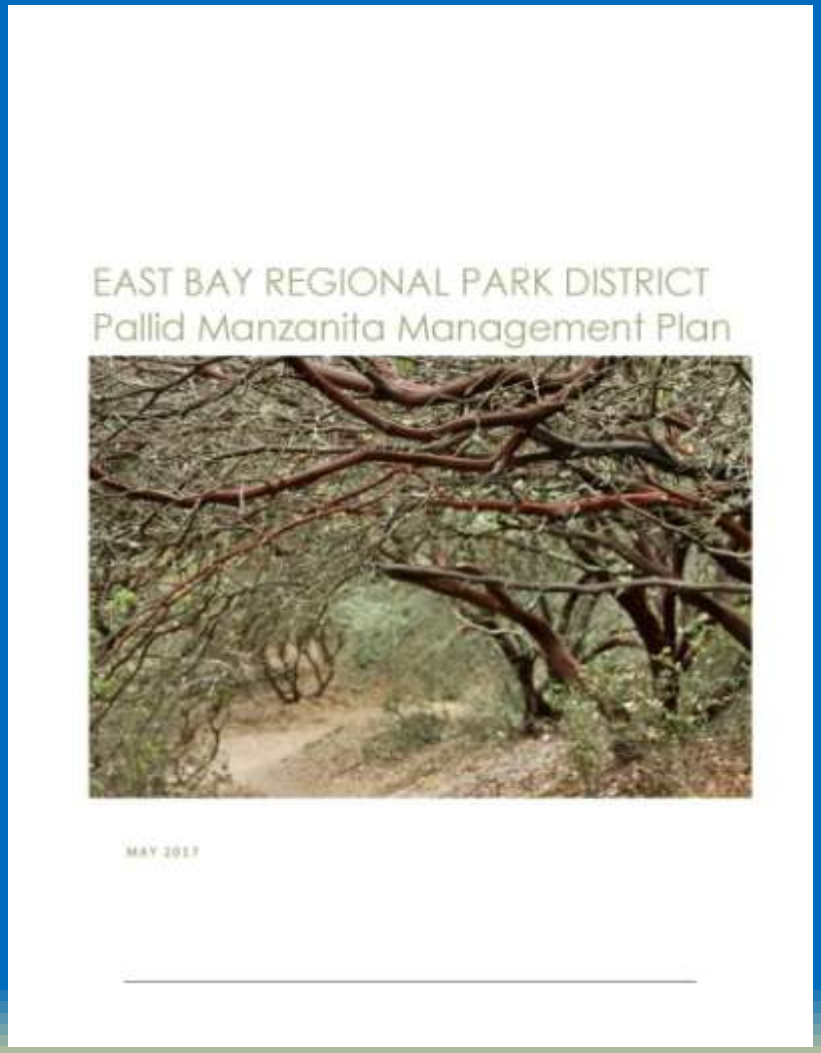


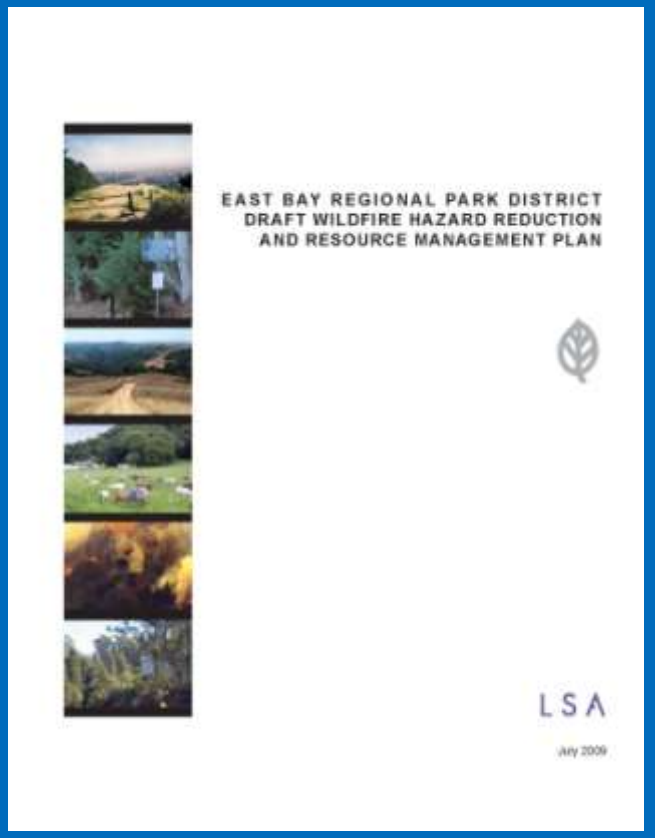
Pallid Manzanita

CHALLENGE:

Wildland Urban Interface (WUI)

Pallid Manzanita Management Plan (PMMP)





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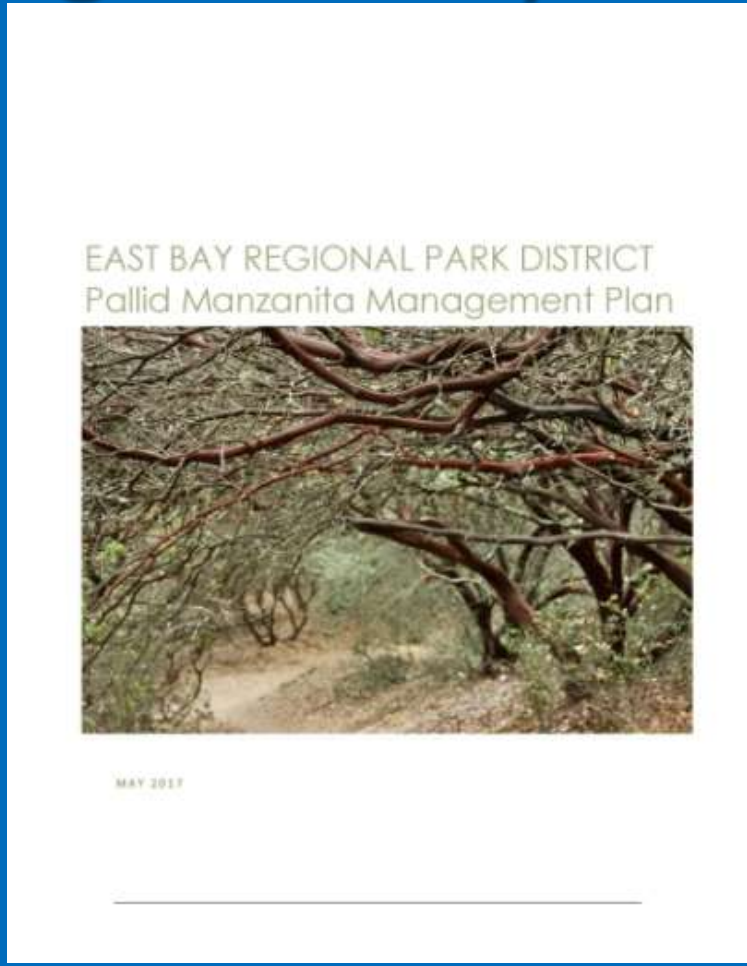
Pallid Manzanita Pathogen Survey

- PMMP
- Extent of infestation *Phytophthora cinnamomi,* root rot water mold
- Pathogen determination and infested habitat mapping
- Survey before any fuels treatment occurs within pallid habitat



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Phytophthora Key Points

- Microscopic water mold
  - Causes root rot, stem canker, blight & death
  - Complex life cycle w/ fungus like characteristics
- Soilborne, moisture dependent
  - Travel through wet soil pore spaces & soil chunks
  - Rapid disease progression in wet conditions
  - Can survive & disperse in dry conditions
- *P. ramorum* -- Air Cycle
  - SOD
  - Bay Laurel is a prolific spore producer

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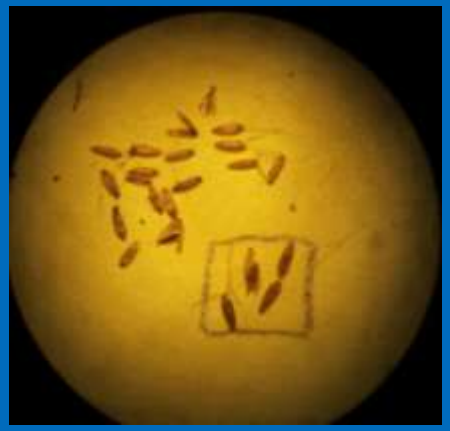
BMP Training 2018



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BMPs

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Travel

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Personal Gear

Pallid Manzanita Pathogen Survey 2017

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Pallid Manzanita Pathogen Survey

- 2017 Survey Objective: determine extent of habitat infested with soilborne root-rotting *Phytophthora* species
- Phytosphere Research: Ted Swiecki and Elizabeth Bernhardt
- June and July 2017 sampled root/soil, branch/canker
- Targeted suspect areas/plants with proximity to Pallid manzanita

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Phytophthora: Soil Movers

- *P. cinnamomi* or other root rot species symptoms
  - Wilt
  - Dead leaves still on branch
  - Multiple plants with symptoms in area

Chinquapin in Huckleberry

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Pathogen Survey Results

- *Phytophthora* species:
  - *P. ramorum* – leaf, SOD also moves through air
  - Other *Phytophthora* species – root, moves through soil
    - *P. cinnamomi*
    - *P. cambivora*
    - *P. cactorum*

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Pathogen Survey Results:

- *Phytophthora ramorum or*

Sudden Oak Death (SOD)

Sobrante Ridge

Huckleberry

Redwood

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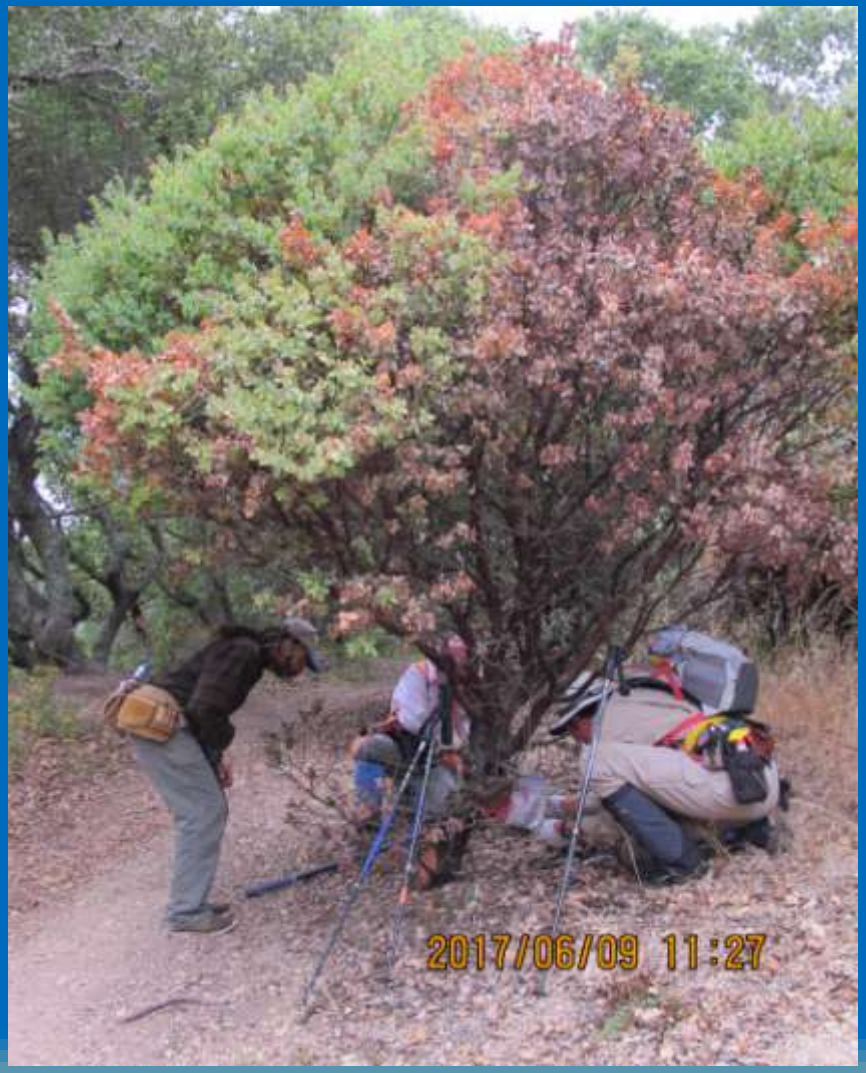
P. ramorum SOD 2017 - 2018



Pathogen Survey Results:

- Huckleberry
  - *P. cinnamomi*, root
  - *P. cactorum*, root
- Redwood
  - *P. cambivora*, root
- Tilden
  - *P. cambivora*, root

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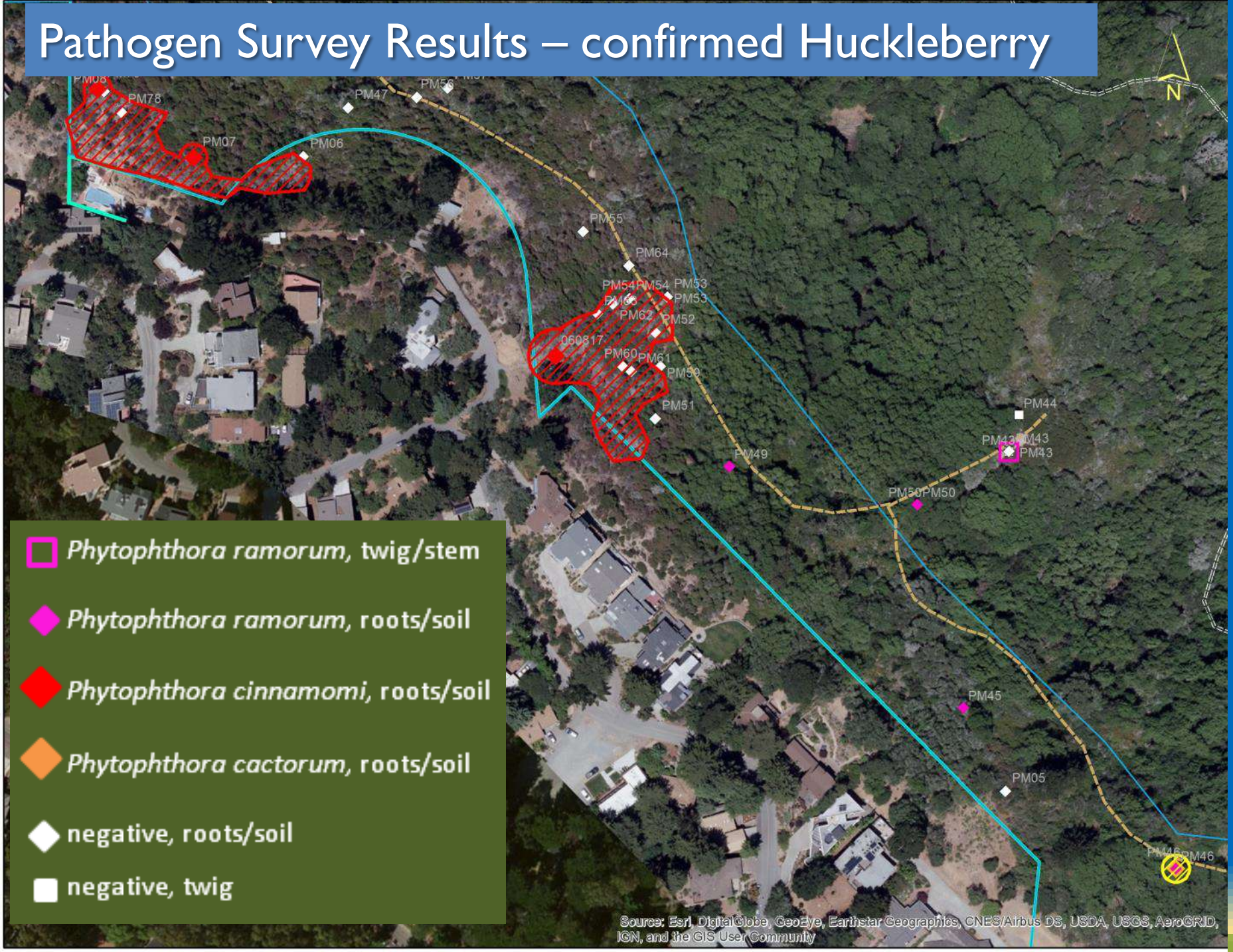
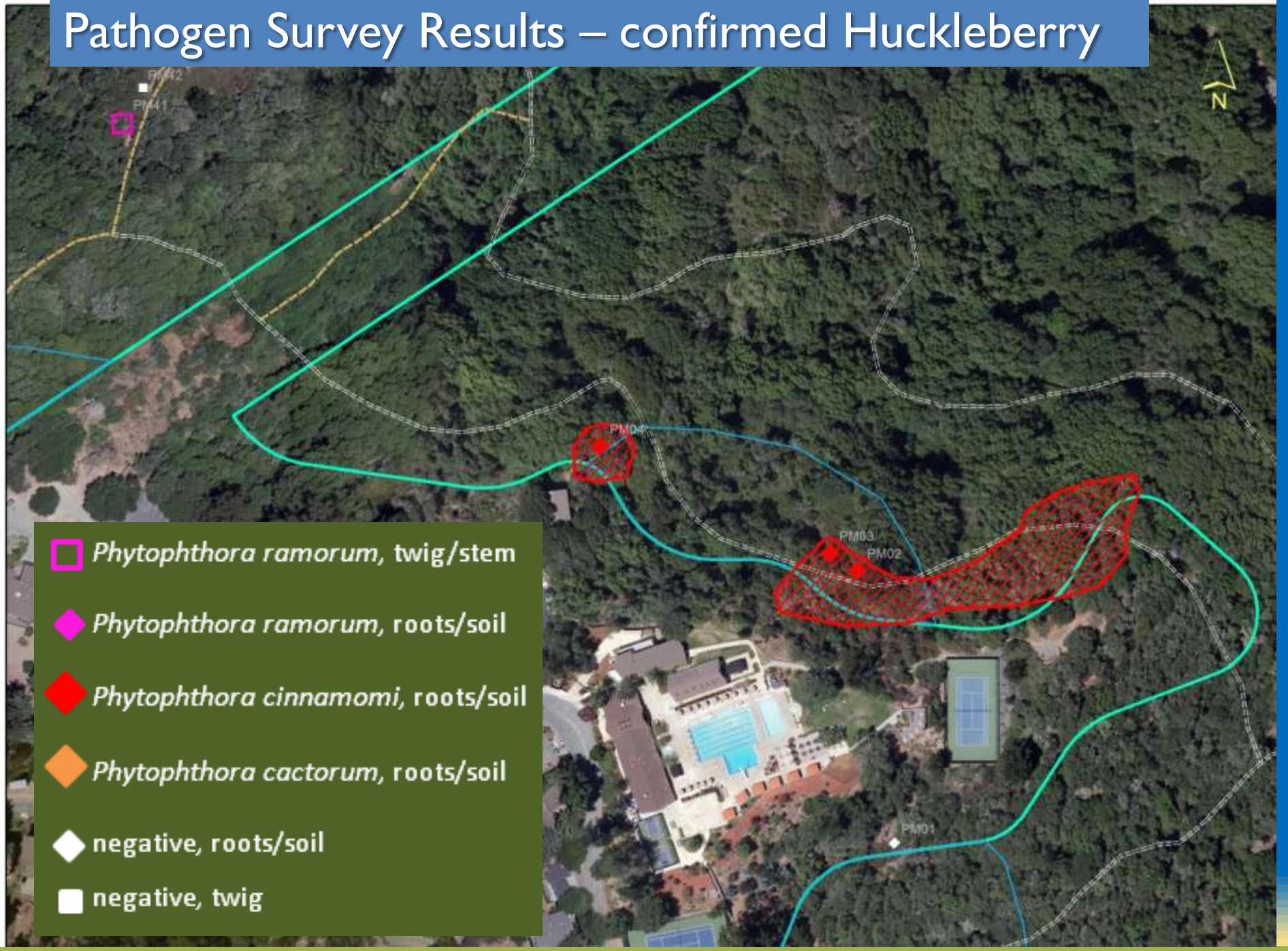
Pathogen Survey Results – confirmed Huckleberry



Pathogen Survey Results – confirmed Huckleberry



Huckleberry Pallid Management Plan

- Public outreach
- Pilot voluntary seasonal trail closure
- Collaborate and guide fuels management actions that help recovery

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Huckleberry Management Plan Actions

- *Reduce threat*:
  - Remove French broom and other overstory plants
  - SOD host plant removal, Bay laurel trees
  - Top tier Phytosanitary protocol using disinfection BMPs
- *Stimulate recruitment*
  - Experimental treatments mimic natural disturbance regime
    - Reduce overstory shading
    - Soil scrape
    - Pile burn

Park Hygiene is a Cultural Routine

- C Clean Start
- L Leave your park/project clean
- E Eliminate dirt clods & vegetation
- A Avoid wet weather work
- N Necessary off-trail work & travel only

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Thanks

- Judy Schwartz, Gudrun Kleist, Marcia Kolb, East Bay CNPS
- Ted Swiecki and Elizabeth Bernhardt of Phytosphere Research
- Julie Garren, Danny Slakey, Dina Robertson of AECOM
- Lech Naumovich, Creekside Sciences and Golden Hour Institute

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Questions?

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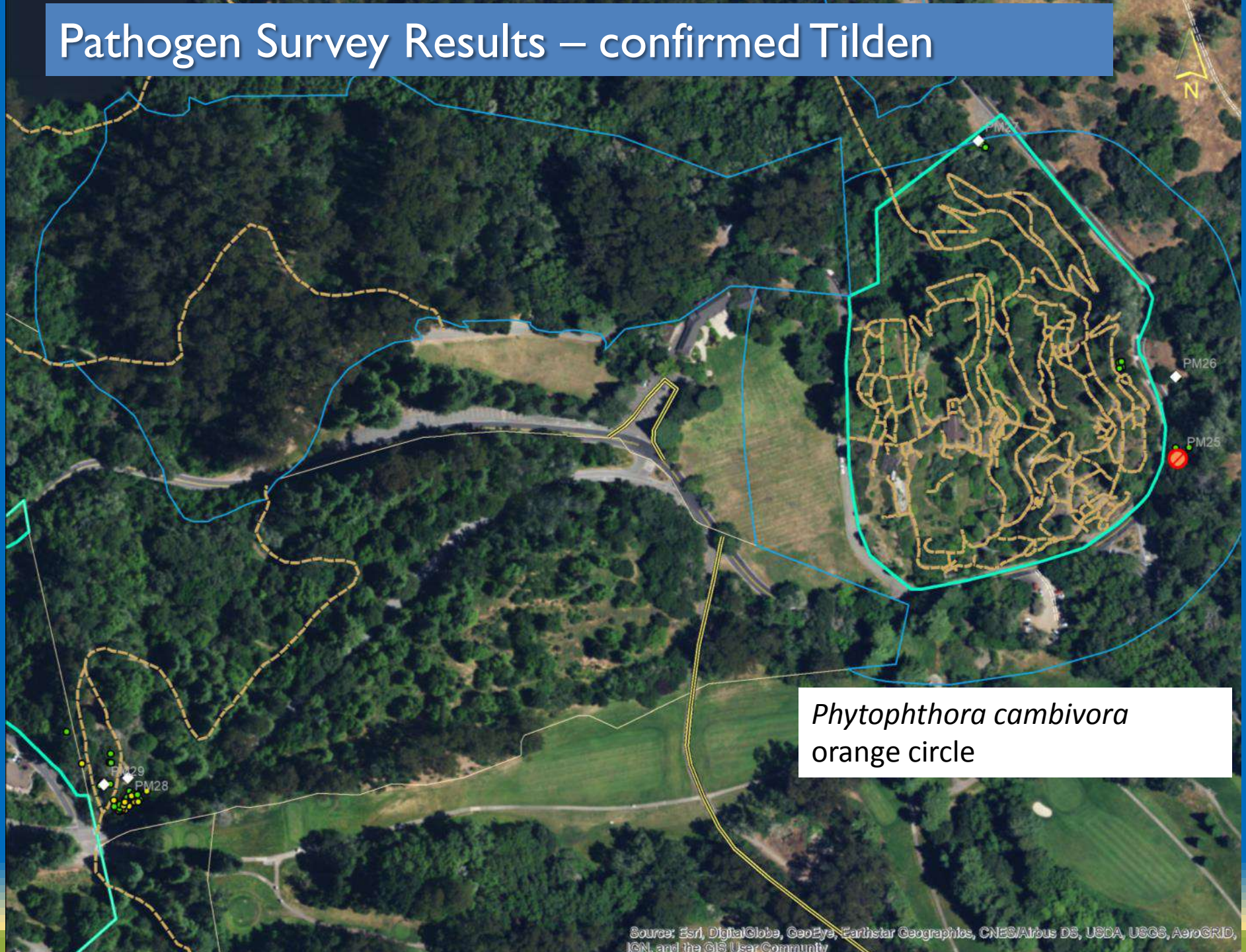
Pathogen Survey Results – confirmed Redwood

Pathogen Survey Results – confirmed Tilden



Huckleberry Regeneration Plan Actions

- *Subarea B*:
  - Reduce overstory competition (native shrub and tree pruning)
  - Randomized on-the-ground treatments
- *Subarea C*:
  - Remove extensive broom area and bay trees
  - Follow up broom and bay tree control
- *Subarea D*:
  - Remove bay trees and scattered broom
  - Randomized on-the-ground treatments

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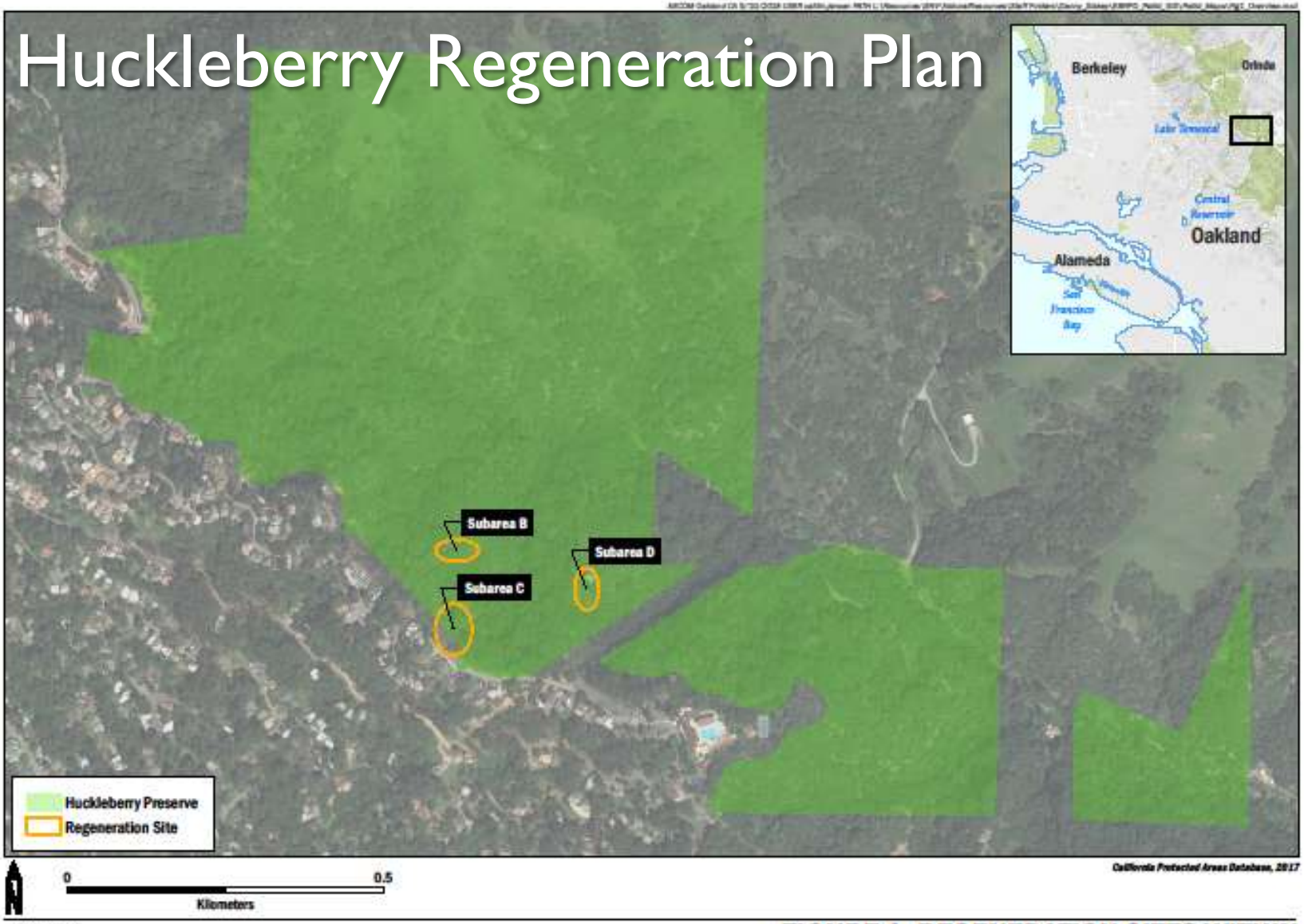
Huckleberry Regeneration Plan



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Pallid Manzanita Regeneration and Management Plan

FIGURE 1. REGENERATION SITES WITHIN HUCKLEBERRY REGIONAL BOTANIC PRESERVE