



TETRA TECH, INC.

Agua Hedionda Watershed Management Plan



**Stakeholder Meeting
August 22, 2007
Carlsbad, CA**



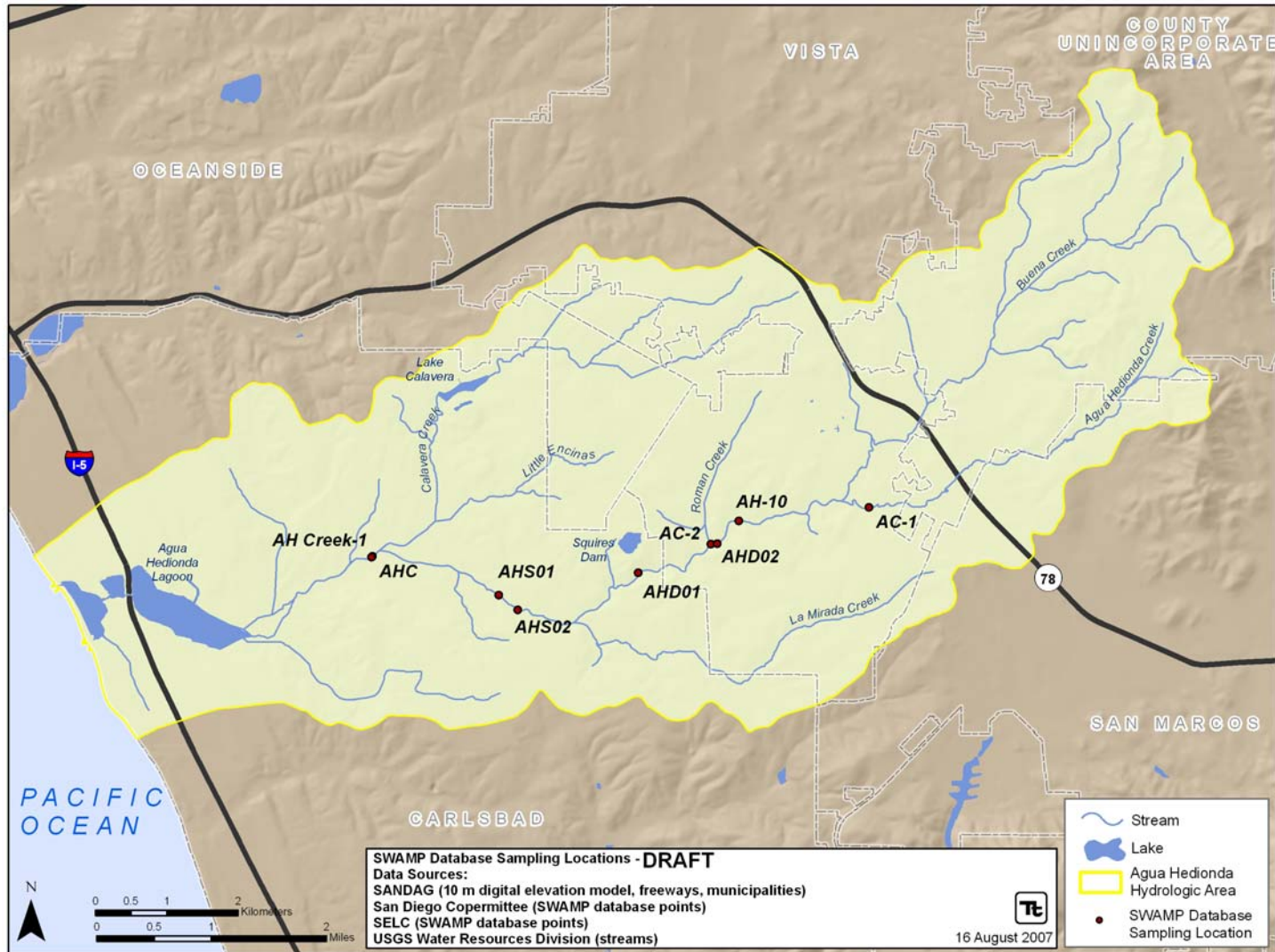


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STATUS OF DELIVERABLES



Surface Waters Ambient Monitoring Program (SWAMP) Submittal



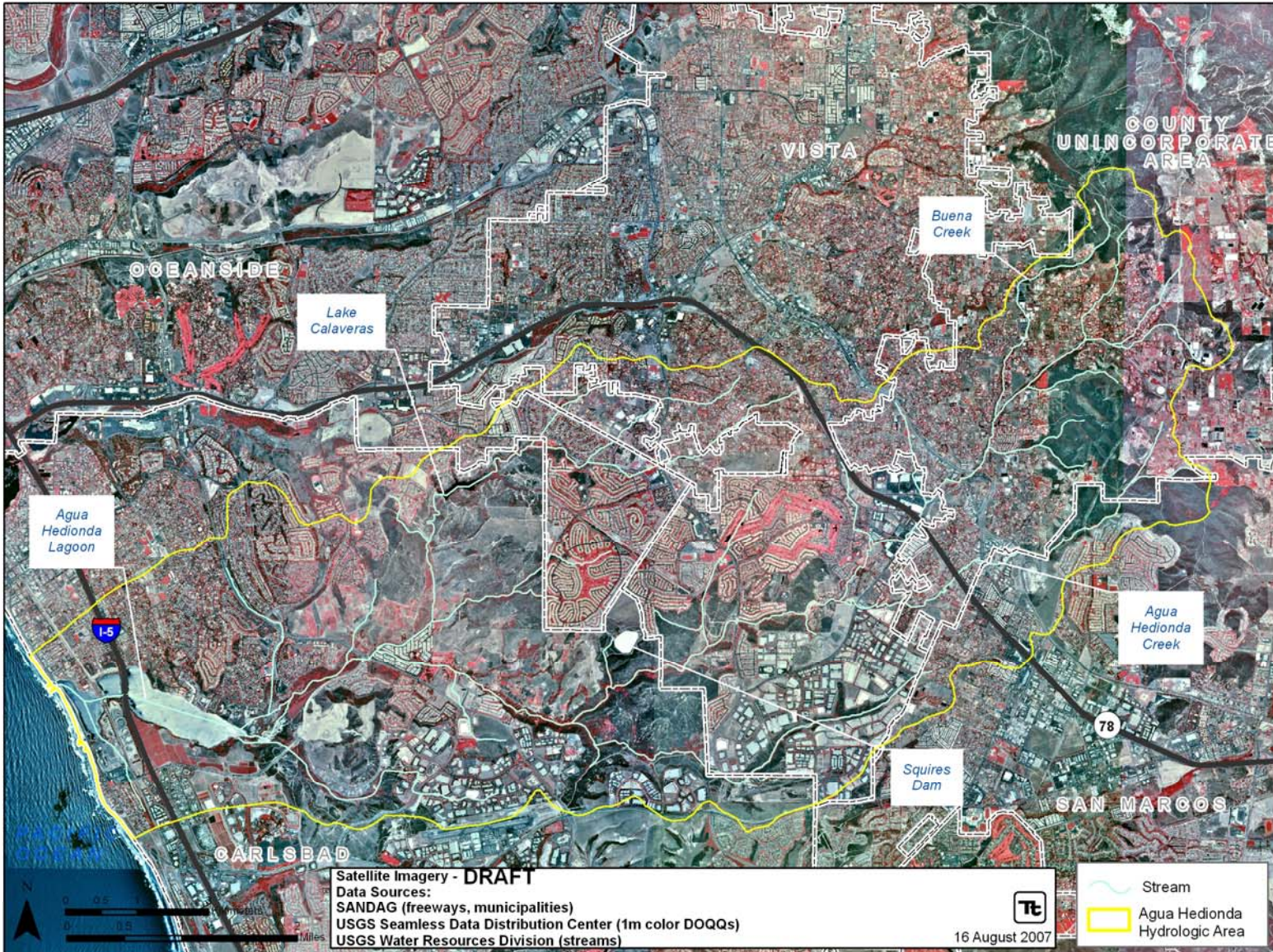


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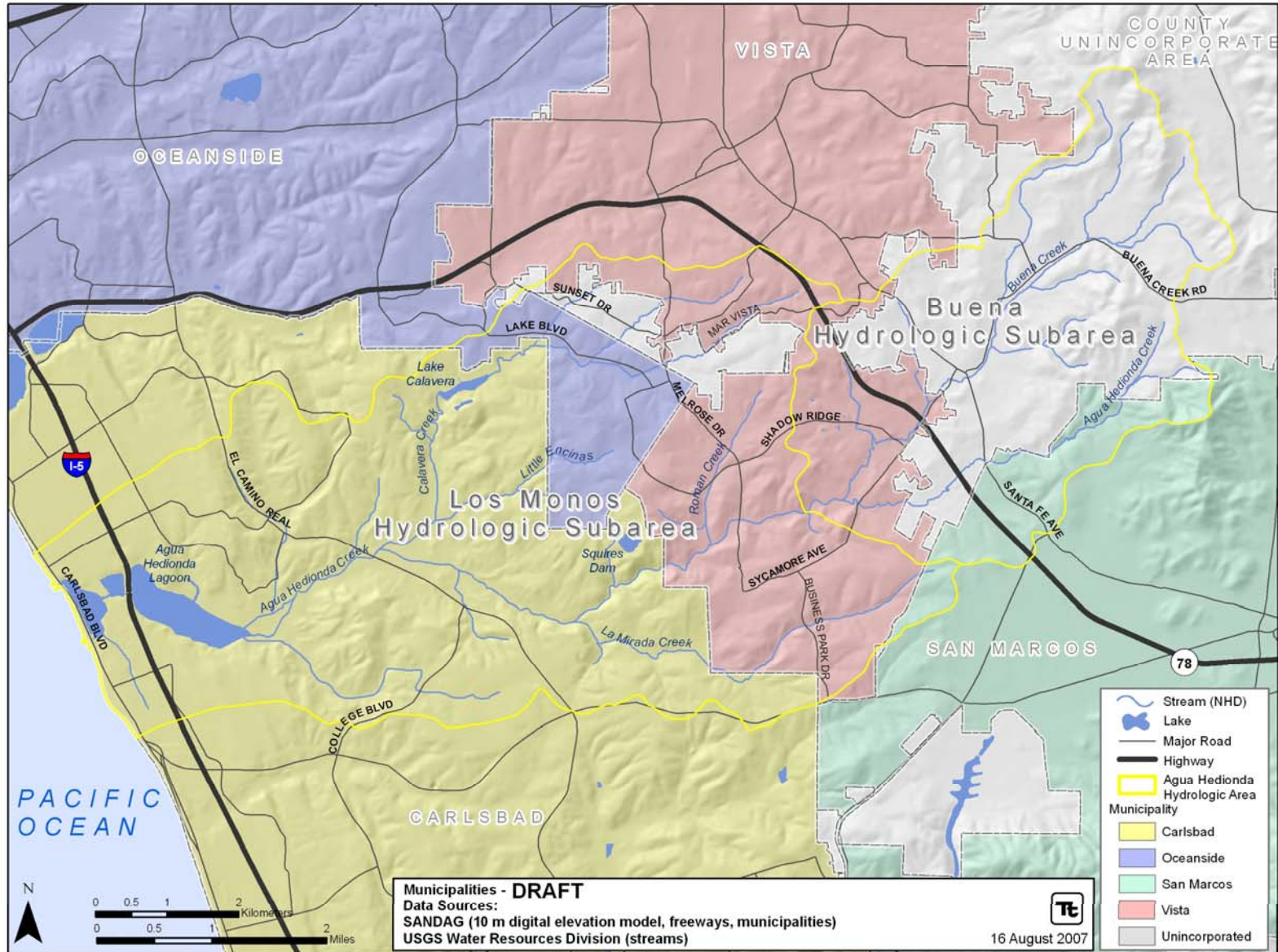
UNDERSTANDING THE WATERSHED



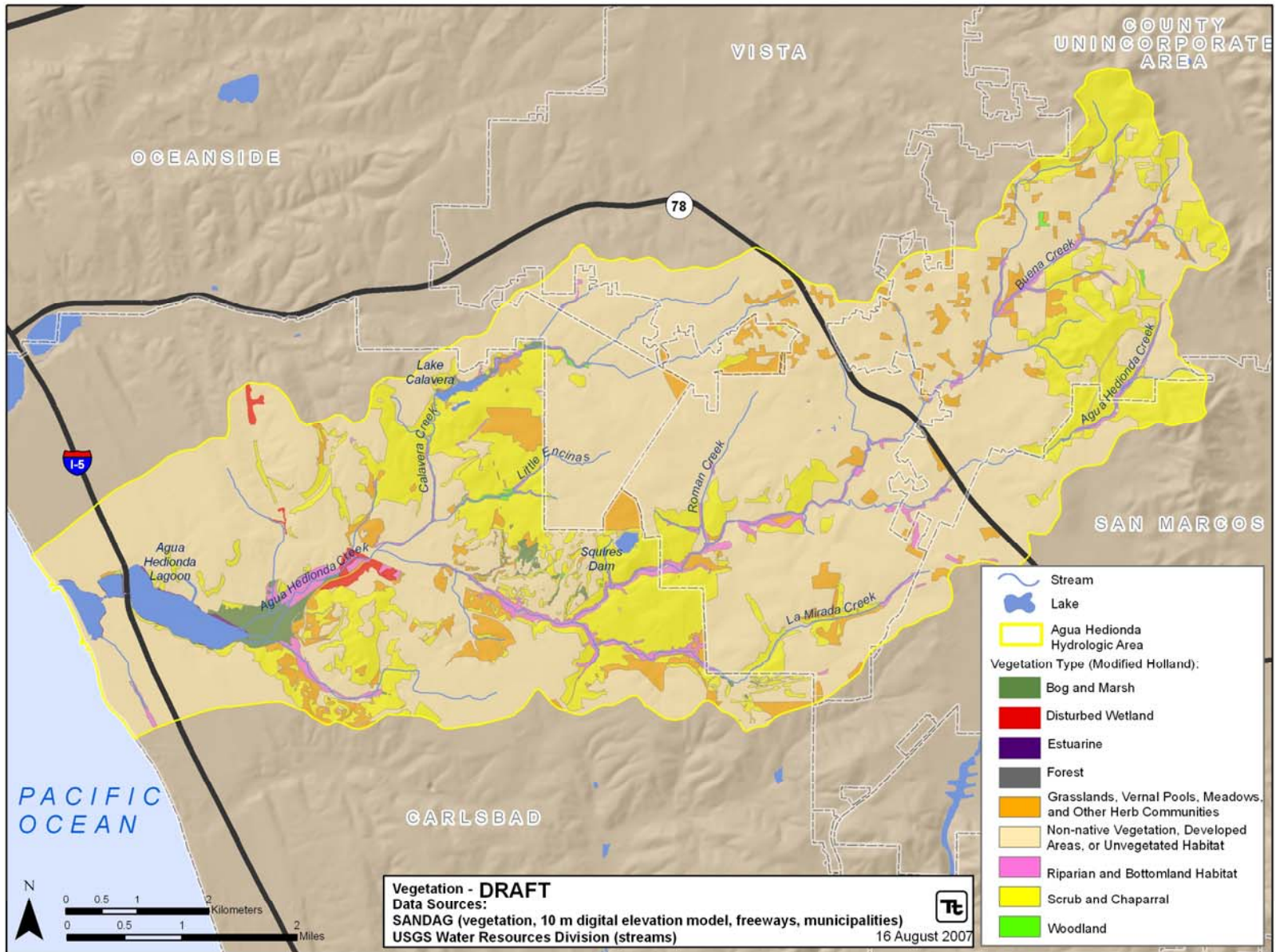
AGUA HEDIONDA WATERSHED



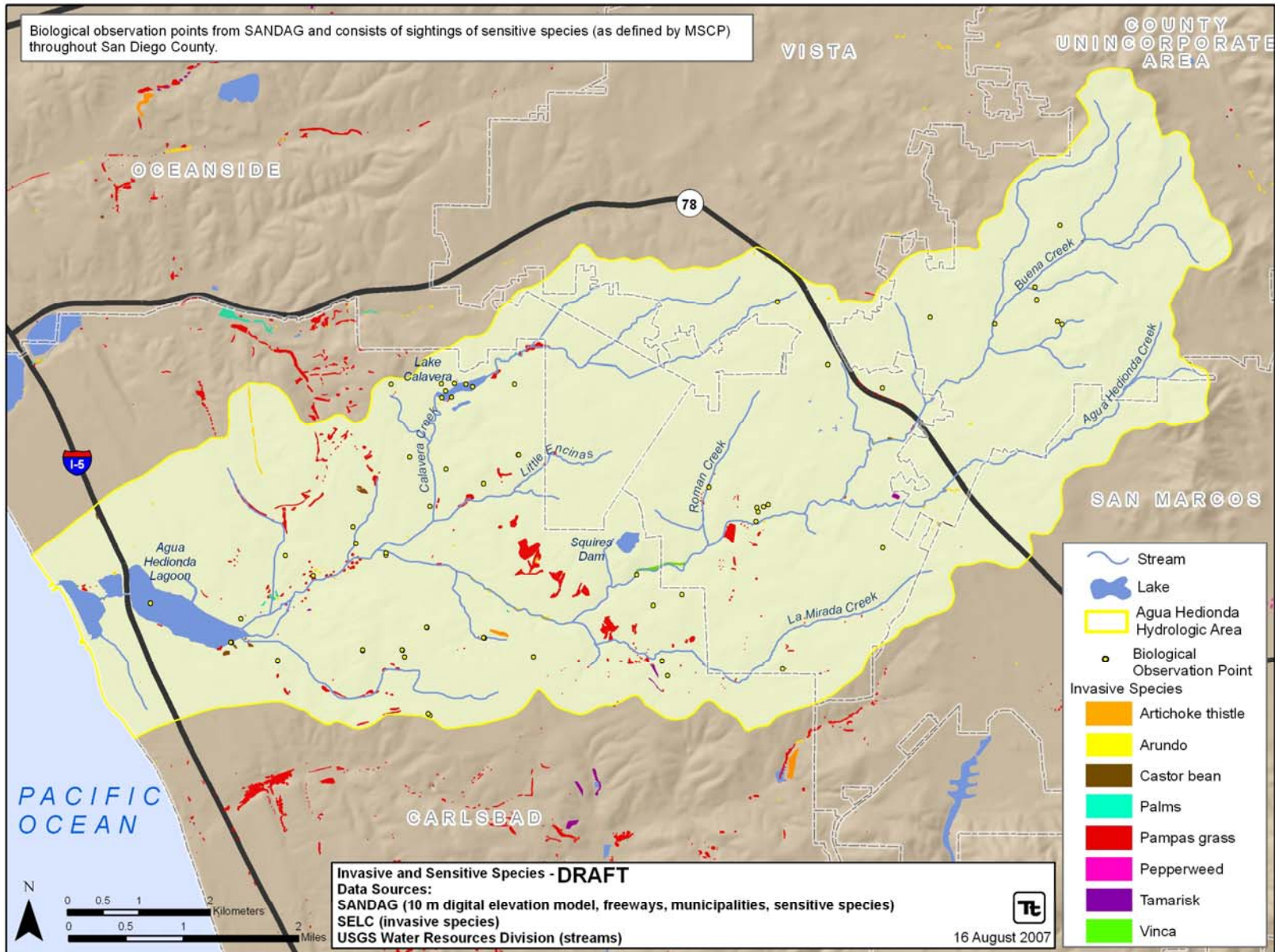
MUNICIPALITIES



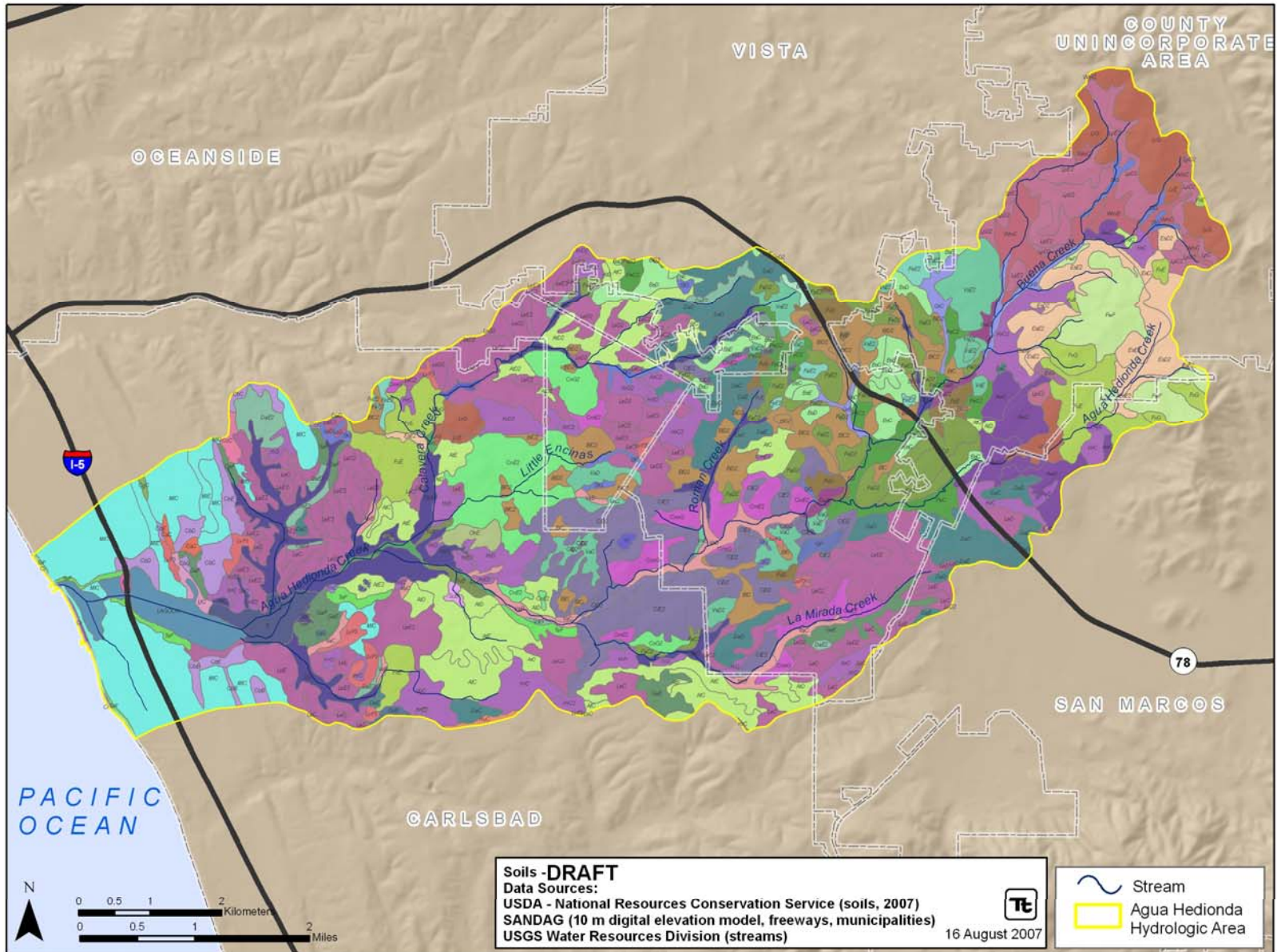
VEGETATION COMMUNITIES



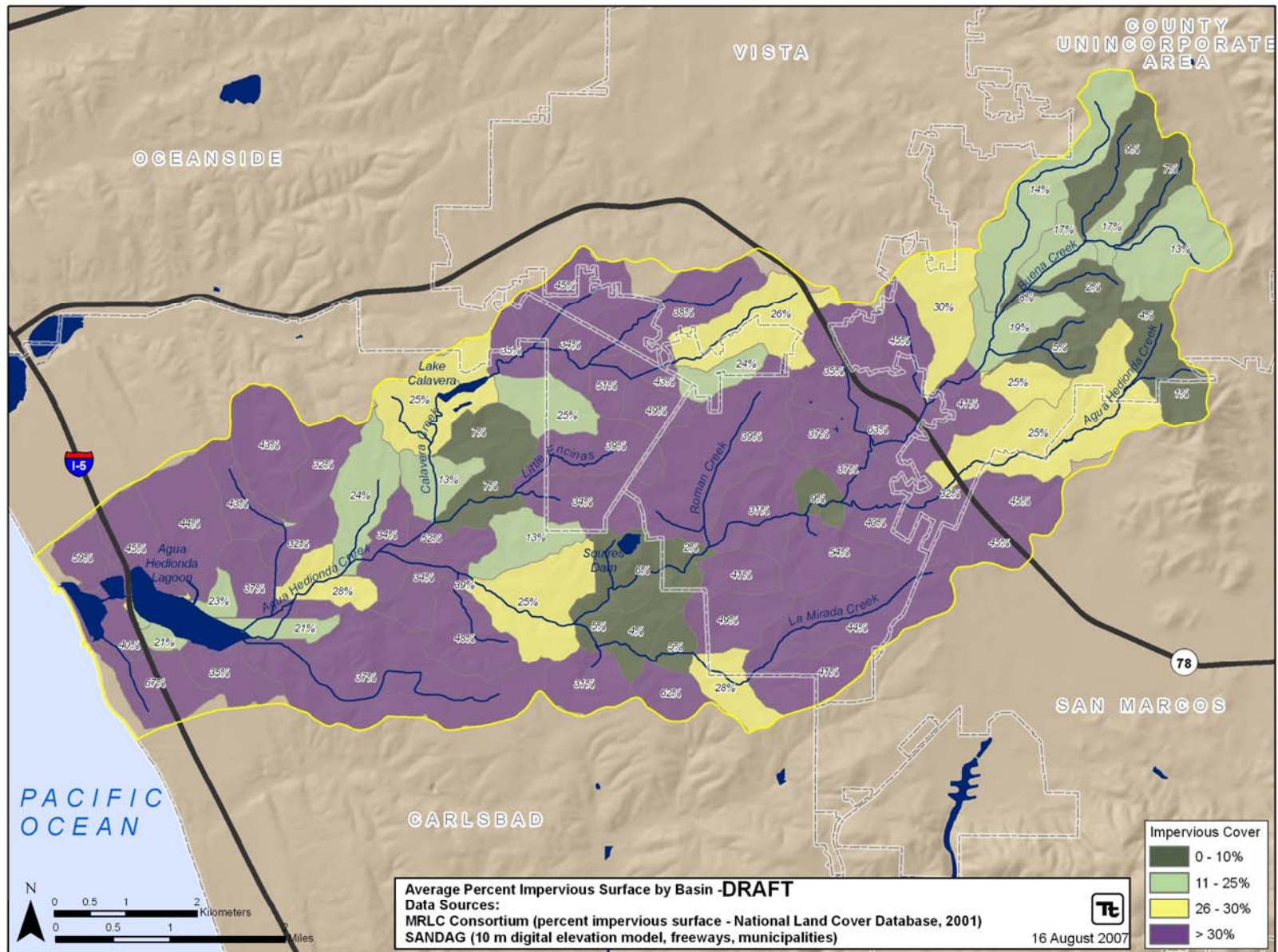
SENSITIVE & INVASIVE SPECIES



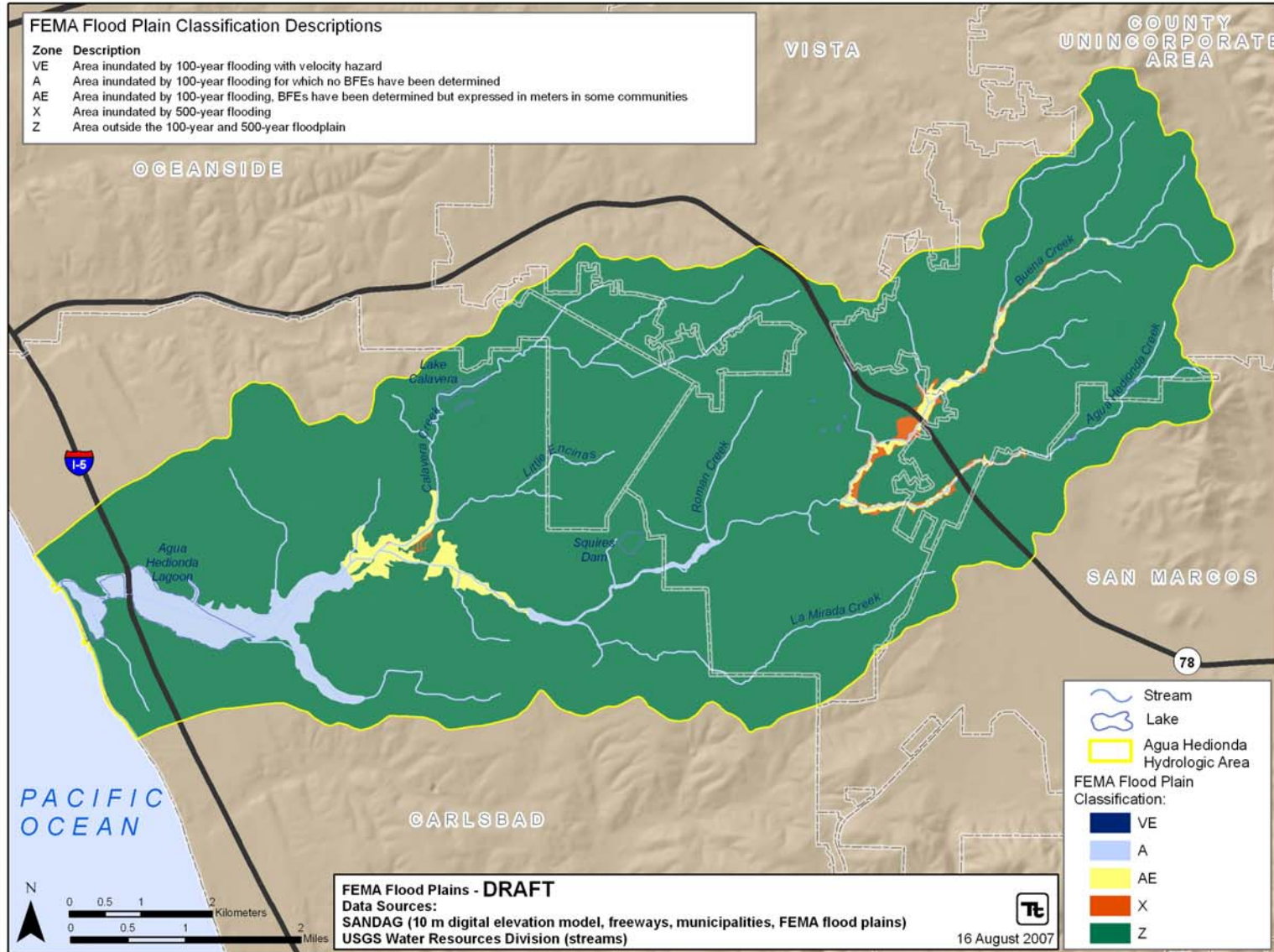
NRCS SOILS



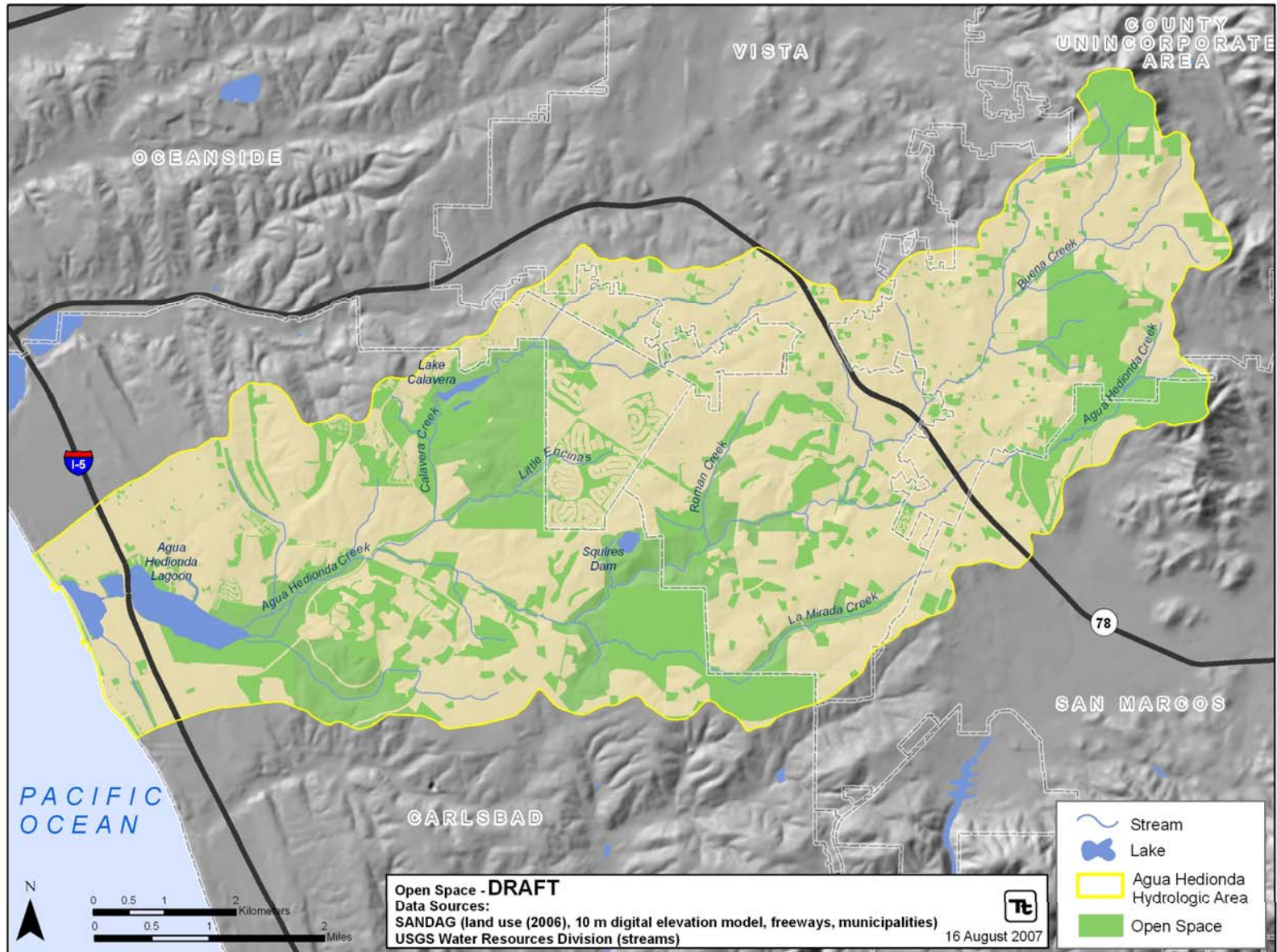
PERCENT IMPERVIOUS SURFACE AREA



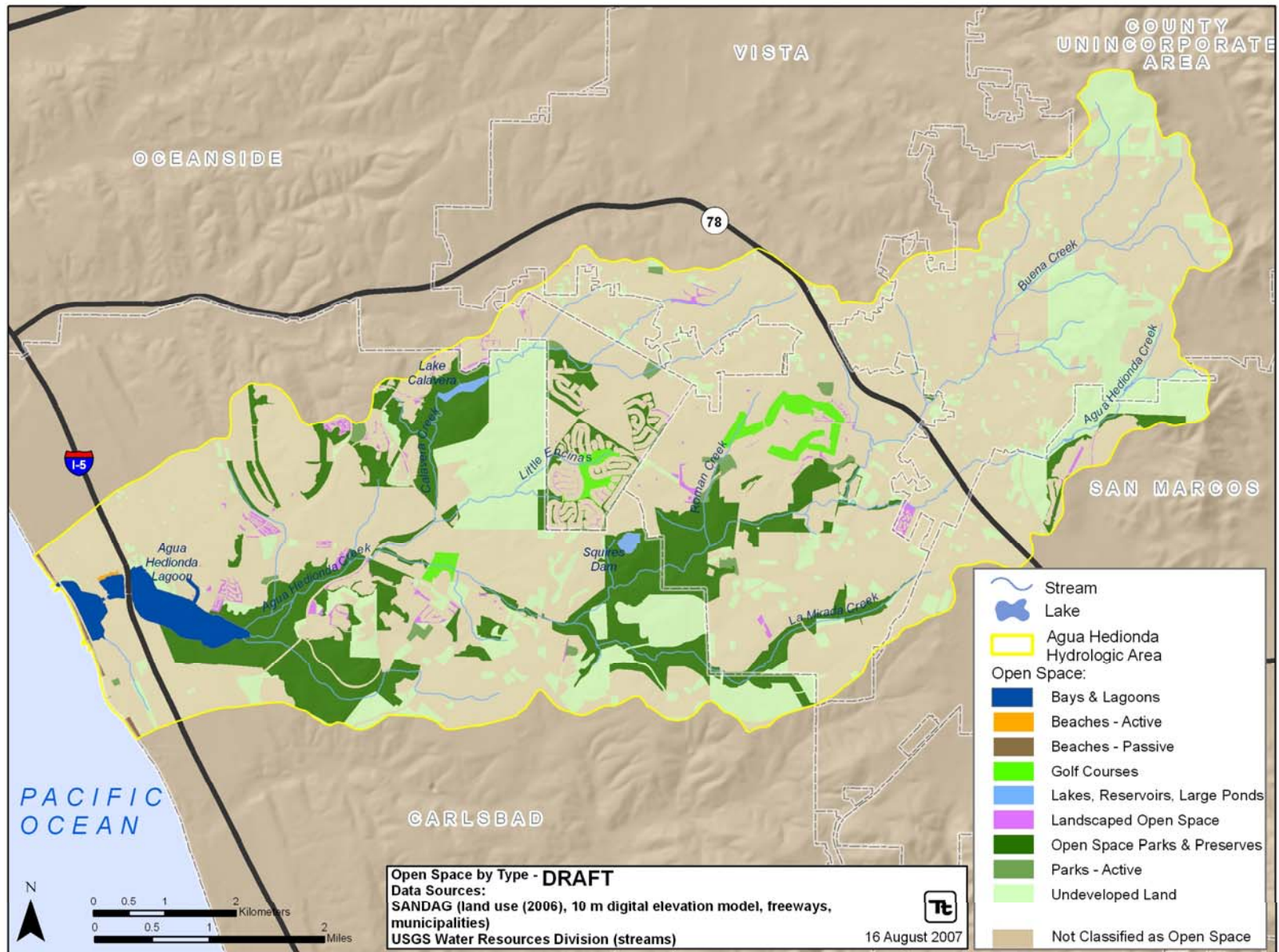
FEMA FLOOD ZONES



OPEN SPACE

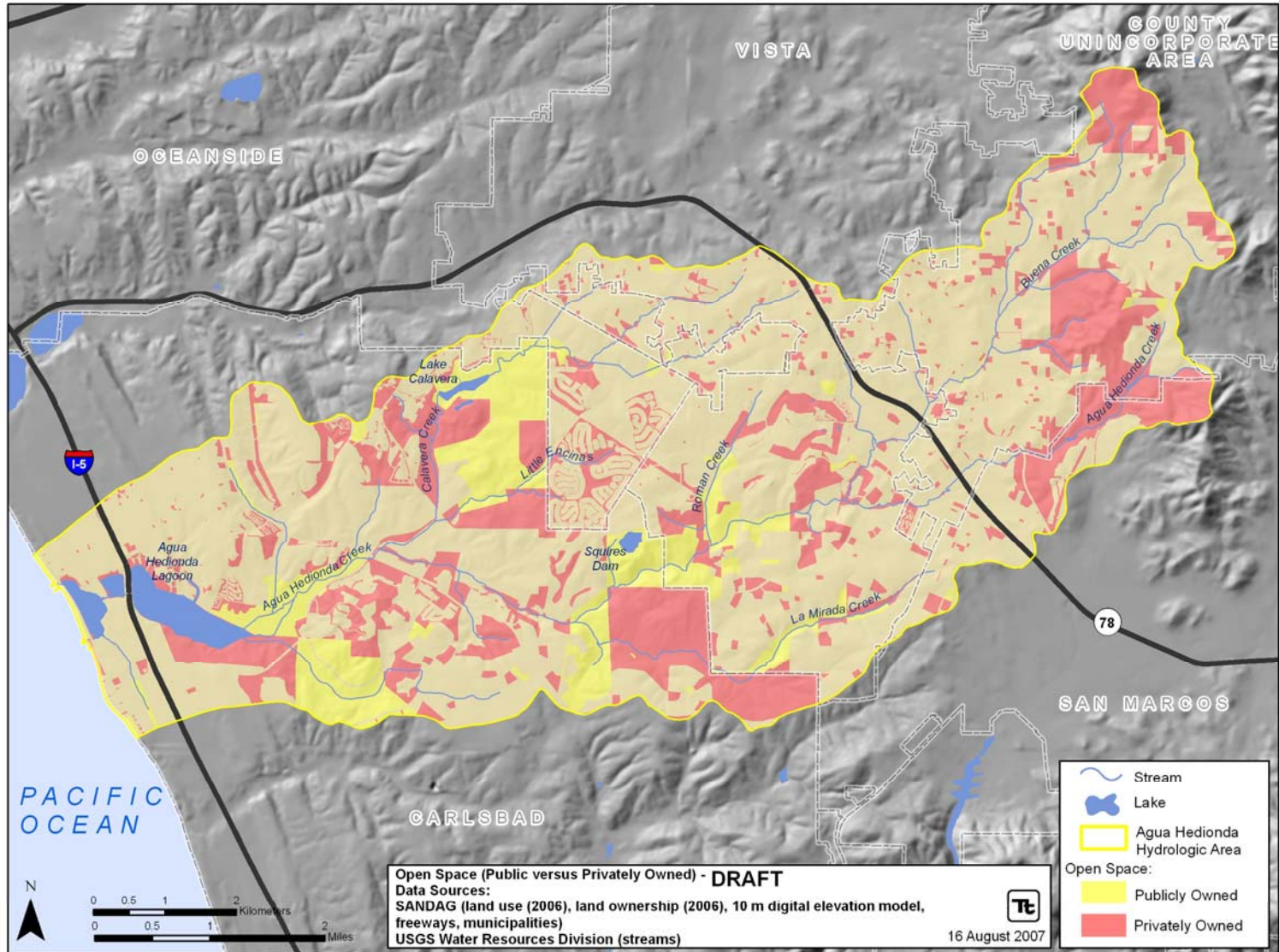


OPEN SPACE CATEGORIES

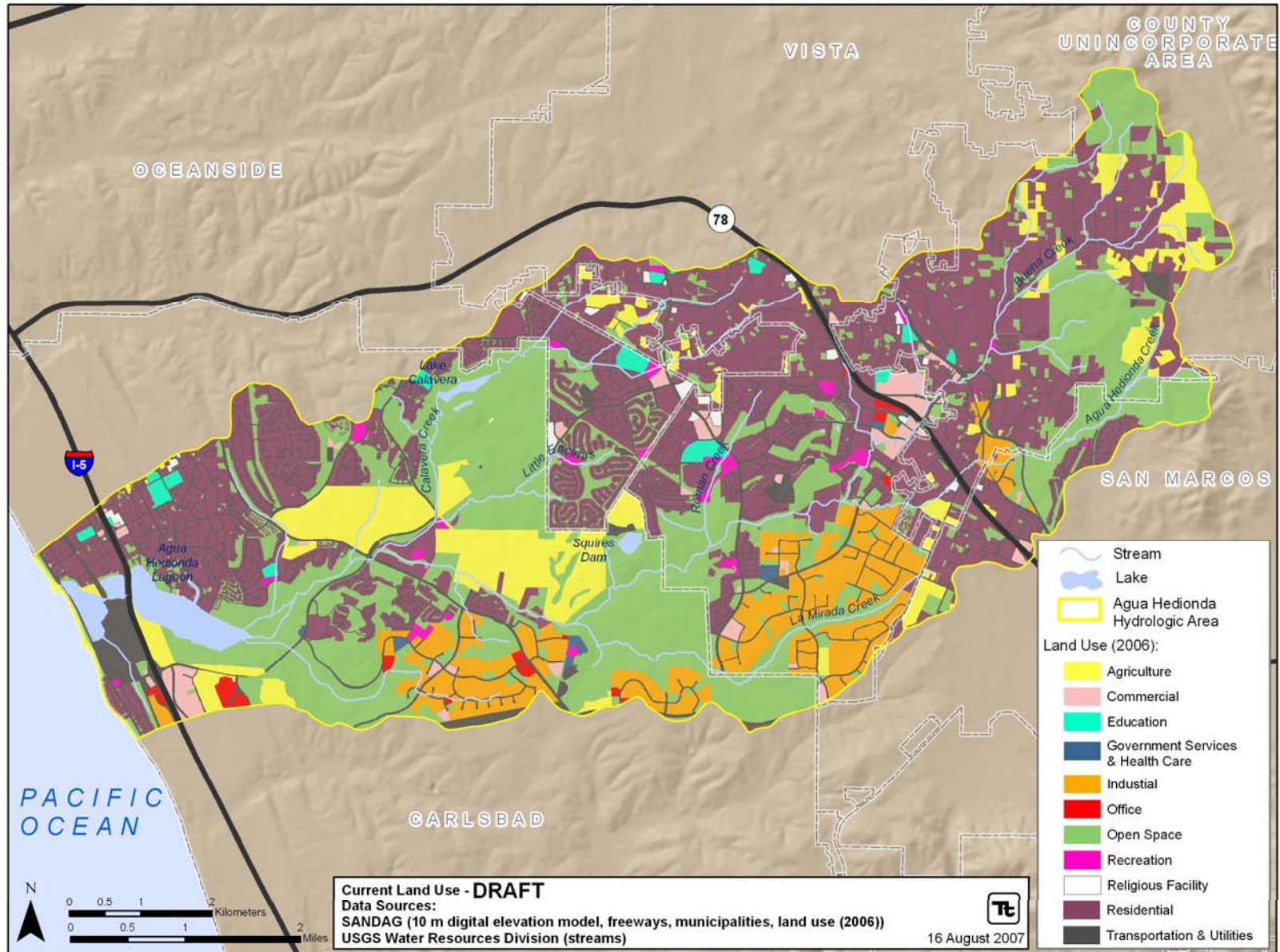


OPEN SPACE

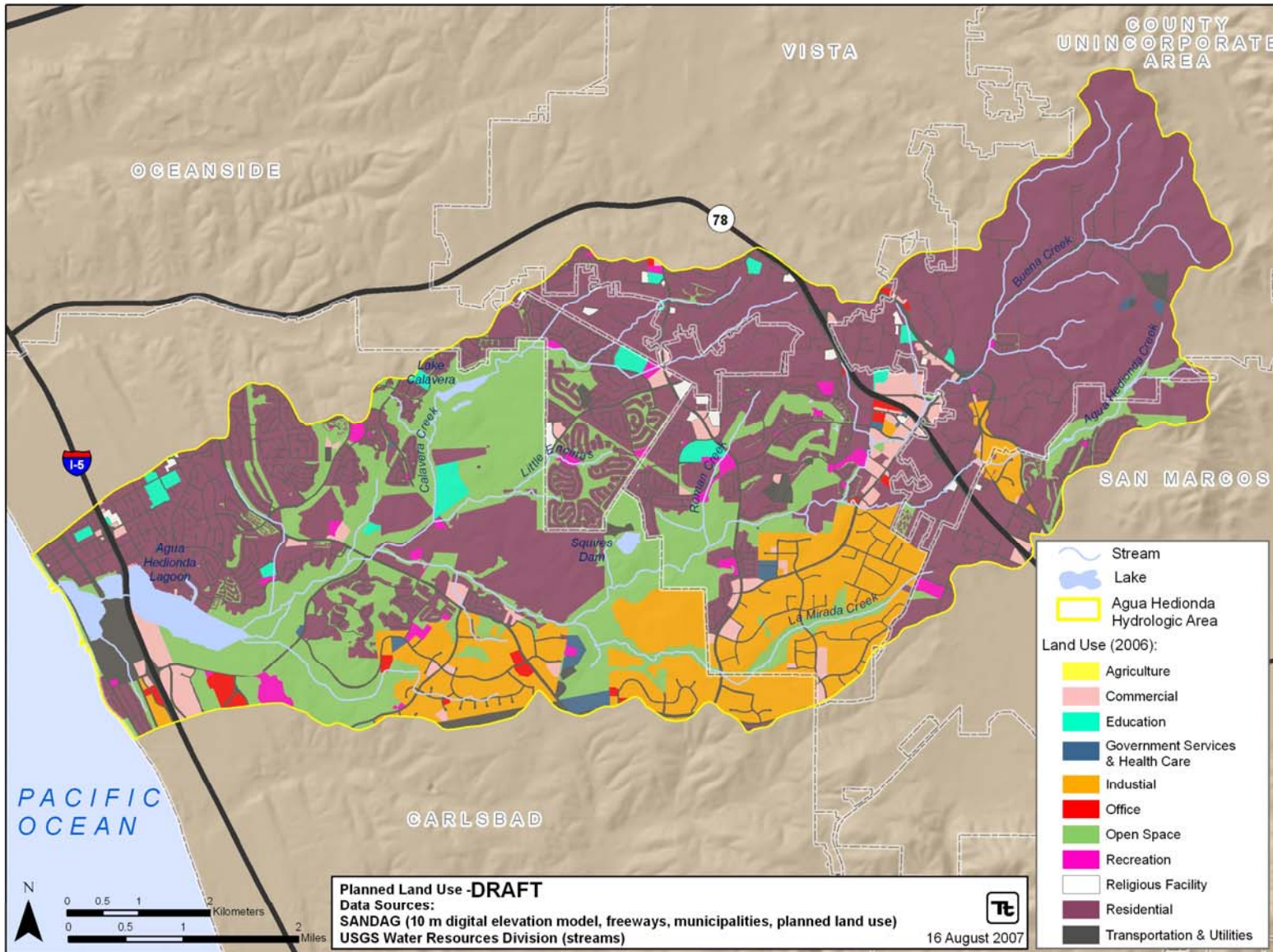
Public vs. Private Ownership



CURRENT LAND USE



PLANNED LAND USE





TETRA TECH, INC.

STREAM CORRIDOR SURVEYS
(STAKEHOLDER INVOLVEMENT)
&
WATERSHED
CHARACTERIZATION





Stream Characterization

■ Two-tier Approach

✓ General Watershed-wide
Reconnaissance

- Joint Stakeholder and Tetra Tech Effort

✓ Targeted Stream Reach
Characterization

- Conducted by Tetra Tech staff





Watershed-wide Reconnaissance

■ Objectives –

- ✓ Facilitate communication
- ✓ Develop understanding of the variety of impacts to stream channels throughout the watershed – NOT to collect detailed information at only a few sites
- ✓ Map the distribution of impacts





Watershed-wide Reconnaissance

▪ **Level of Effort –**

✓ 4 Teams

- Combine stakeholders with Tetra Tech staff

✓ One day

✓ Driving tour of watershed

- Visit pre-selected reaches and reaches of interest

✓ Activities:

- Record locations using GPS

- Record conditions using cameras

- Record conditions using notes and field forms





Watershed-wide Reconnaissance

- **Reconnaissance Outcome –**
 - ✓ Understanding of stream reach impacts
 - Hydrologic
 - Water Quality
 - Habitat
 - ✓ Photographic Documentation
 - ✓ GIS Mapping Files





Watershed-wide Reconnaissance

- **What this effort is NOT:**
 - ✓ Quantitative monitoring
 - ✓ Time intensive
 - ✓ Focused on specific reaches
 - ✓ A stream walk





Stream Reach Characterization

- **Follow-up effort to reconnaissance**
- **Combine reconnaissance and GIS evaluation to identify targeted reaches**





Stream Reach Characterization

■ Objectives –

- ✓ Develop understanding of the extent, magnitude, and range of instream erosion and sedimentation impacts
- ✓ Identify high value aquatic resources
- ✓ Identify candidate reaches for management measures





Stream Reach Characterization

Characterization Outcome –

- ✓ Photographic Documentation
- ✓ GIS Mapping Files
- ✓ Database of Conditions as Recorded on Field Forms
 - Field Forms May Include:
 - Physical Channel Dimensions
 - Instream Habitat Quality
 - Streambank Properties (materials, vegetation)
 - Floodplain Properties (connectivity, vegetation, width)





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Stream Reach Characterization

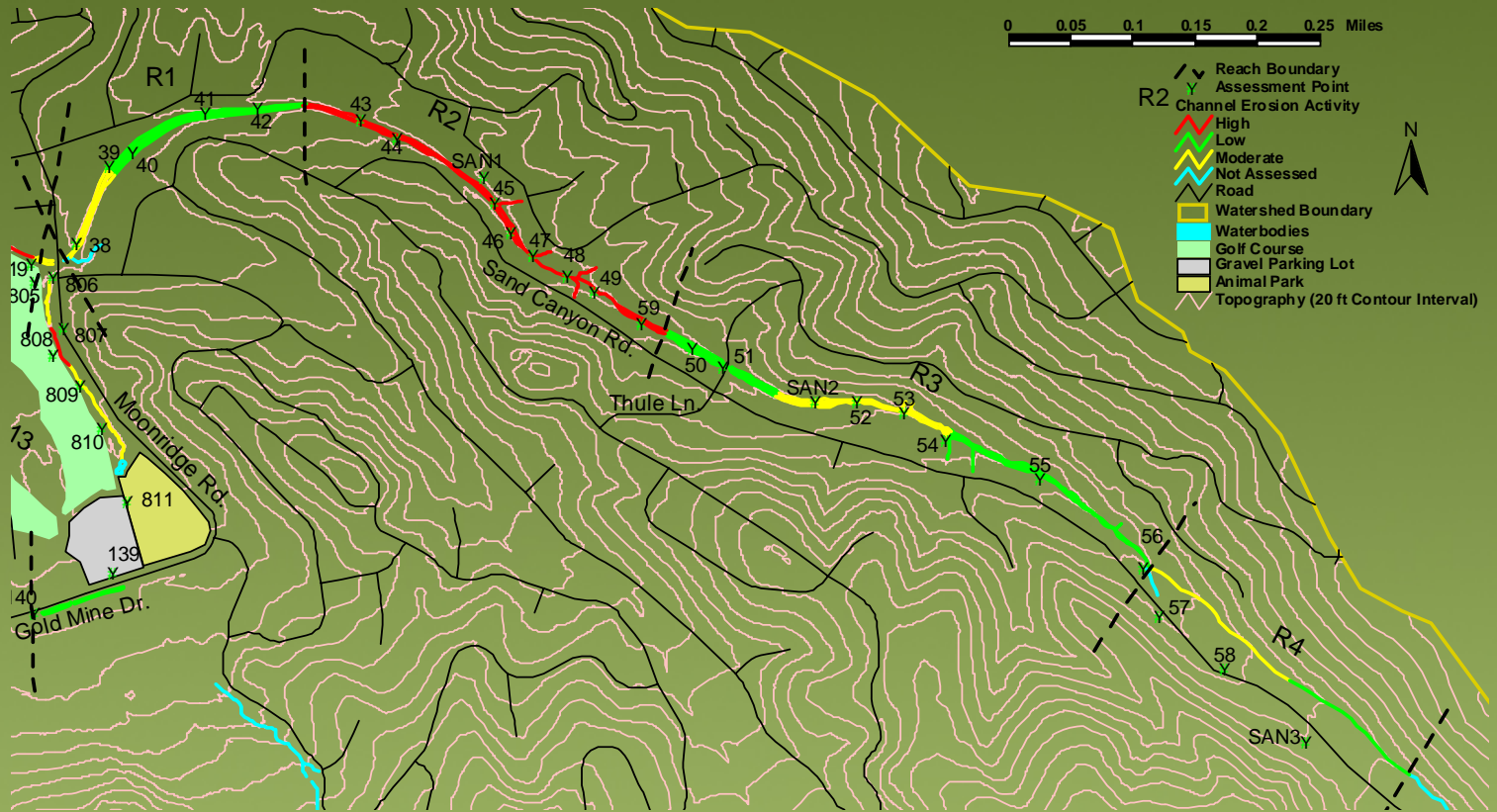


Downstream view of Academy Center Branch from Kerr Street. Channel has natural bottom but walls are made of stacked stone. Dimensions: ~7-ft deep, ~12-ft wide. Note white foam and bubbles on the surface, as well as urban trash.





Stream Reach Characterization





Stream Reach Characterization

- **How Will Collected Data Be Used?**
- **Assess susceptibility of response due to altered hydrology**
- **Targeting of Management**





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Preliminary Goals, Objectives, and Indicators





Some observations

- WPG brainstormed comprehensive, preliminary goals
- Tt developed preliminary objectives and indicators linked to each goal.
- Proposed WPG goals, objectives, and indicators could form long-term workplan for WPG
- See handout





Preliminary Mission Statement

- *Preserve, protect and improve the Agua Hedionda Watershed and enhance its beneficial uses.*

or

- *Preserve, restore and enhance the watershed's natural functions and features (alternatively use the term "watershed health and function")*





Goal #1

- *Land use and infrastructure are designed so as to minimize impacts on the watershed.*
- Objectives refer to minimizing impacts from
 - a) Infrastructure
 - b) Development





Goal #2

- *Protect (preserve?), restore and enhance habitat in the watershed.*
- Objectives refer to protecting, restoring, and/or enhancing different habitat types.





Goal #3

- *Restore watershed functions, including hydrology, water quality, and habitat, using a balanced approach that minimizes negative impacts.*
- Objectives refer to:
 - ✓ Restoring and protecting watershed functions
 - ✓ Minimizing impacts of restoration





Goal #4

- *Support compliance with regional, state, and federal regulatory requirements applicable to the watershed*





Goal #5

- *Increase awareness and stewardship within the watershed, including encouraging policy makers to develop policies that support a healthy watershed.*
- Objectives to be determined.





INDICATORS

- **Linked to each objective**
- **Measurable (e.g. riparian habitat within 100 year floodplain)**
- **Used to**
 - ✓ Measure current health of the watershed.
 - ✓ Identify on-the-ground management opportunities
 - ✓ Track progress in meeting goals and objective





How does current watershed plan effort link to WPG long-term efforts?

- **Tt's assessment and planning to focus on**
 - ✓ Hydromodification impacts on habitat
 - ✓ Preservation opportunities
 - ✓ Priority projects for stream restoration, stormwater retrofits, and land acquisition
- **Tt Scope of Work supports WPG's comprehensive goals**





NEXT STEPS

- **Design of field reconnaissance**
- **Project indicator refinement based on**
 - ✓ Available data
 - ✓ Available assessment tools
 - ✓ Project scope and budget
- **Revision of project goals and objectives following:**
 - ✓ Scoping Analysis
 - ✓ Detailed Assessment

