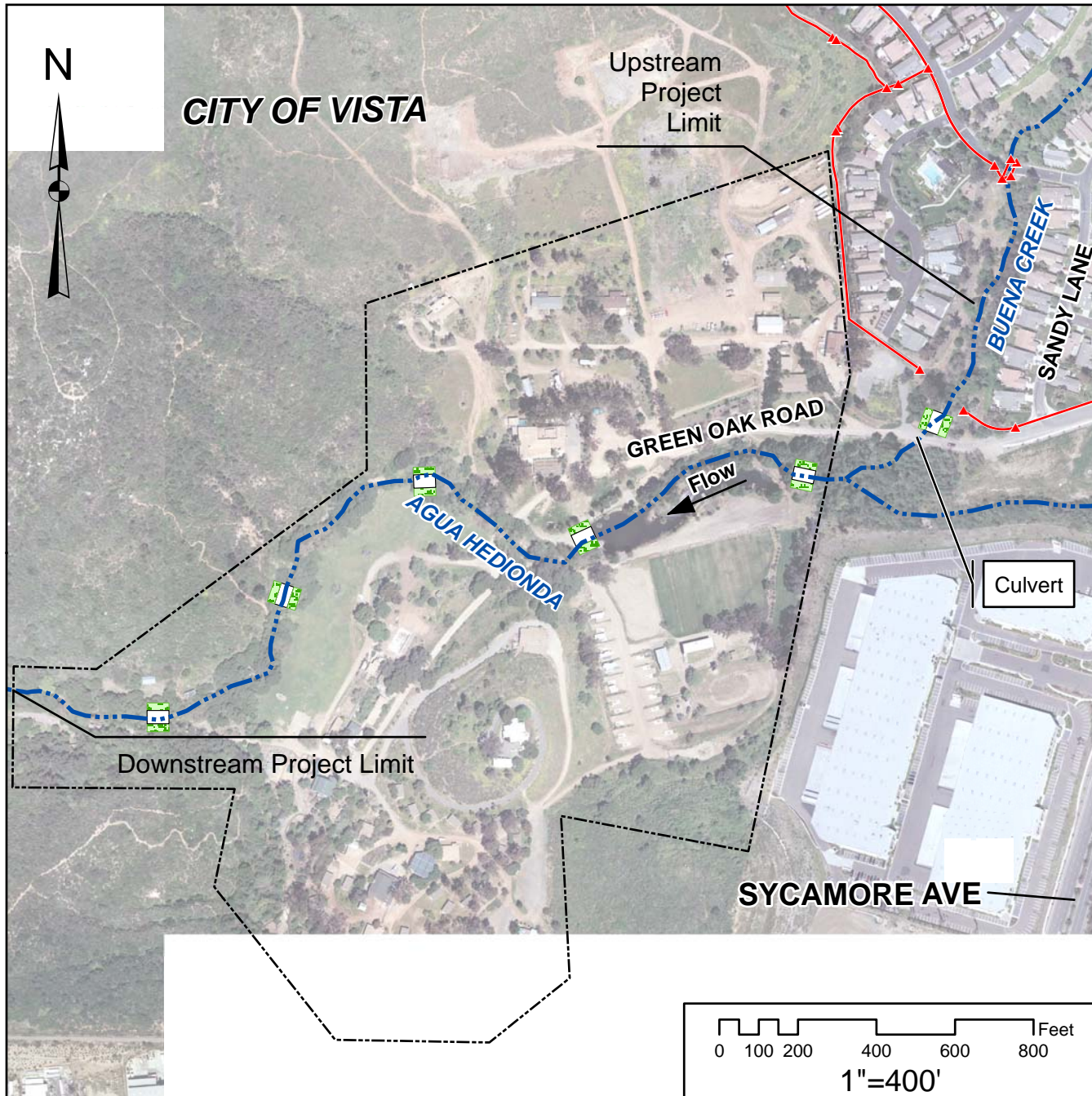


Appendix C. Stream Restoration Concept Sheets

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Site #SR-1: Agua Hedionda Reach 9



Major Issues

- Clogged culvert
- Obstructed culvert entrance
- Bank erosion

Restoration Opportunities

- Clean culvert
- Regrade culvert entrance area
- Grade Stabilizers

- Low profile (up to 2' drops)
- Select locations that do not disturb high value trees

Legend

▲ Stormdrain Structures

— Stormdrain Lines

--- Stream Channel

--- Green Oak Ranch

GradeStabilizers

□ Grade Control Structure

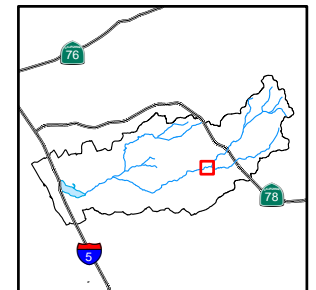
■ Replantings

JURISDICTION:

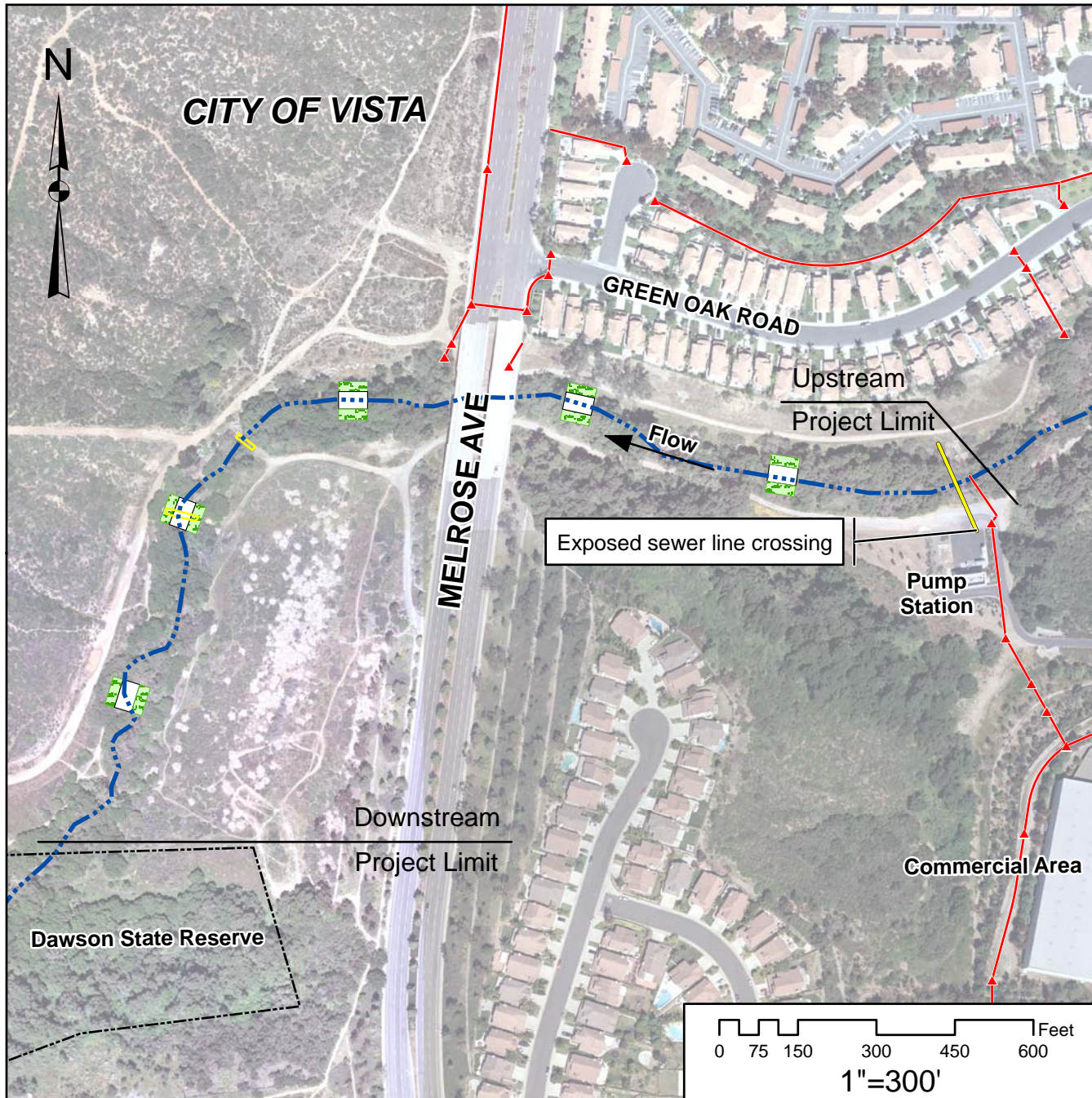
Vista

OWNERSHIP:

Private



Site #SR-2: Agua Hedionda Reach 14-15



Major Issues

- Erosion along the toe
- Large trees undercut
- Exposed sewer line
- Failing Grade Stabilizer

Restoration Opportunities

Grade Stabilizers

- Low profile (up to 2' drops)
- Select locations that do not disturb high value trees

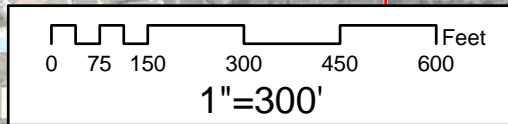
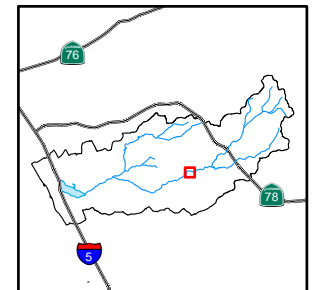
Toe Protection

- At location of imminent failure
- Soil wraps, boulders, rock vanes, willow whips

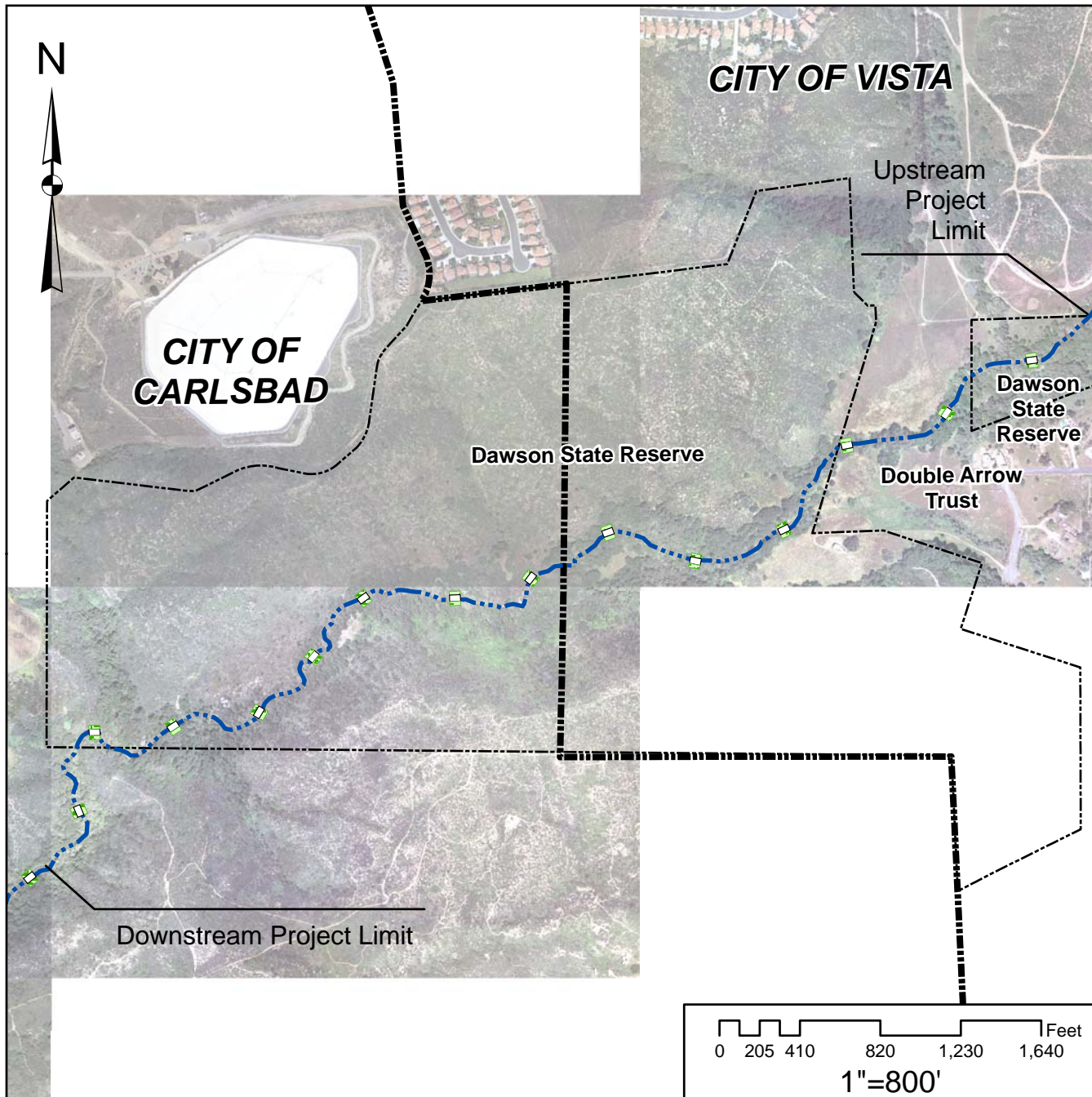
Legend

- ▲ Stormdrain Structures
- Stormdrain Lines
- - - Stream Channel
- Grade Control Structure
- Old GCS
- Replantings
- State Reserve

JURISDICTION:
Vista
OWNERSHIP:
Public



Site #SR-3: Agua Hedionda Reach 17



Major Issues

Moderate to significant bank failure at specific locations






Next Steps

Identification of bedrock controls
Determine if bedrocks allows for significant additional bank failure

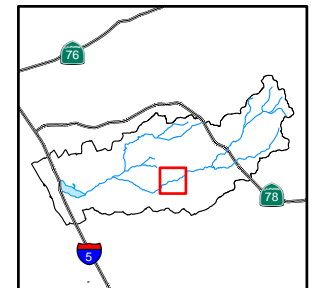
Restoration Opportunities

Toe Protection (rock) at select locations

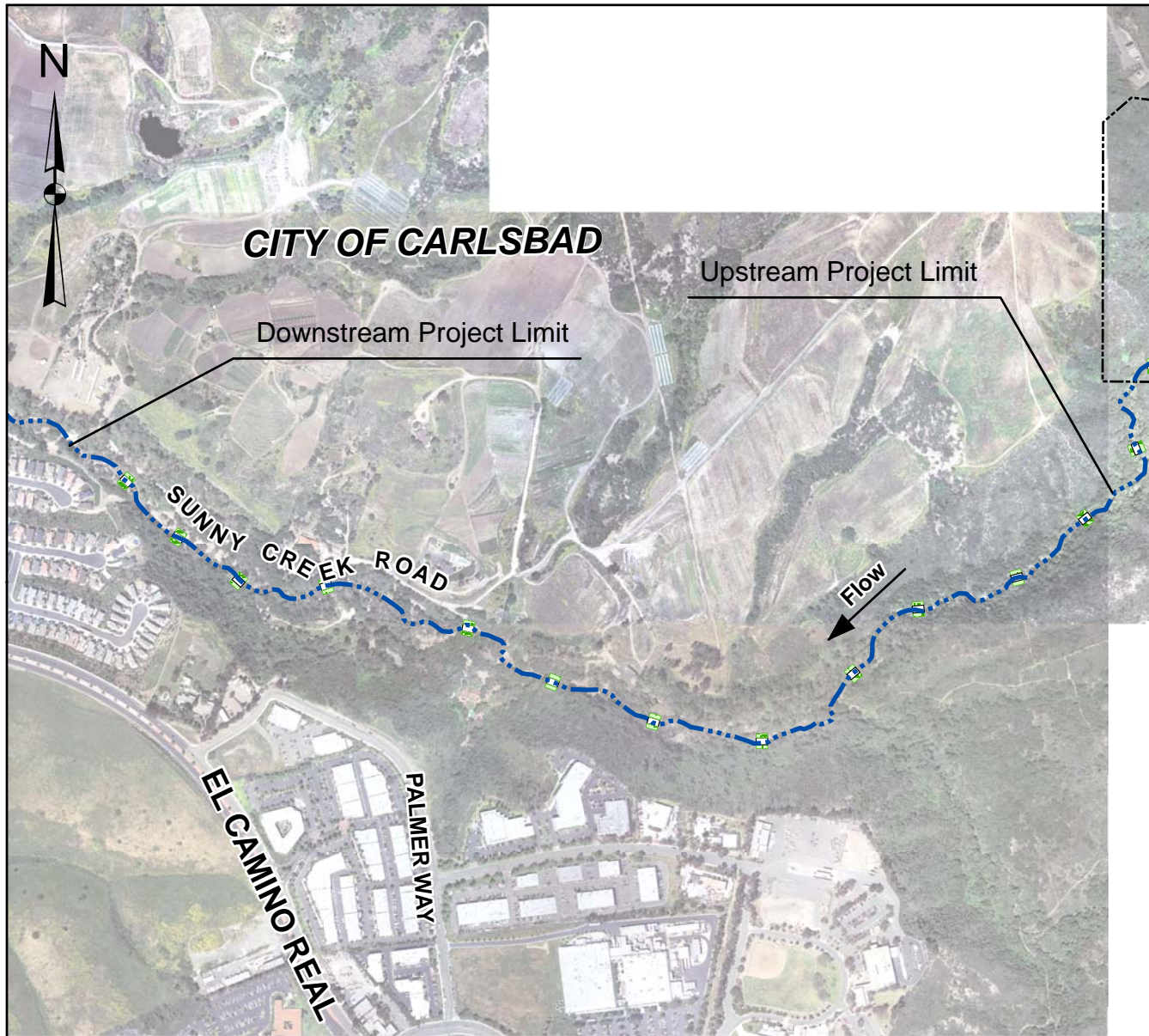
Legend

-  Stream Channel
-  Cities
-  State Reserve
-  Grade Control Structure
-  Replantings

JURISDICTION:
Vista & Carlsbad
OWNERSHIP:
Public & Private



Site #SR-4: Agua Hedionda Reach 18



Major Issues

Moderate to significant bank failure at specific locations

Next Steps

Identification of bedrock controls
Determine if bedrocks allows for significant additional bank failure

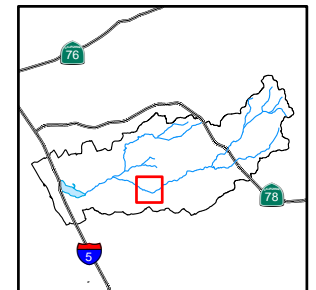
Restoration Opportunities

Toe Protection (rock) at select locations

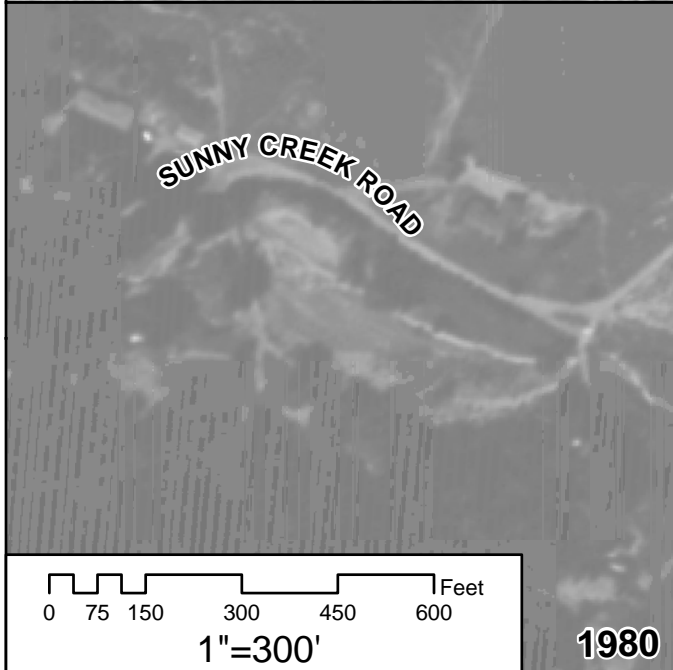
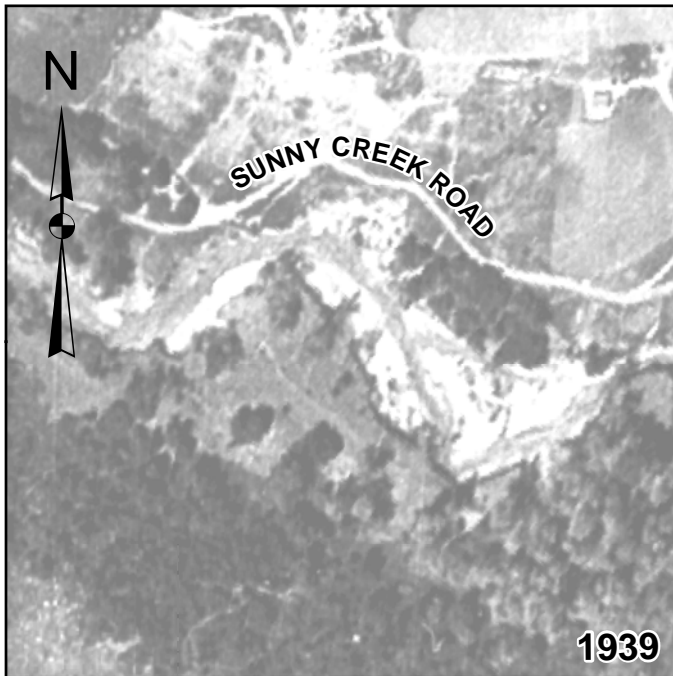
Legend

- Stream Channel
- State Reserve
- Grade Control Structure
- Replantings

JURISDICTION:
Carlsbad
OWNERSHIP:
Private

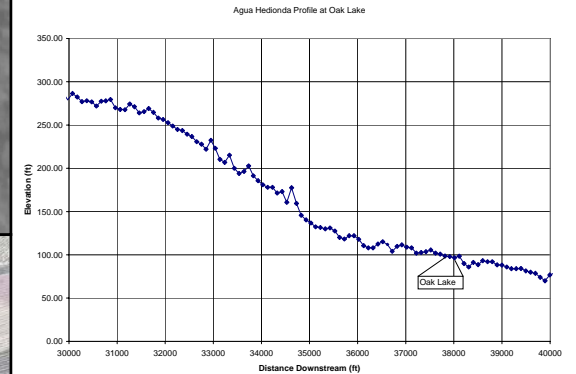


Site #SR-5: Agua Hedionda, Oak Lake

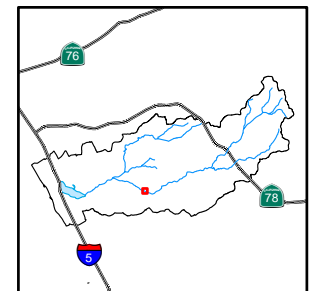


Major Issues
Habitat Feature

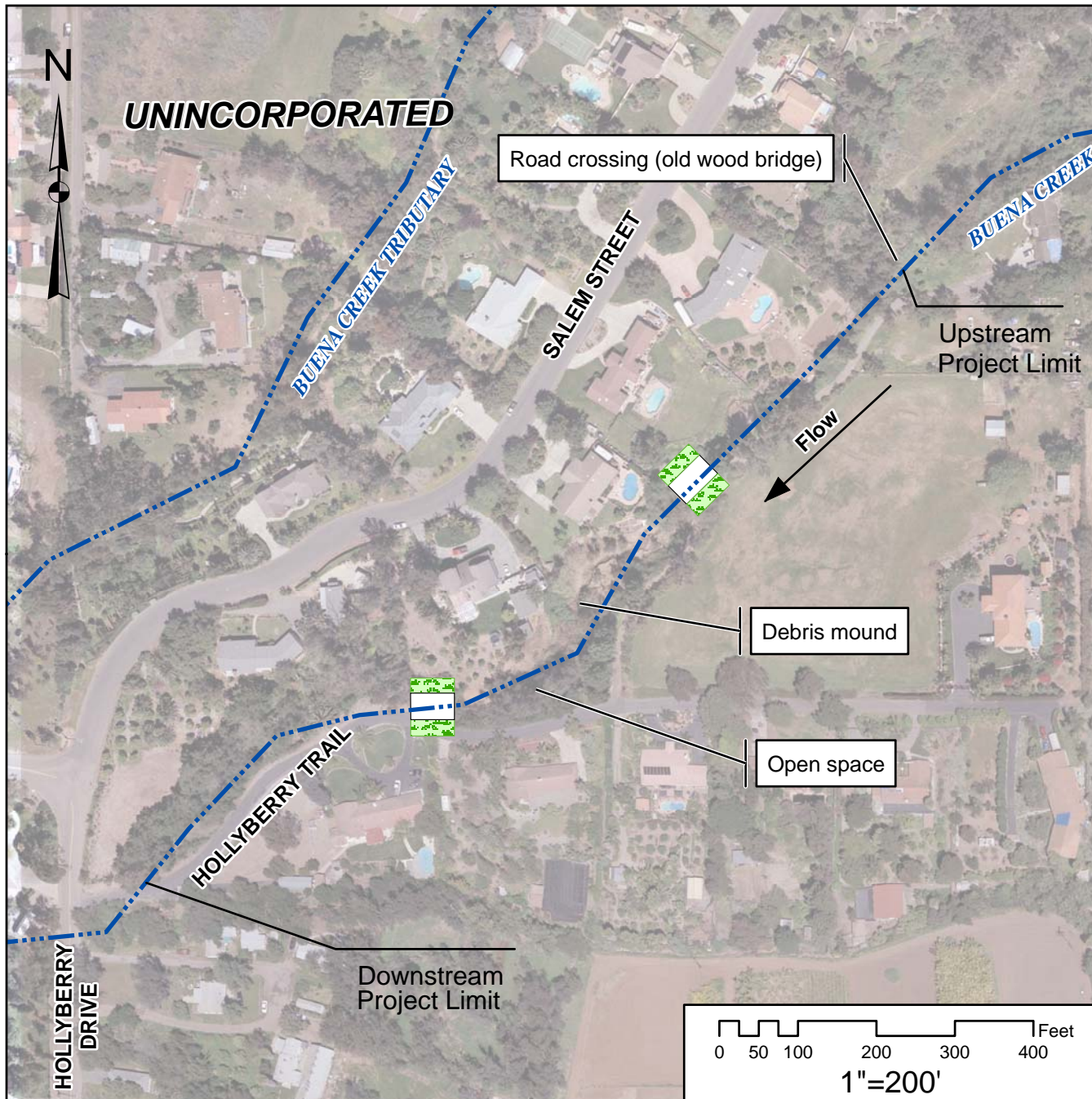
Restoration Opportunities
Restore Habitat Feature



JURISDICTION:
Carlsbad
OWNERSHIP:
Private



Site #SR-6: Buena Creek Reach 23



Major Issues




- Intermittent bank protection
- Bank erosion to 6' high
- Channel clogged with debris

Restoration Opportunities

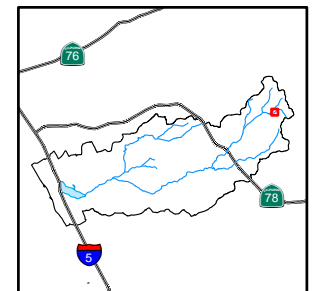
Grade stabilizers

- Use rock to match natural setting
- Create riffles to mimic existing conditions

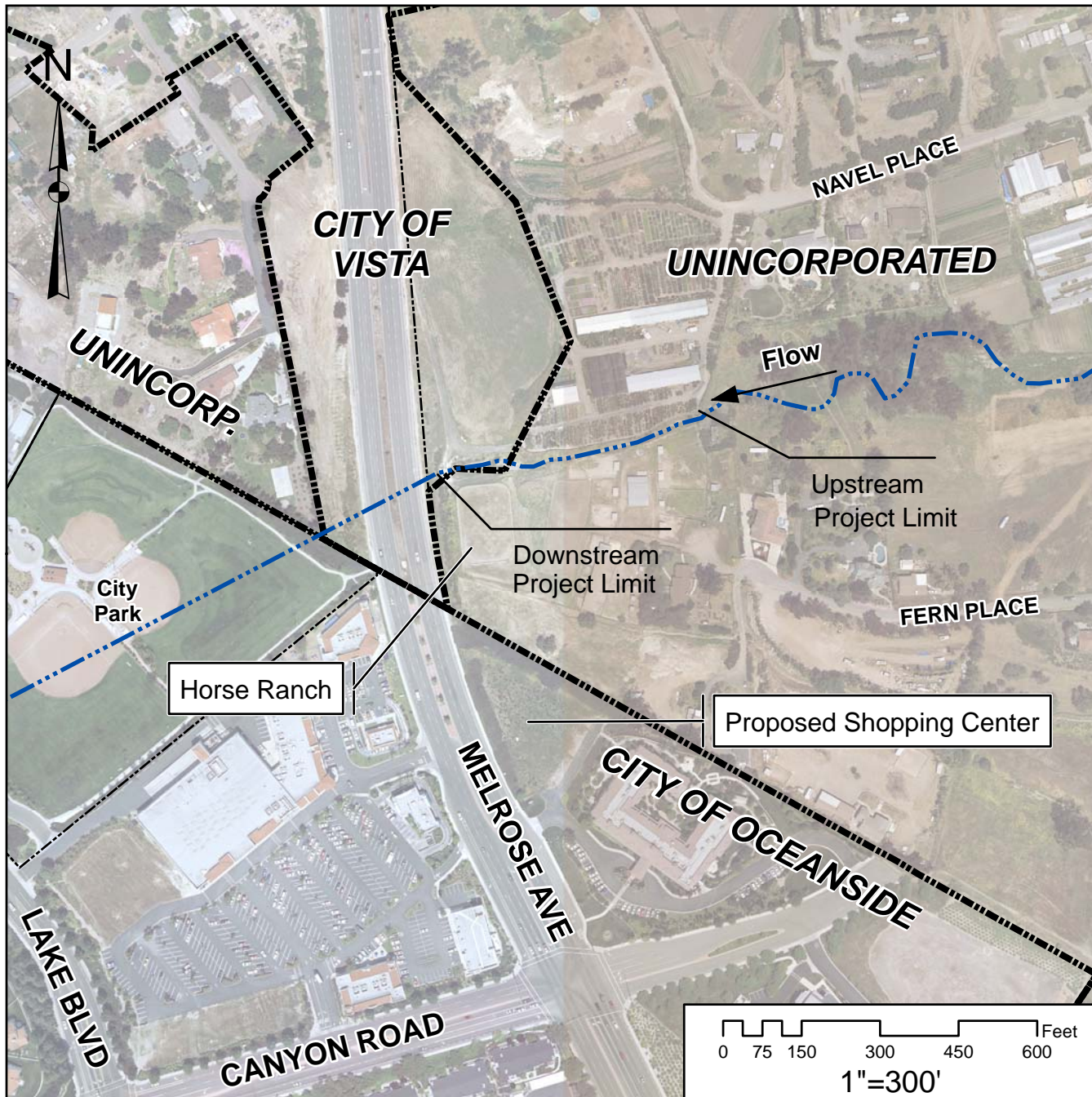
Legend

-  Stream Channel
-  Grade Control Structure
-  Replantings

JURISDICTION:
Unincorporated
OWNERSHIP:
Private



Site #SR-7: Calavera Creek Reach 51



Major Issues

- Channel severely restricted
- No riparian area
- Likely water quality impact from adjacent agriculture

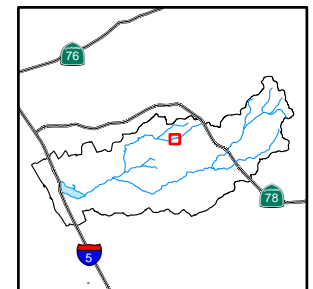
Restoration Opportunities

- Purchase adjacent land
 - Widen channel
 - Establish Riparian buffer
- Educational Opportunities
 - Connect proposed shopping center to river

Legend

- Stream Channel
- City Boundaries
- Public Parcels

JURISDICTION:
Unincorporated
OWNERSHIP:
Private



Site #SR-8: Calavera Creek Reach 56A



Major Issues

- Erosion along the toe
- Widening Channel
- Adjacent infrastructure (road and property wall)
- Failed grade stabilizers (sand bags)

Restoration Opportunities

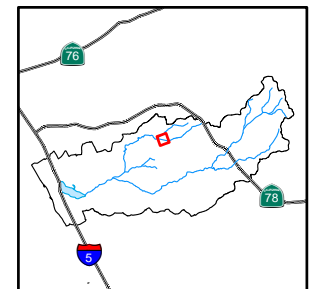
Grade Stabilizers

- Low profile (up to 2' drops)
- Use rock to match natural settings

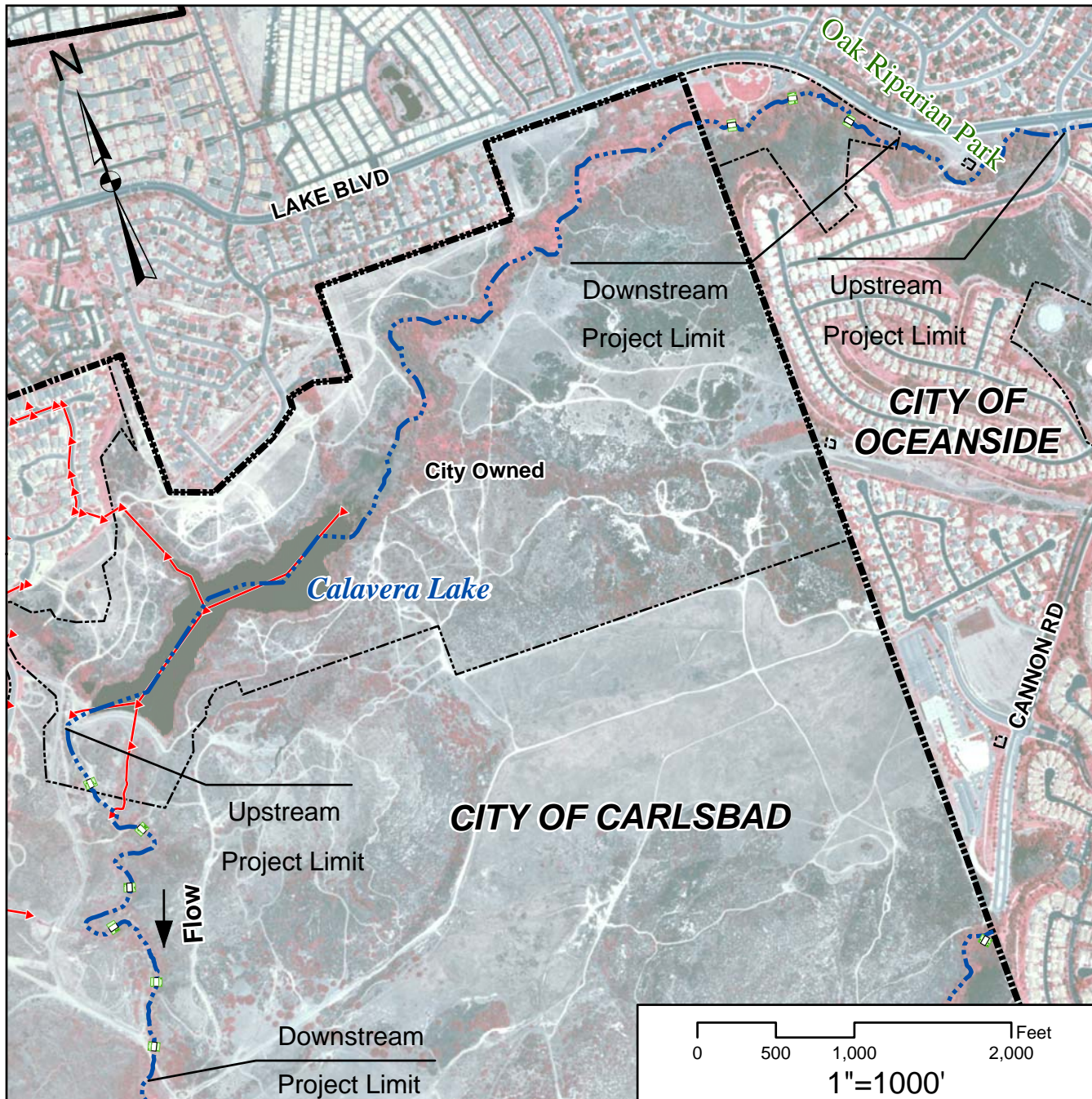
Legend

- Stream Channel
- Cities
- Public Parcels
- Grade Control Structure
- Replantings

JURISDICTION:
Oceanside
OWNERSHIP:
Private



Site #SR-9: Calavera Creek Reach 60



Major Issues

Mass wasting of channel

Restoration Opportunities

Regrade banks

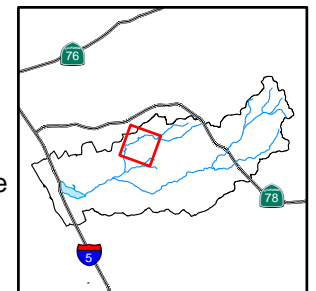
Grade stabilizers

Natural settings

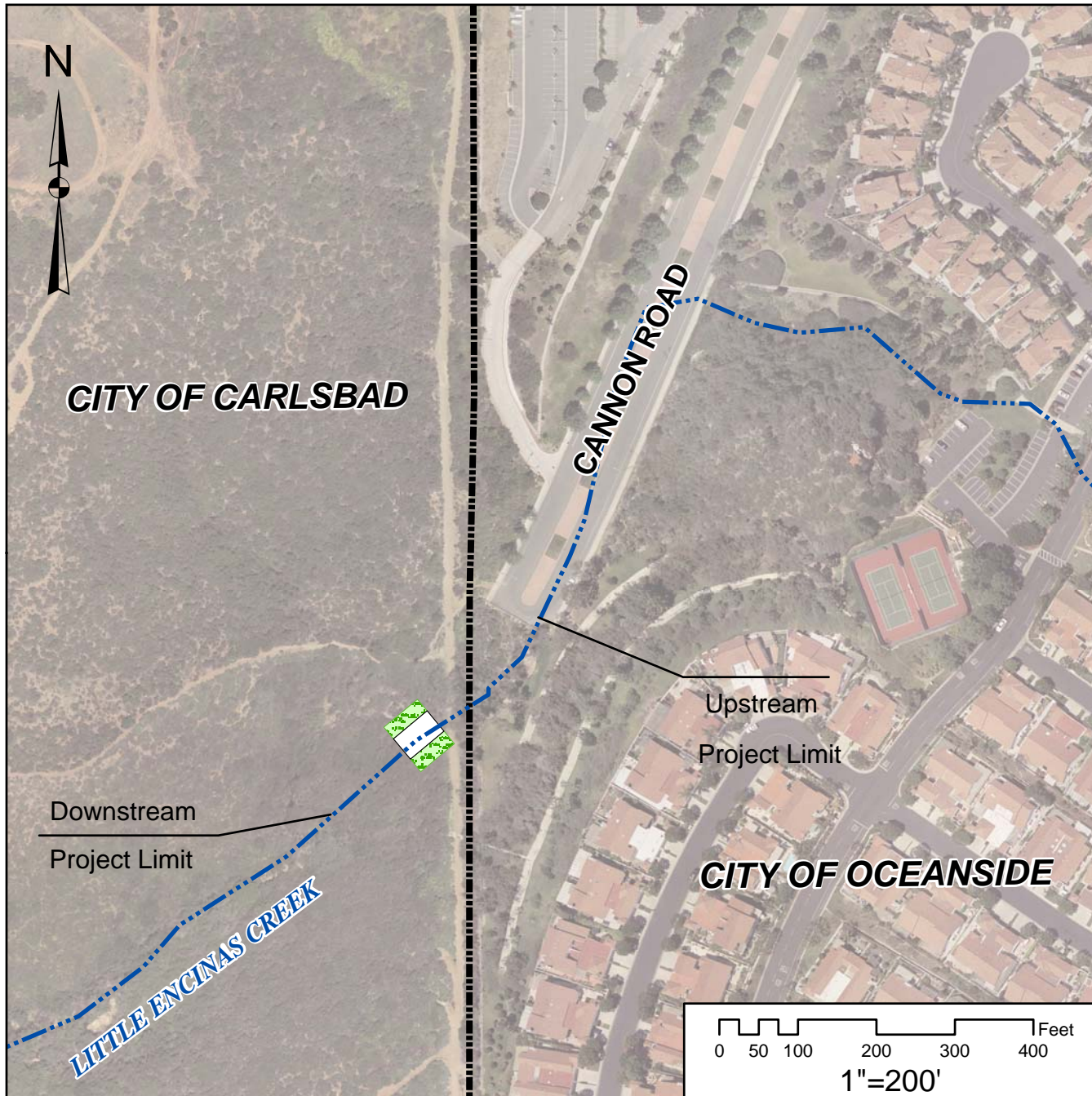
Legend

- · — · Stream Channel
- ▲ Stormwater Structures
- Stormwater Lines
- Public Parcels
- Grade Control Structure
- Replantings

JURISDICTION:
Carlsbad & Oceanside
OWNERSHIP:
Public



Site #SR-10: Little Encinas Creek Reach 63



Major Issues

Bank failure & Undercutting

Restoration Opportunities

Regrade banks

Grade stabilizers

Natural settings

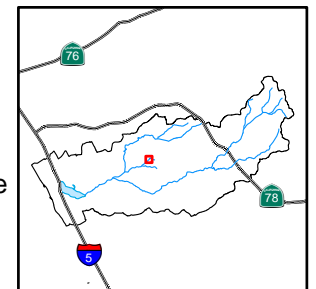
Legend

—•••— Stream Channel

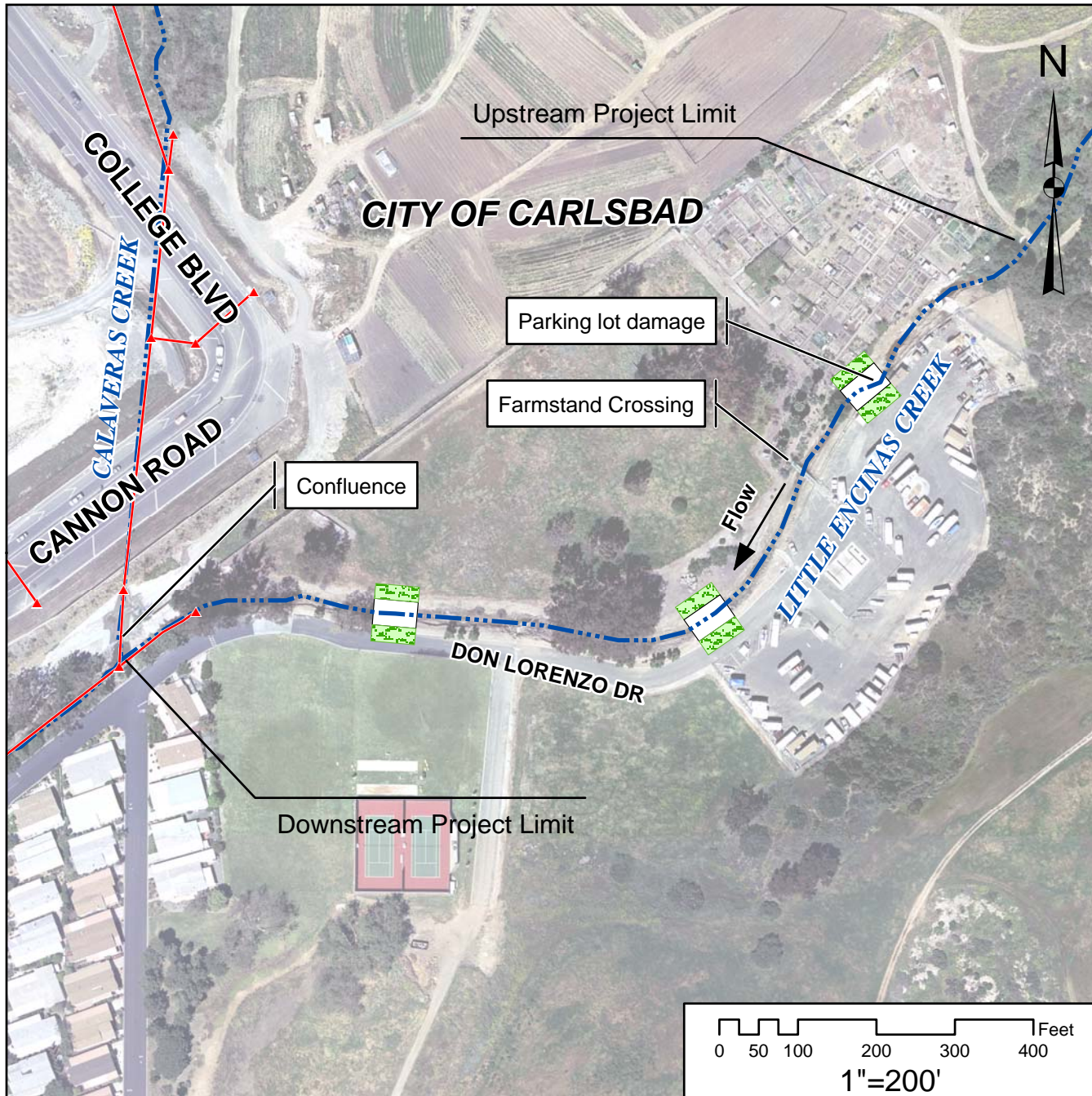
□ Grade Control Structure

■ Replantings

JURISDICTION:
Carlsbad & Oceanside
OWNERSHIP:
Public



Site #SR-11: Little Encinas Creek Reach 64



Major Issues

- Invert erosion (4') downstream of culvert
- Bank failure
- Damage to adjacent infrastructure
- Intermittent bank protection
- Riprap and geo-fabric slumped into channel

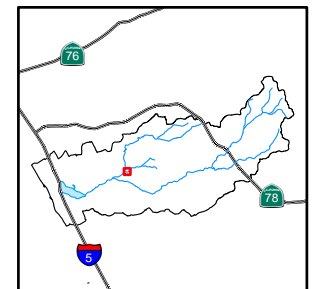
Restoration Opportunities

- Regrade bank away from road
- Grade stabilizers
 - Low profile (up to 2' drops)
 - Use rock to match natural settings

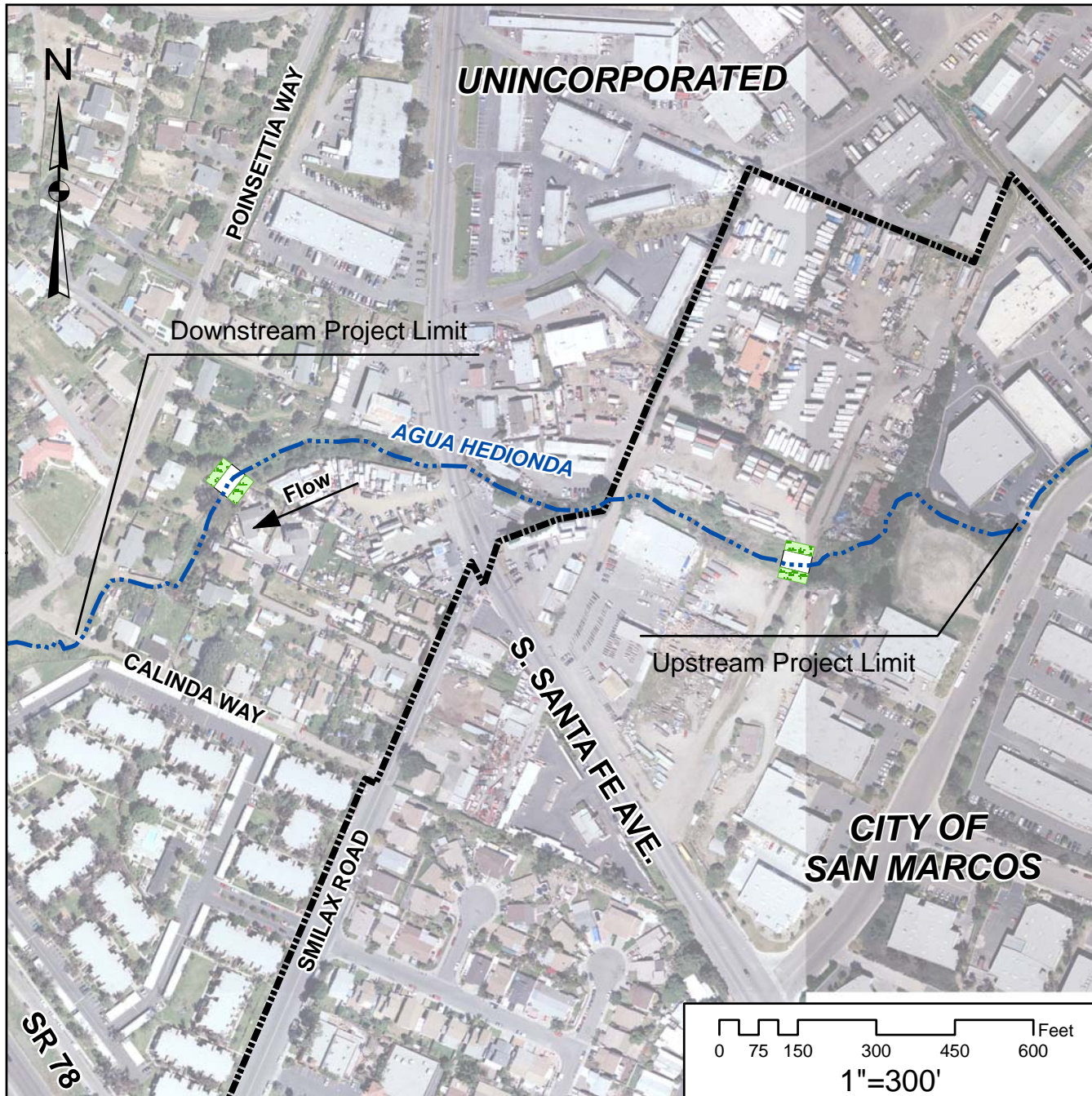
Legend

- ▲ Stormdrain Structures
- Stormdrain Lines
- - - Stream Channel
- Grade Control Structure
- Replantings

JURISDICTION:
Carlsbad
OWNERSHIP:
Private



Site #SR-12: Agua Hedionda Reach 4



Major Issues

- Erosion
- Channel confinement
- Adjacent Infrastructure

Restoration Opportunities

Grade Stabilizers

- Low profile (up to 2' drops)
- Select locations that do not disturb high value trees

Legend

— Stream Channel

Grade Stabilizers

□ Grade Control Structure

▨ Replantings

▭ Green Oak Ranch

JURISDICTION:
Unincorporated
& San Marcos
OWNERSHIP:
Private

