



RECON



MARITIME SUCCULENT SCRUB  
RESTORATION AND MANAGEMENT  
FOR CACTUS WRENS  
by Mark Doderro

# Planning for Restoration

- Select a site
- Develop a plan
- Seed collection
- Plant propagation
- Implementation
- Maintenance, monitoring, and reporting

# OHV Damaged Areas, Overgrazed Lands and Manufactured Slopes can be Restored



# Possible Restoration/Enhancement Goals



Improve Ecosystem Function  
Mustard Invasion  
into Preserved MSS



Habitat for  
Restoration  
Rare Species-  
Variegated  
Dudleya



Improve  
Conditions for  
Native  
Pollinator  
Populations

# Create Low Fuel-Low Water Habitat



# Seed Collection, Bulking and Storage



Appropriate timing  
of Seed Collection  
from Local Sources



Seed Bulking  
of Native Grasses



Store Seeds  
in a Cool, Dry  
Location



# Advantages of Using Native Soil

- Reduced Nutrient Content Which Inhibits Weed Growth (Native Species Are Often Adapted to Low Nutrient Conditions)
- Improved Water Retention Compared to Traditional Nursery Mix
- Native Mycorrhizal Component Already in Soil
- Reduced Transplanting Stress

# Large-Scale Cactus Salvage Operations



# Controlled Drought in the Nursery

Plants are Pre-conditioned for Low Water Environments by Limiting Available Water at the Nursery



Guest Nursery  
Acclimated Plants at the Restoration Site

# Site Preparation



Site Grading/Recontouring



Weed Thatch Removal  
Using Weed Whips

# Site Preparation-Habitat Structure



Native Brush Piles and Natural Rock Cobbles Provide Structure

# Plant Installation



Hand Excavation



Auger Used in Rocky/  
Hardpan Soils



Planting Salvaged Native Bunchgrasses

# Water Truck Irrigation in Remote Restoration Locations



# Temporary Irrigation used to Establish New Plantings



# Invasive Species Management



Follow up Spraying  
to Control Weeds

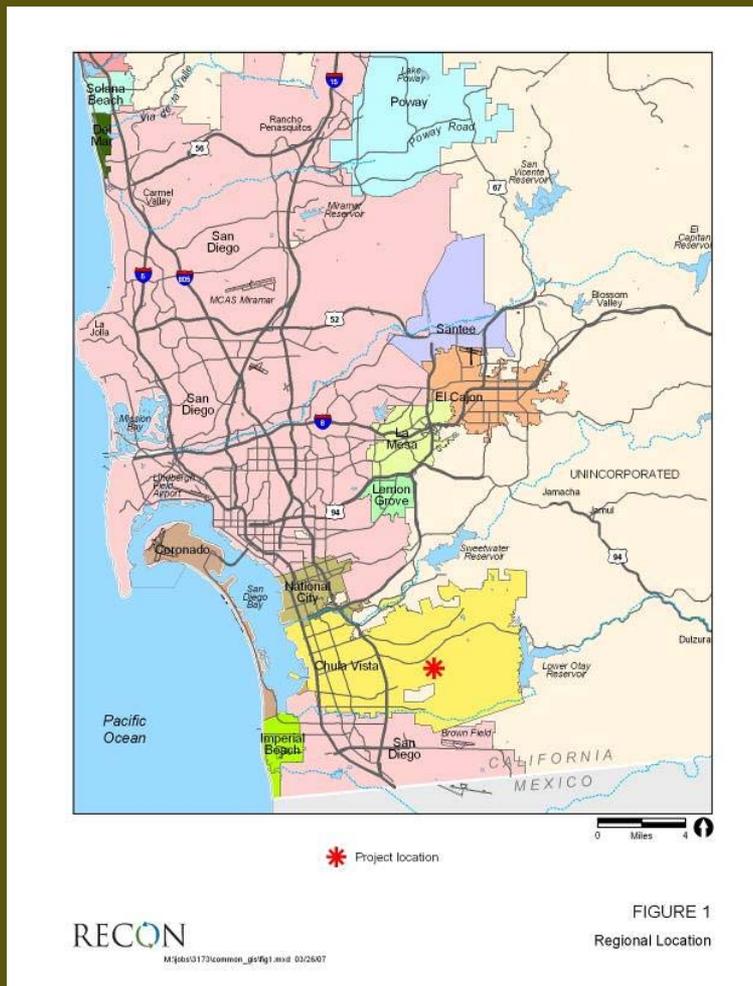


Reduce Non-native Flash Fuels  
Mustards-Annual Grasses

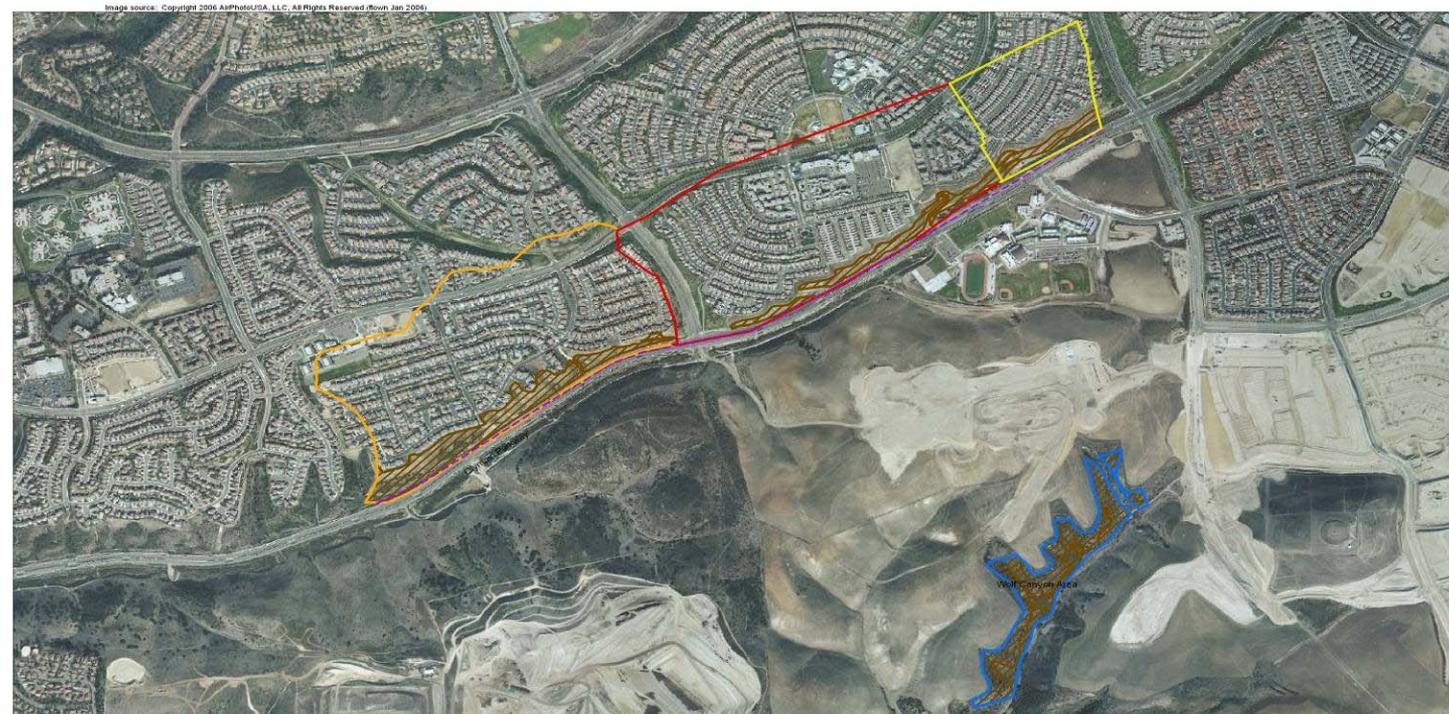
# Maritime Succulent Scrub Restoration-Otay Ranch



# Regional Location

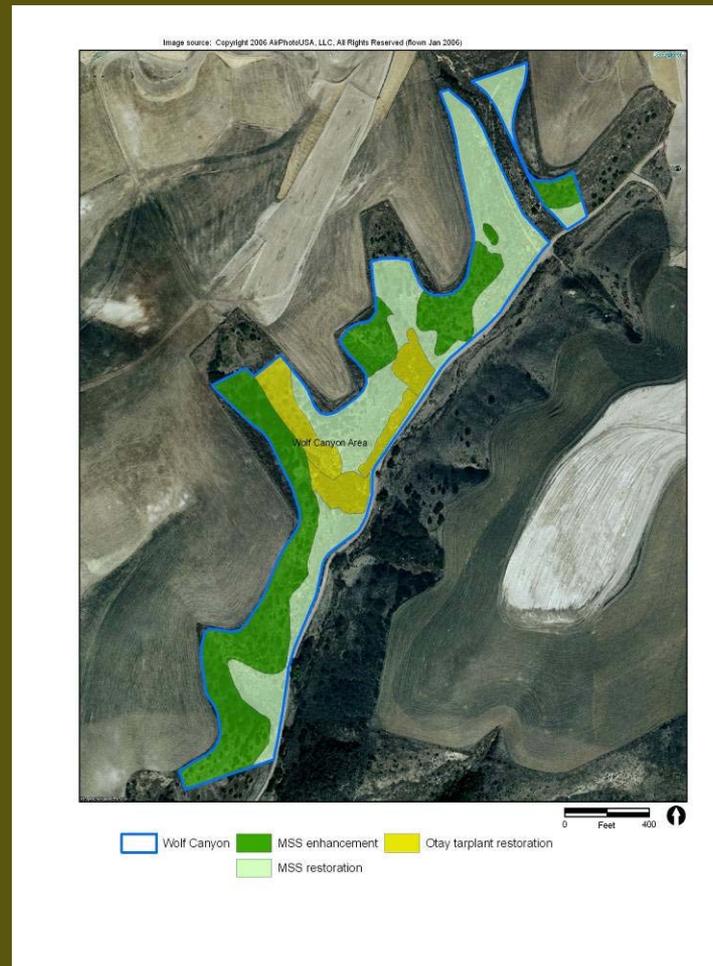


# Restoration Locations Olympic Parkway Slopes and Wolf Canyon

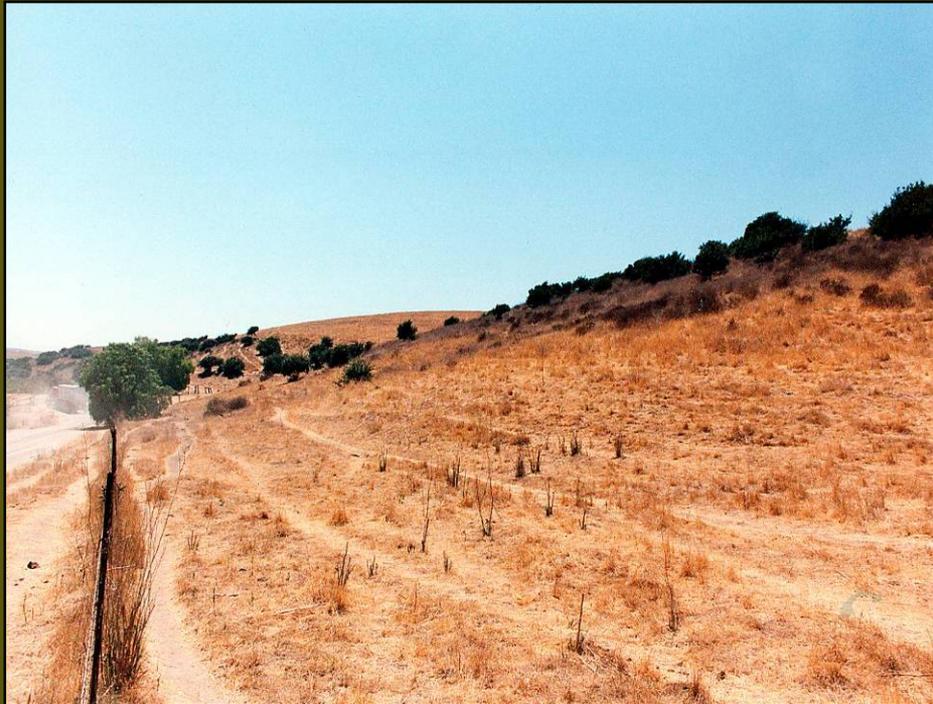


- Wolf Canyon
- Village 1 Phase 7
- Village 1 Phase 4
- Village 1 West South
- Olympic Parkway Alignment
- Restoration, Preservation and Enhancement Areas

# Wolf Canyon Preserve and MSS Restoration Areas



# Prior to implementation, the Wolf Canyon Site was Dominated by Non-native Weeds



# Manufactured Slope Preparation



Native brush piles and natural rock cobbles provide structure

# Large-Scale Cactus Salvage and Plant Propagation



# Other Species Salvaged For Relocation

Geophytes



Invertebrates



# Propagation of Characteristic MSS Species



San Diego Bursage



Anderson's  
Boxthorn



Native  
*Erodium  
texanum*

# Sensitive Species Salvage and Propagation



Coast Barrel Cactus



Snake Cholla

# Barrel cactus propagated from locally collected seed

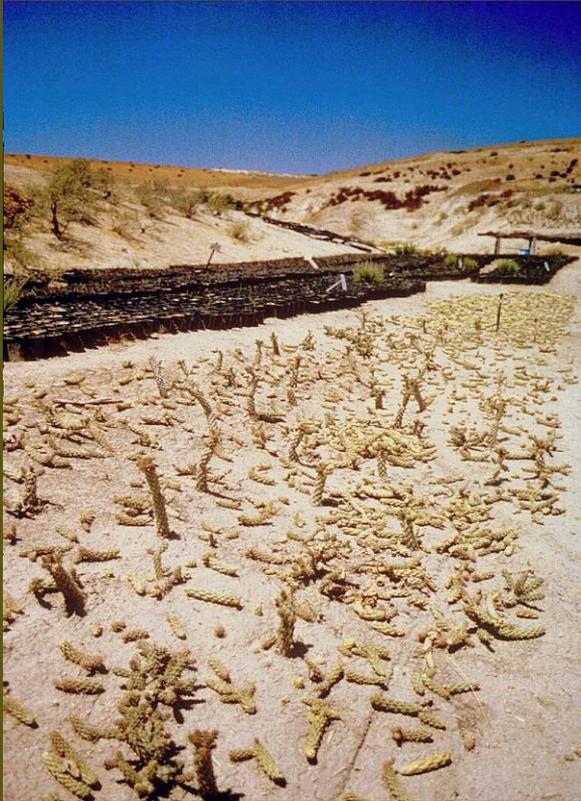


# Restoration After Weed Removal



# On Site Nursery Grown Plants Increase Native Cover and Diversity





Cholla propagation



Flowering jojoba



Flowering Adolphia

# Site Appropriate Species-Long Sequential Flowering Season-Pollinator Support



Viguiera



Cleveland's Sage



Gumplant

Mojave yucca



# As Cover and Diversity Increases Wildlife Use Increases



# Development of More Complex Food Webs



Meloid Beetle-Pollen Feeder



Tarantula hawk



Lynx spider with prey

# Listed and sensitive animals now occupy the MSS restoration areas



Coastal California Gnatcatcher



Coastal Cactus Wren Nest

# Wolf Canyon Before and After



# Long-term Native Vegetation Management for Sustainability and Fuel Reduction



# Lemonadeberry Can Dominate Sensitive Habitat Adaptive Vegetation Management



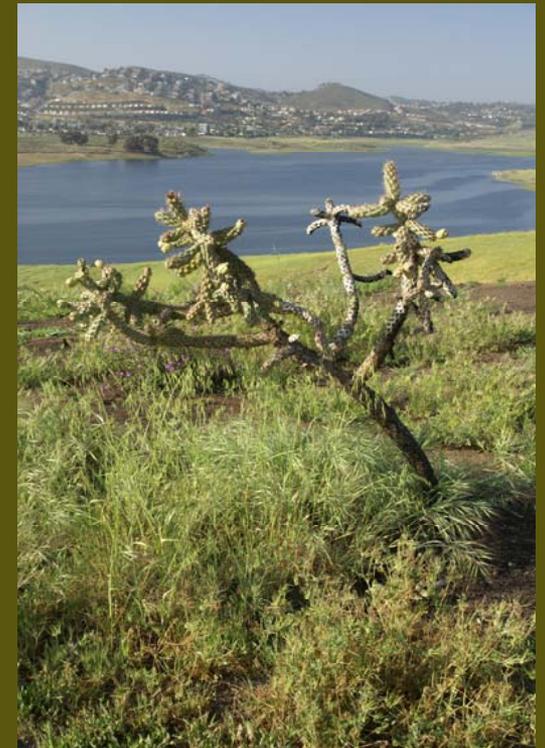
# Post-fire San Diego National Wildlife Refuge



October 26, 2007



February 25, 2008

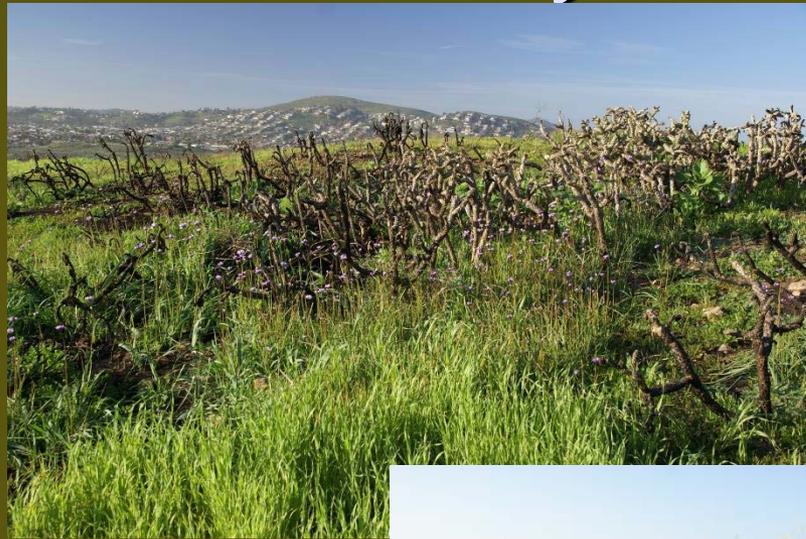


March 31, 2008

# Non-Native Grasses Can Dominate the Understory Postfire



October 2007



February  
2008



March 2008

# Post-fire Resprouting and Dead Cholla



# Prioritize Management Funding to Maintain Cactus Wren Habitat



Thank You!

