

# Desert Habitat Restoration on SCE's Eldorado-Ivanpah Transmission Project

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# The Eldorado-Ivanpah Transmission Project

- Owned and built by Southern California Edison (SCE) in 2012/2013
- 35-mile-long 220-kV transmission line, including fiber optic telecommunication line
- Restoration of 244 acres of temporary impacts across 326 restoration areas
- Transplantation of succulents and shrub species
- Seed collection and dispersal
- Propagation of sensitive plant species that were impacted
- Extensive weed control (hand weeding and herbicide)





# Outline

- Project Challenges
- Restoration Implementation – seed collection, seeding, and transplanting
- Adaptive Management – additional seeding, propagation, planting, and transplantation
- Results
- Lessons Learned



# Challenges

- Overall size and project complexity
- Multiple activities with restrictive time frames
- Remote mountainous setting
- Drought
- OHV activity





## Seeding and Imprinting

- Seed mixes specific to 6 ecological zones
- Hand seeded 195 acres via hand broadcasting and raked into soil
- Combination of hand seeding with imprinting immediately after seeding in 2013
- Innovative imprinter developed specifically for project
- Imprinted 49 acres (larger sites)



# Succulent Transplantation

- 223 nurseries across EITP
- BLM approved leaving 50 percent of succulents *in situ*
- Approximately 4,700 succulent individuals transplanted back to restoration areas
- Prioritized healthy plants for transplanting
- Special-status succulent species left *in situ*





# Special-Status Plant Species

- Matted cholla (*Grusonia parishii*) – photo
- California barrel cactus (*Ferocactus cylindraceus*) –photo
- Desert pincushion (*Coryphantha* spp.) - 2 species both sensitive



## Special-Status Plant Species

- Rosy two-toned beardtongue (*Penstemon bicolor* ssp. *roseus*) – photo
- White-margined beardtongue (*Penstemon albomarginatus*) – photo
- Nine-awned pappus grass (*Enneapogon desvauxi*) - photo





# Shrub and Succulent Transplantation

- Transplantation of over 3,000 additional succulents and shrubs to enhance cover
- Have transplanted straight from adjacent Project sites, from plants transplanted into nurseries, and from plants transplanted into containers
- Have transplanted in the summer



# Shrub and Succulent Transplantation Success

## Case Study: Crossroads Construction Yard

March 2014



June 2015



June 2018



- Plants excavated and planted with equipment within same day of salvage

- Small to medium plants
- Plants bare rooted
- Water!



# Success of Restoration Efforts

### Final Success Standard

- Lack of significant erosion
- Evidence of wildlife use
- Recruitment of native plant seedlings
- Nonnative weeds no more than 25% absolute cover
- 60% of the baseline natural cover at the end of Year 5
- 50% of the baseline total number of dominate species

### Year 5 Success Results

- Going into Year 5, 61 of the 326 restoration sites were not meeting all of the standards
- At the end of Year 5, only 13 sites were not meeting all the success standards
- 6 of these sites are close enough that no remedial action was taken
- 7 sites have had remedial plantings in 2018, primarily the dry lake salt bush sites

# Remedial Efforts in 2018

- Over 3,000 container plants, mostly salt bush (*Atriplex polycarpa*), installed at the 7 sites not meeting Final Success Standards
- Currently watering them in an effort to bring native shrub cover to 60% at the 7 sites.





# Lessons Learned

## Seeding

- Start seed collection and dispersal early since drought years make seed collection and seeding a challenge
- In the appropriate soils, Imprinting can be effective for soil stabilization and SWPPP goals along with restoration goals
- Reseed early and yearly as needed
- Pray for rain. The sooner, the better!
- Be patient!



# Lessons Learned

## Container Planting or Salvage

- Succulents and other shrubs (including creosote and bursage) can be effectively planted (container or salvage) at any time of the year although cooler months are better
- Excavate large basin that will hold up to 5 gallons per watering
- Plan for at least 8-12 watering visits, depending on site, weather, etc.
- Pray for rain, but don't count on your prayers being answered!
- If you don't have budget to water adequately, reduce planting effort, or don't plant!





# Thank You and Questions

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