

# Creation of Riparian Habitat at the Imperial Irrigation District Phase 2 Managed Marsh



**Amec Foster Wheeler Environment & Infrastructure, Inc.**

**Imperial Irrigation District**

CRTR Meeting January 28, 2015

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# Imperial Irrigation District's Managed Marsh



- IID habitat needs are for a Managed Marsh complex of approximately 959 acres, including 341 acres of non-emergent vegetation and 618 acres of open water/emergent vegetation
- IID has a commitment for habitat development for many of the LCMSCP covered species, including riparian birds
- Phase 1 of the Managed Marsh, including riparian vegetation cells, was developed in 2009: area has both benefits and challenges for riparian bird habitat values

**Southwestern willow flycatcher (*Empidonax traillii extimus*)**



**Yellow warbler (*Dendroica petechia*)**



# Riparian Habitat in Phase 1 as of 2013



- Not fully suitable for riparian birds
- Willow or riparian shrub habitat low to medium density
- ***Open water rare***
- Dense growth of cattails lining ***narrow channels*** and ***covering open water*** may limit future riparian habitat suitable for riparian birds, especially Southwestern Willow Flycatcher



# Phase 2 Goals and Design Criteria

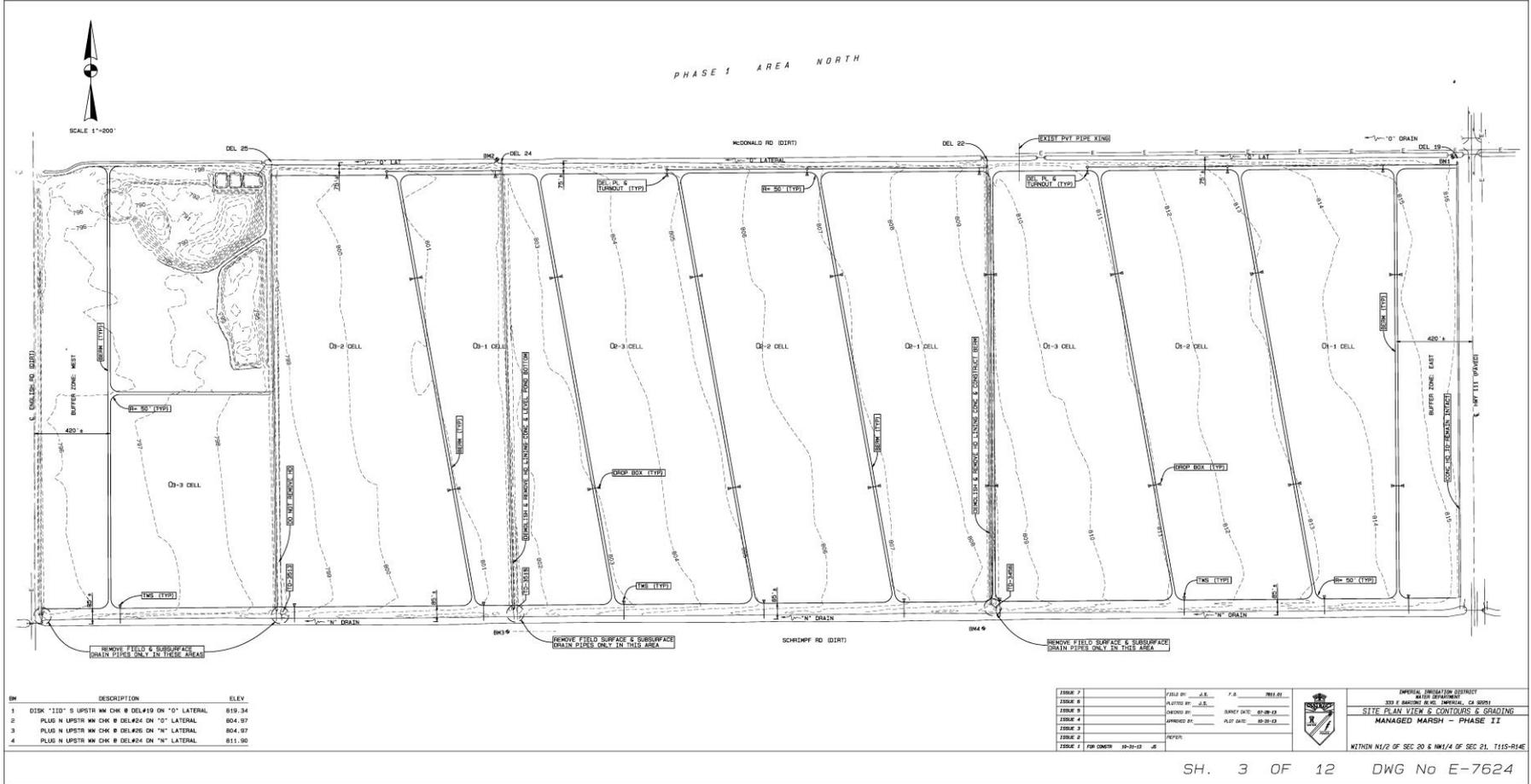


- Focus on better riparian areas
  - Utilizing lessons learned from Phase I
  
- In-house design and engineering
  - Utilizing existing water infrastructure
  - Minimize cost of berms
  - Minimize future maintenance cost

# Phase 2 Goals and Design Criteria



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# Phase 2 Goals and Design Criteria



## ■ Marsh Cells

- Focus on black rail habitat for target species
- Designed with rushes and ability to manage water to 2 inches



## ■ Riparian Cells

- Emphasis on tree health and maintenance
- Designed with trees on raised islands



## ■ Buffer Zones

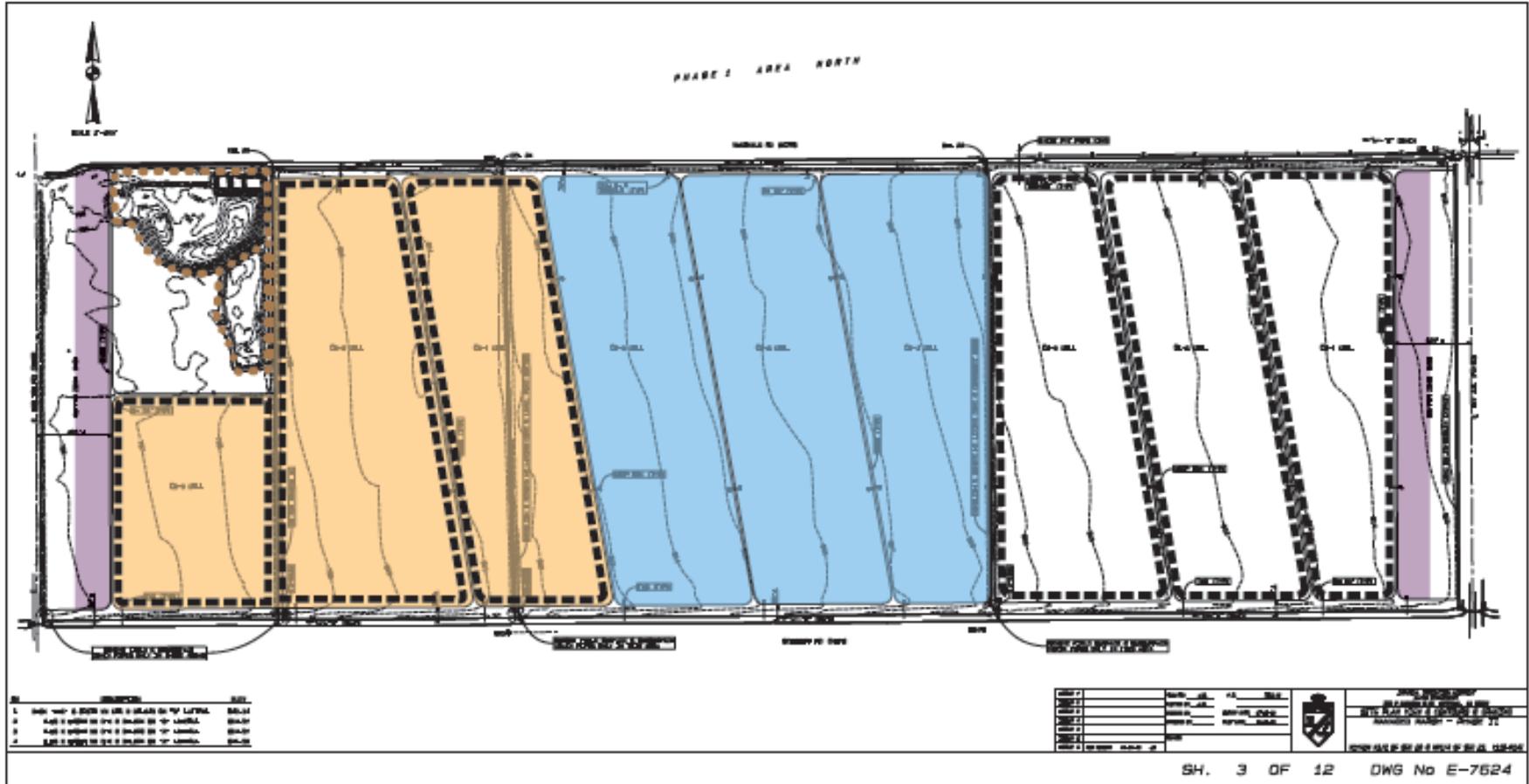
- Emphasis on irrigation and tree health
- Designed with trees in lowered channels



# Phase 2 Goals and Design Criteria



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- Native Tree Habitat  
36.9 acres
- Woody Vegetation (Willows)  
114.3 acres
- Emergent Vegetation  
124.5 acres
- Salt Grass Seeding
- Woody Vegetation (Cottonwoods)



# Construction and infrastructure elements



## Muskrat Shelves

- 3 ft from top of berm
- Minimizing damage to main berm



# Planting the Marsh: Willow Islands Materials and Labor



Challenge: Willow number needed to be high, but cost was a constraint

Solution: Use smaller plants, much like those planted in Reclamation's riparian cells

Challenge: Very short planting window

Solution: A double Conservation Corps (American Conservation Experience) crew



# Planting the Marsh: Moisture Management



Challenge: Soils were very dry

Solution: Deliver water with each installed plant, using trailer mounted “water buffalos”



# Planting the Marsh: Moisture Management



Challenge: More than one day was required for each cell, so water could not be brought up immediately

Solution: Broadcast water from water trucks to all areas of islands



# Planting the Marsh: Filling the Cells



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Challenge: Water needed to cover the islands, yet dropped fast enough so that the small willows were not impacted

Solution: Manage water level closely and accurately with flashboards



# Other Habitats and Species



Mesquites were planted into the east and west buffer areas; these were small plants, but went into deep augered holes with protectors.



# Other Habitats and Species



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Cottonwoods were planted into some areas of the east buffer, into holes augered with a Bobcat



# Other Habitats and Species



Saltgrass was seeded at the base of the berms to stabilize banks



# Other Habitats and Species



Emergent aquatic vegetation  
was seeded using prilled seed



# Other Habitats and Species



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Some cells were not seeded, as volunteer vegetation is common



## Conclusions and next steps



- Phase 3 will be mostly riparian acres, as the emergent acres are largely completed
  - Determine if the islands are a good idea
  - Use Phase 2 as a “lessons learned” for Phase 3
- Work on management of cattails in both Phase 1 cells and around the islands in Phase 2
  - Evaluate the smaller plant sizes for both willows and mesquite

# Questions?

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