# Laguna Division Conservation Area

Colorado River Citizens Forum

Yuma, AZ

March 7, 2012

Fred Phillips Consulting

Natural Channel Design, Inc.

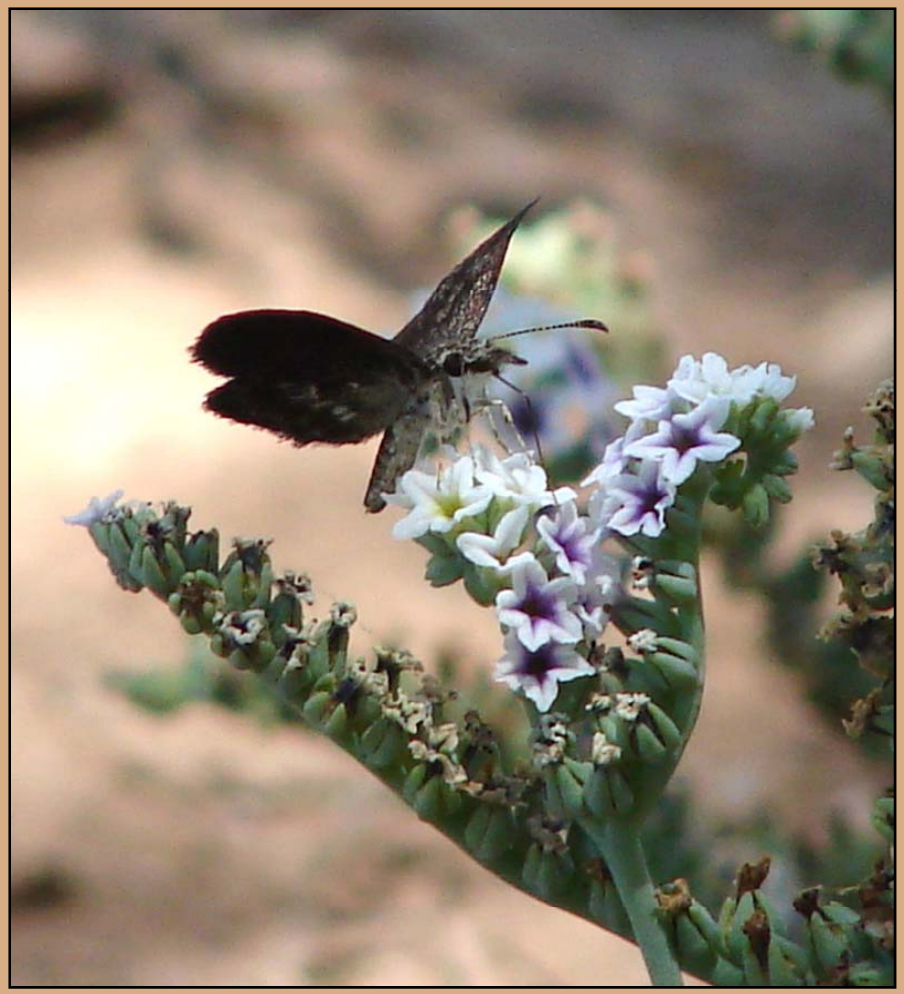
Lower Colorado River Multi-Species Conservation Program

# Presentation Outline

- MSCP Background
- Project Introduction
- Current Design Concept and Construction Components
- Future Schedule
- Questions

# Lower Colorado River Multi-Species Conservation Program

- 50-Years of ESA and CESA (for CA Parties)
- Balance LCR use with native species habitat conservation
- Minimize impact to current and future water / power operations
- Provide basis for incidental take authorizations



# Lower Colorado River Multi-Species Conservation Program

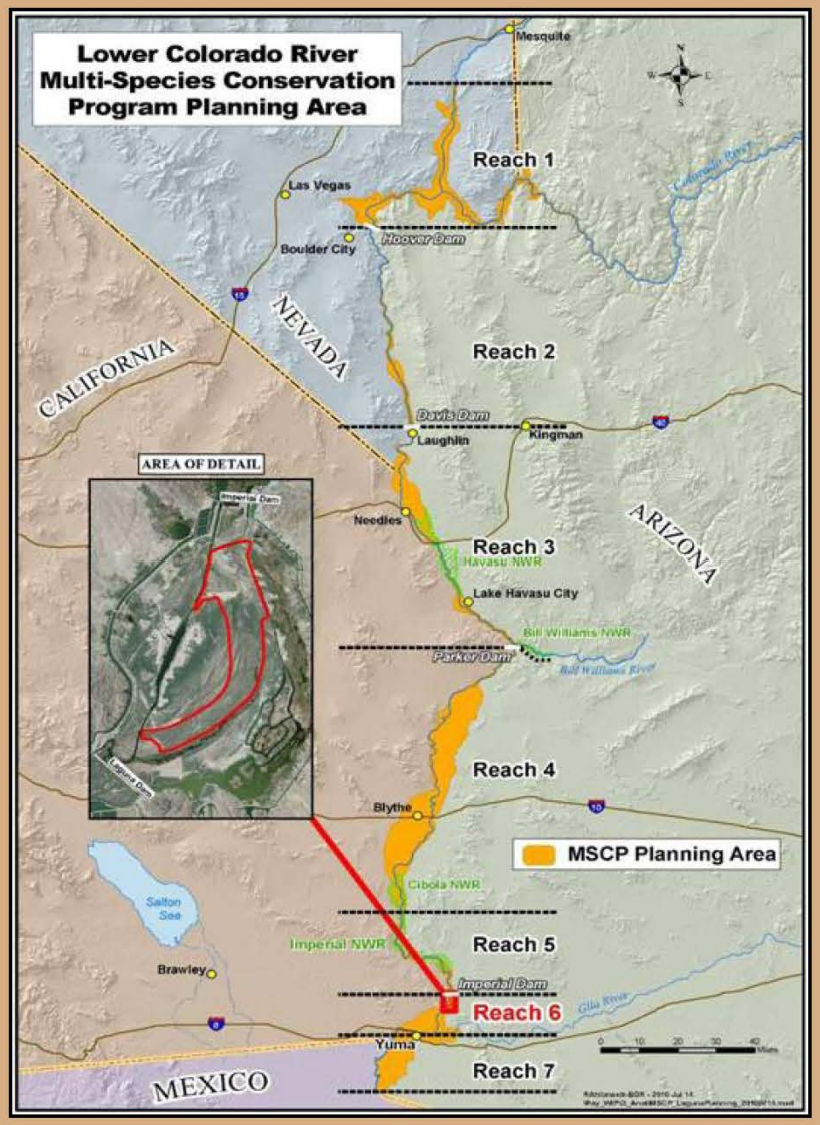
**26 COVERED SPECIES**

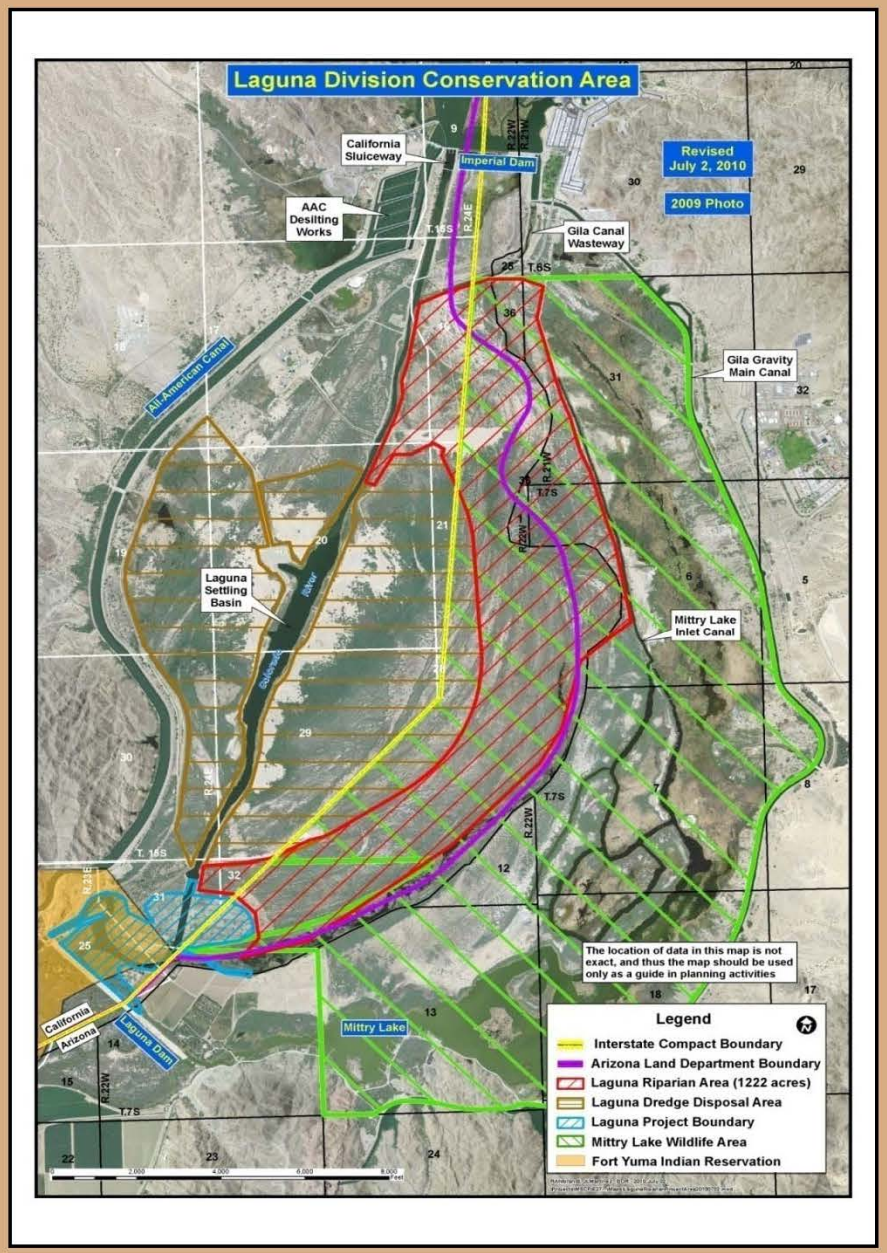
- 6 T&E species
  - 2 birds, 1 reptile, 3 fish
- 20 other species
  - 4 mammals, 10 birds, 2 reptiles, 1 fish, 1 insect, 2 plants
- 5 “evaluation species”
  - 3 mammals, 2 reptiles

# Lower Colorado River Multi-Species Conservation Program

- **PROGRAM COMPONENTS**
  - Native Fish Augmentation
  - Species and Habitat Research
  - System-wide Monitoring
  - Existing Species Habitat Maintenance
  - Conservation Area Development & Mgmt

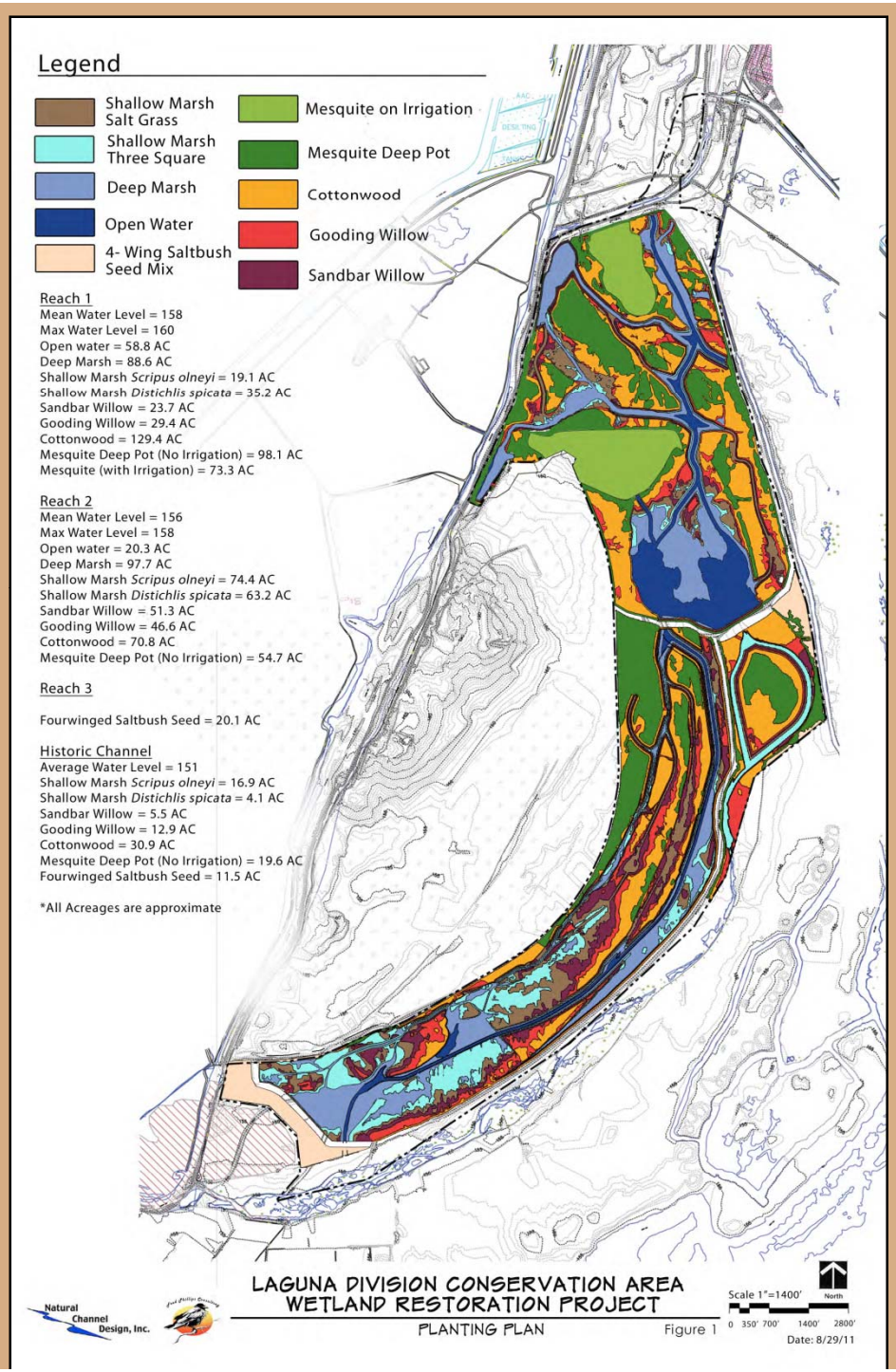
# Laguna Division Conservation Area



# Project Design

- Irrigation delivered through the Gila Sluiceway Gate
- Habitat Targets
  - Open Water/Marsh: 50 – 100 ac
  - Cottonwood/Willow: >200 ac
  - Upland(mesquite): <500 ac
- Provide hydrology to support habitats for 50 years or more
- No detrimental effect on existing Mittry Lake or Old River Channel Habitats
- Minimize impacts to existing operations (sluicing, dredge disposal, water delivery, etc.)
- Minimize both initial construction and long-term operating costs



# Target Habitats

# LDCA Target Species

California black rail

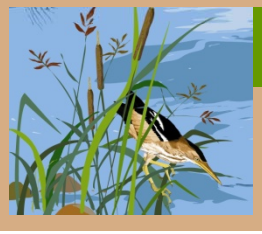
Yuma clapper rail

Southwestern willow flycatcher

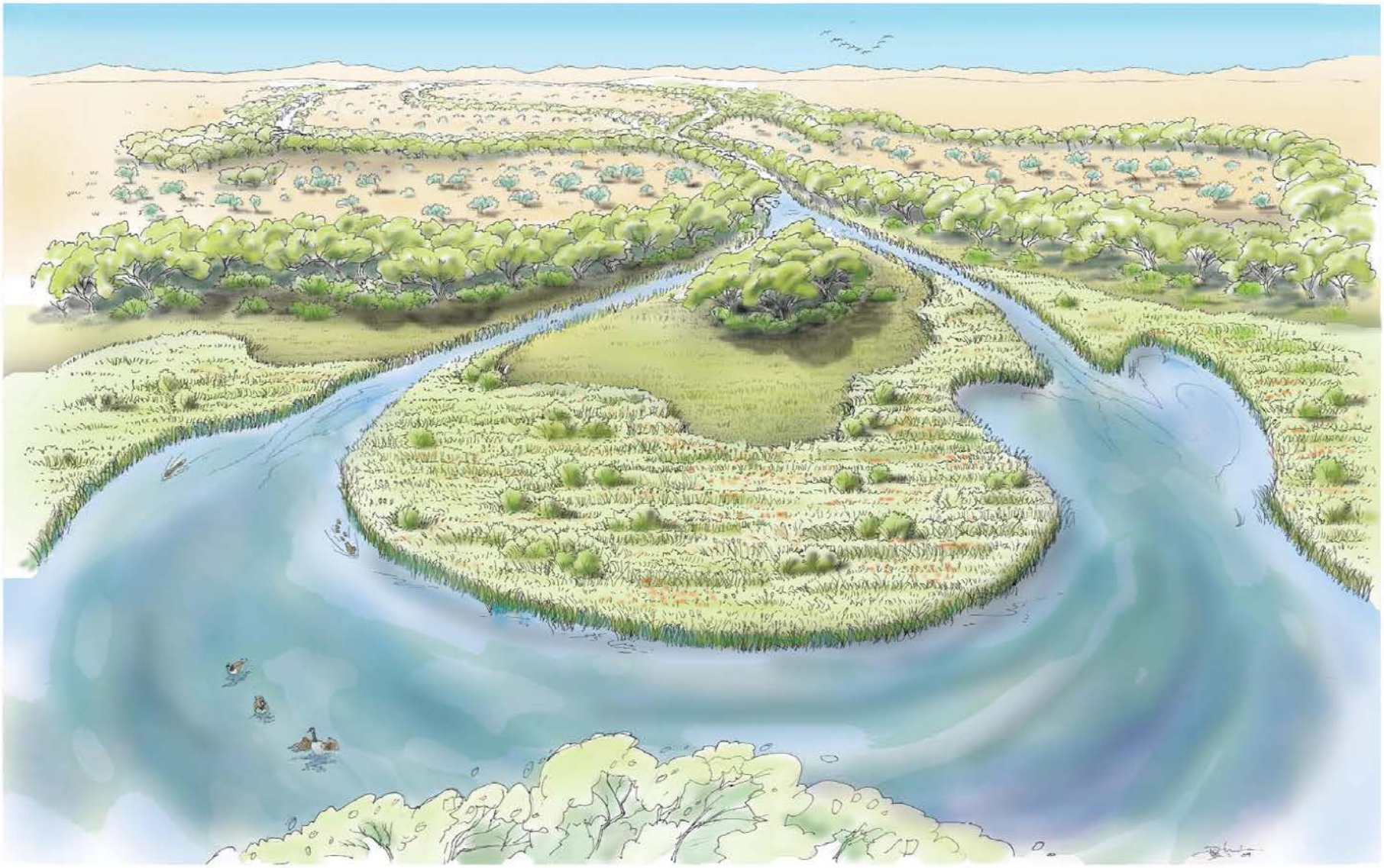
Yellow billed cuckoo

Yuma hispid cotton rat

Colorado River cotton rat



Western least bittern



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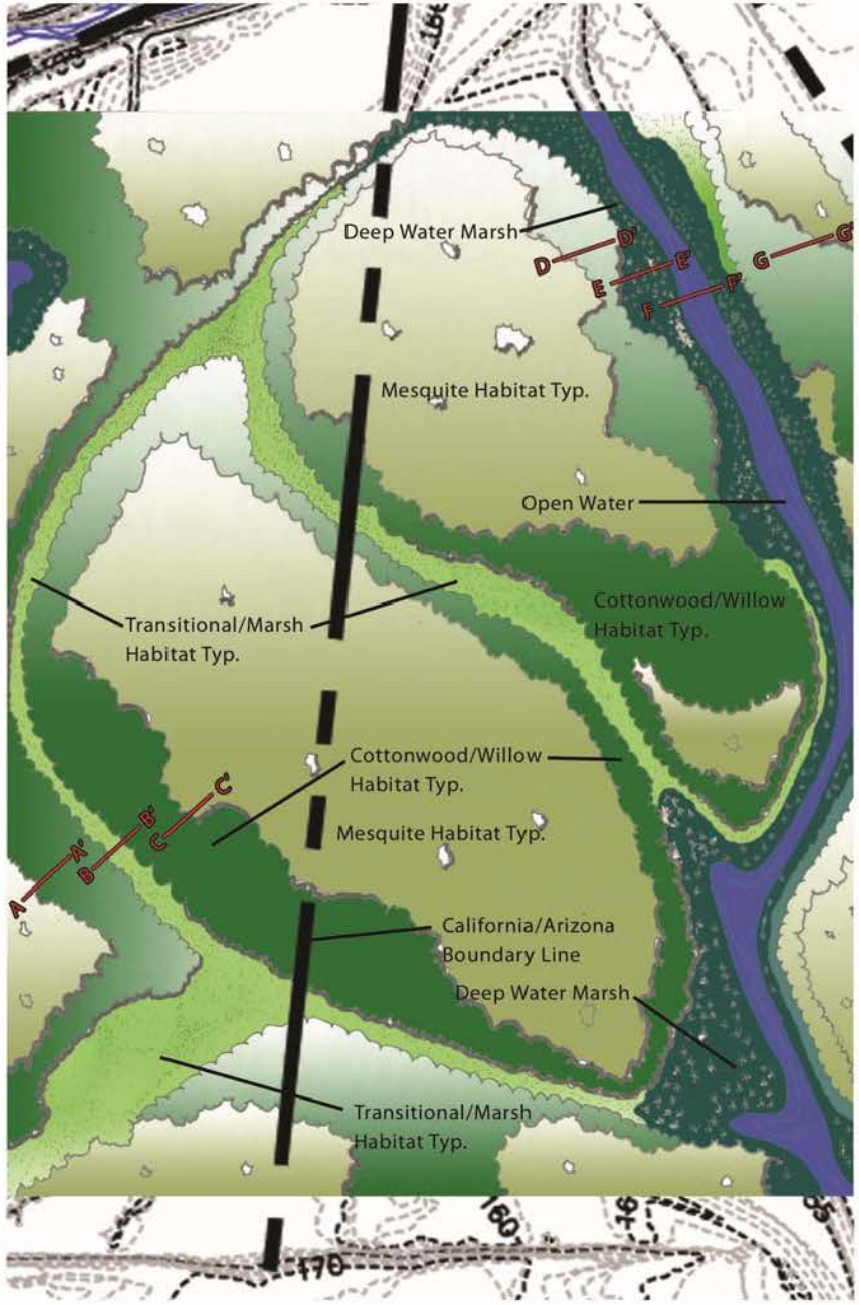
# MSCP Laguna Restoration

Reach 1 Concept Drawing

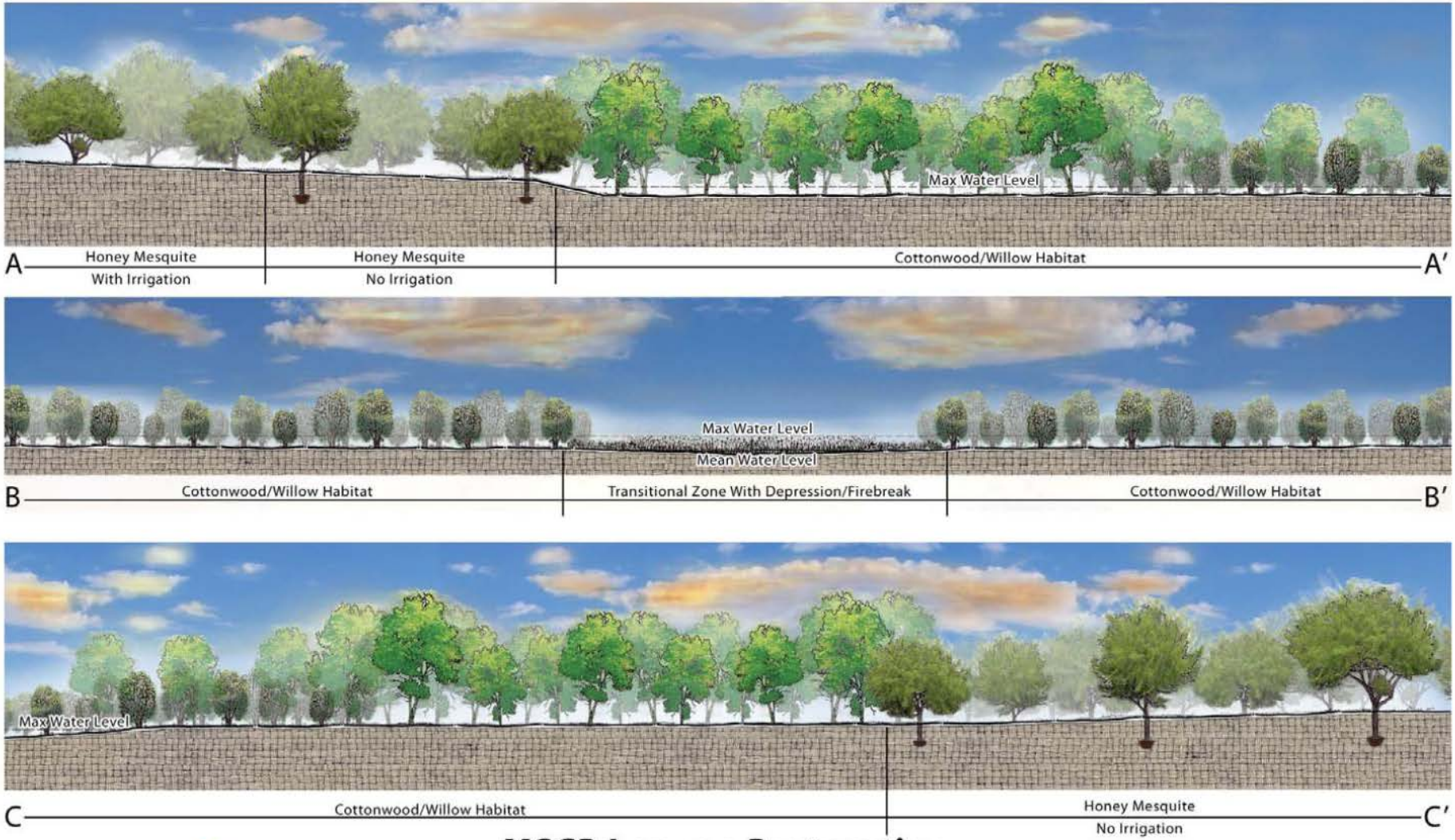
Date: 8/18/09




**MSCP Laguna Restoration**
**Reach 1 Restoration**

Date: 9/20/09

Scale: 1" = 240'
0' 60' 120' 240' 360'
North

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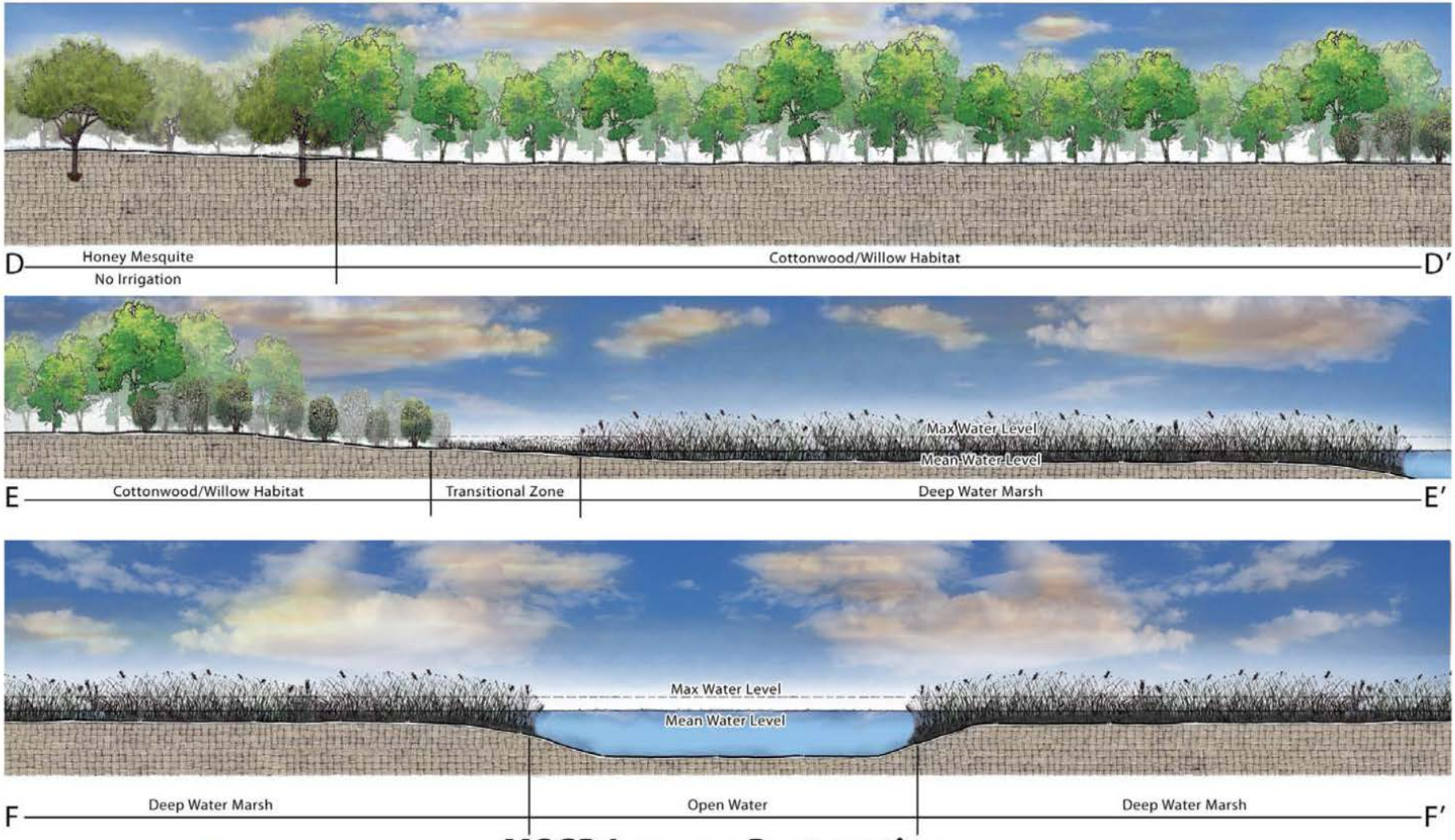
# MSCP Laguna Restoration

## Reach 1 Cross Sections

Scale: 1" = 120'

Date: 8/25/10

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# MSCP Laguna Restoration

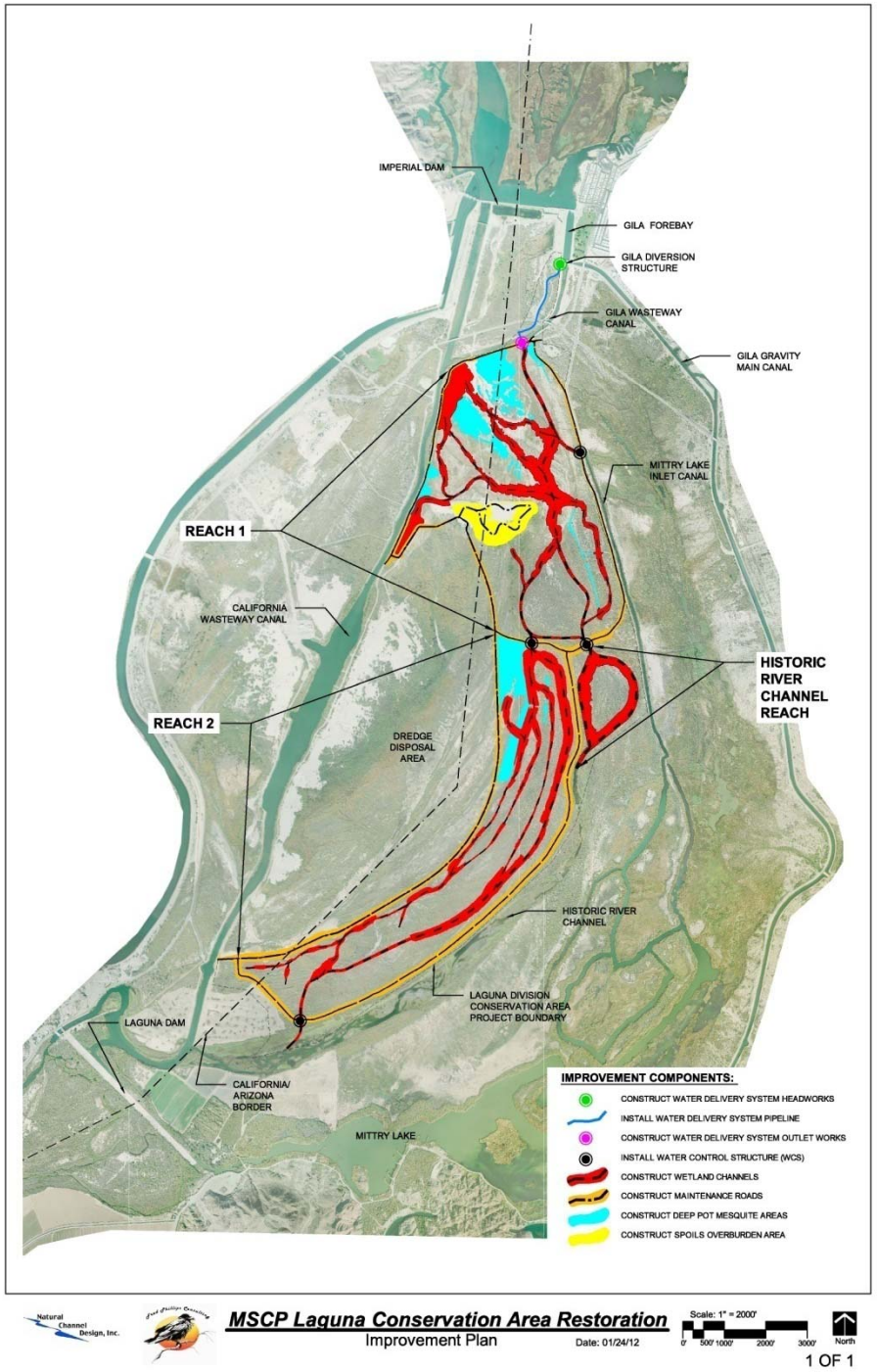
## Reach 1 Cross Sections

Scale: 1" = 120'

Date: 8/25/10

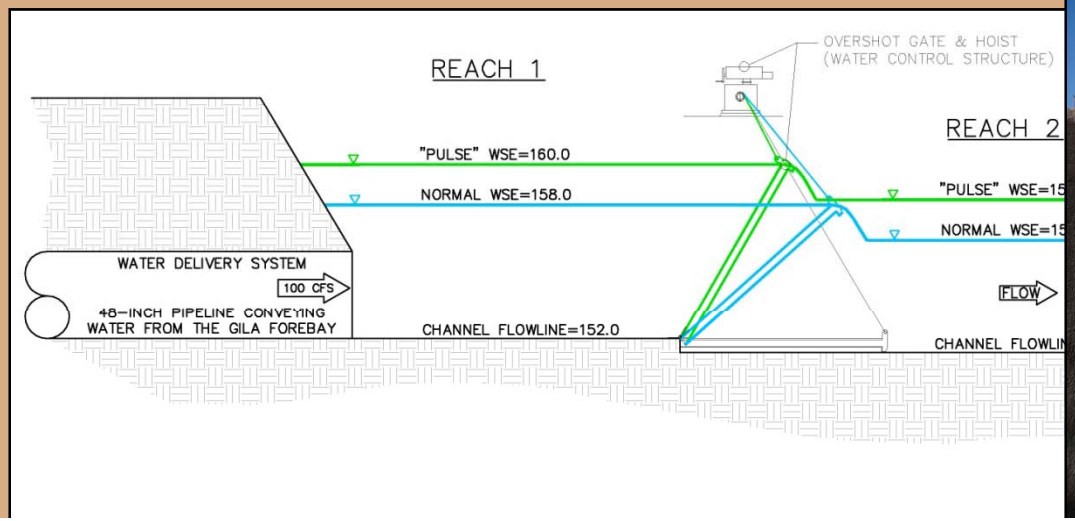
# Construction Components

- Water Delivery System
  - Headworks at Gila sluicing gates
  - Buried pipeline to convey water to the project area
- Site Preparation for Earthwork
  - Clear and bury non-native vegetation
- Earthwork
  - Channels provide the topography to support water conveyance and vegetation/ habitat
  - Utilize existing topography to minimize cut/fill and maximize pulse flow irrigated area
  - Reach 1 & 2 primary and secondary channels; Enhancement of historic channel
  - Maintenance roads for access and firebreaks
- Water Control Structures
  - Manage water levels in Reaches 1 & 2, and historic river channel
  - Additional Mittry Lake turnout structure



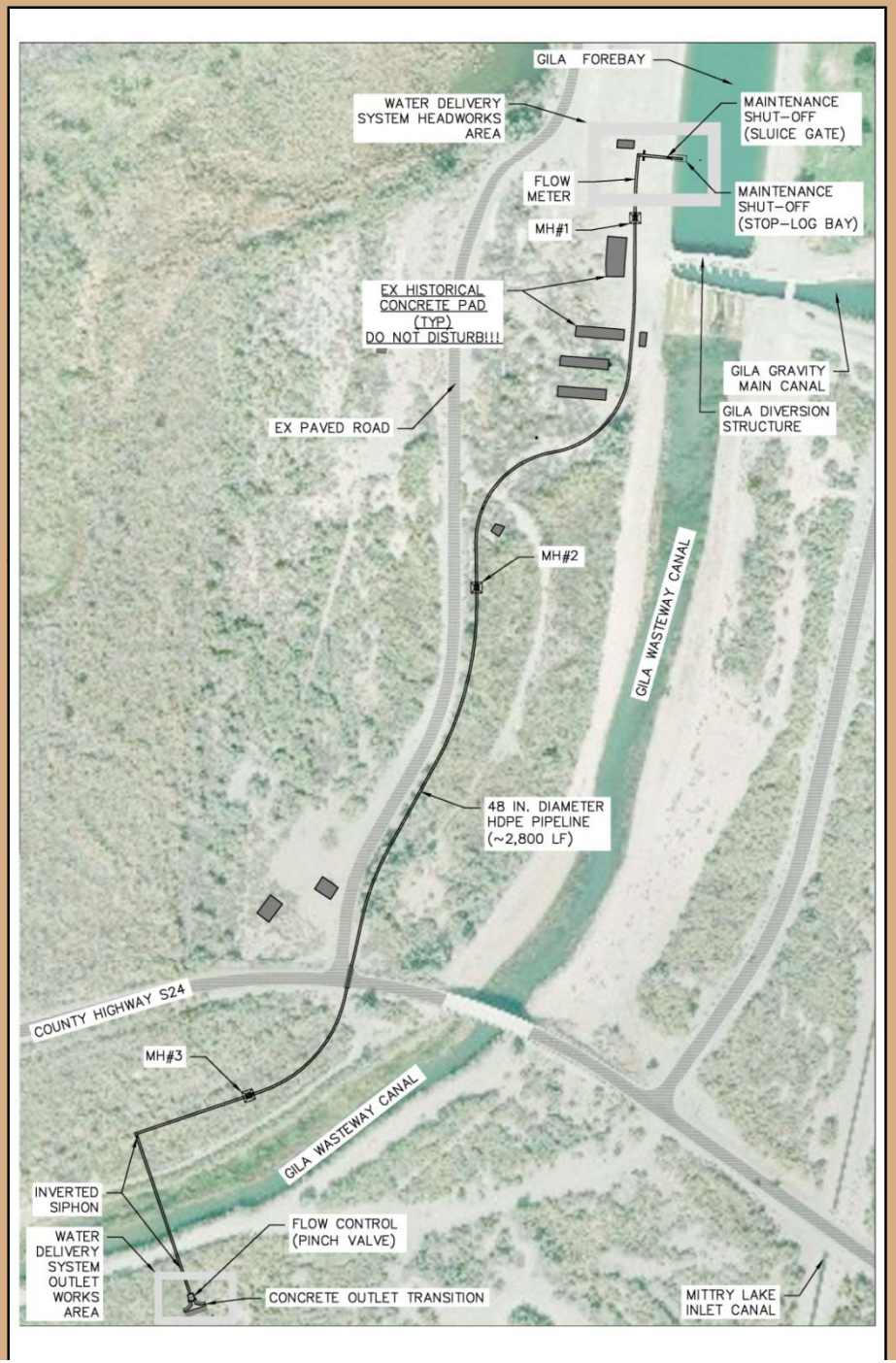
# Current Design Concept: Overview

- Water delivery via pipeline from Gila Gravity Canal sluicing gates
- Operate as a managed, leveed wetland rather than a river system to maximize limited water resource
- Use existing overflow channels through project area to minimize excavation
- Use “pulse flows” to provide irrigation to woody species
- Requires water control structures to manage water levels

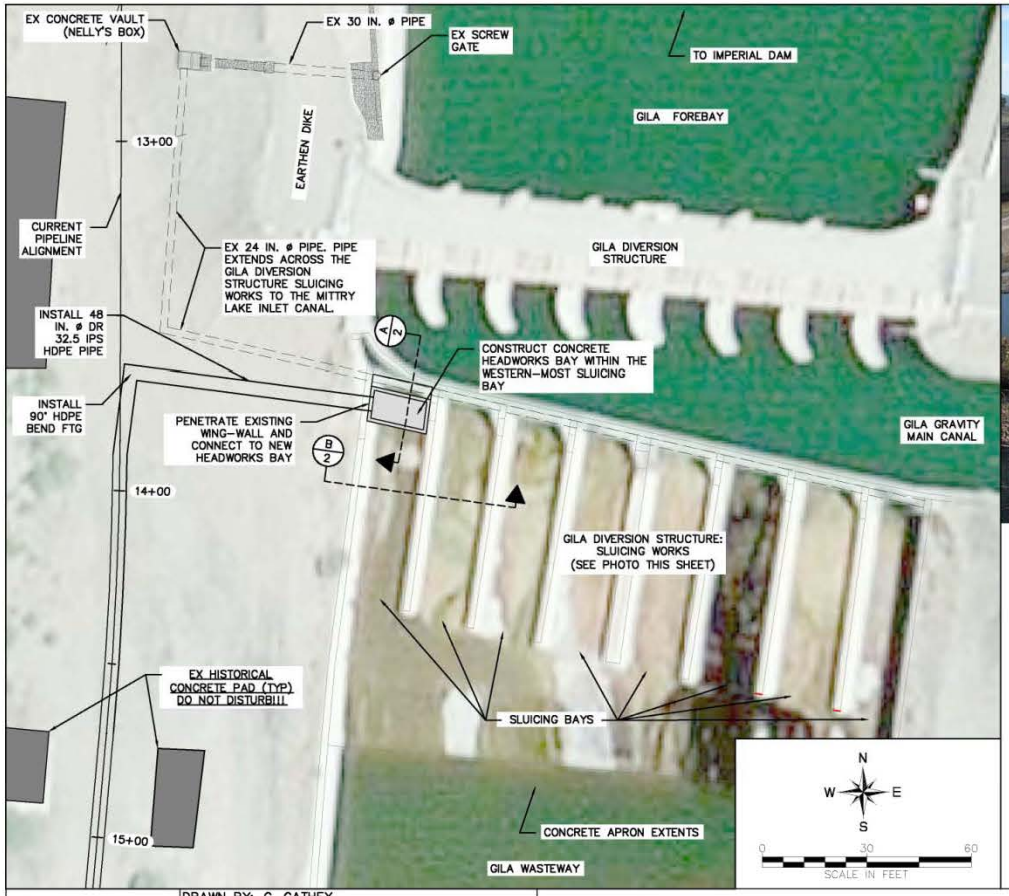


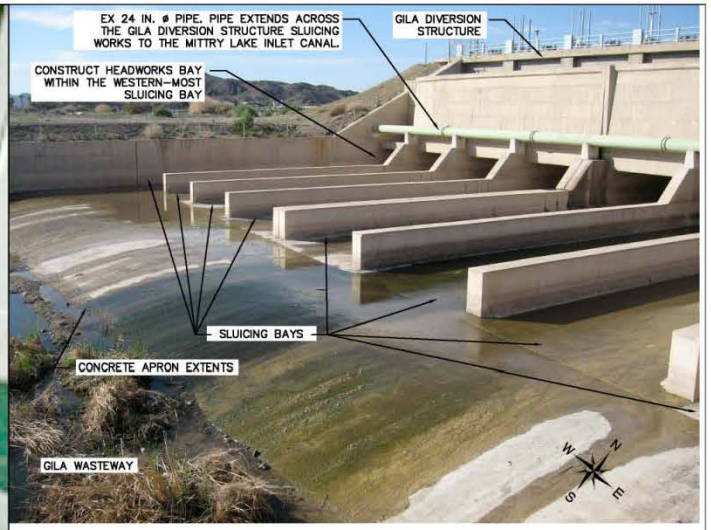
# Water Delivery System Overview

- Gravity system delivering 100 cfs of high quality water from the Gila sluicing gates to the wetland restoration area
- Pipeline headworks at the Gila Sluicing Gates
- 2,300-ft., 48-in. diameter pipeline
- Cross underneath the Gila Wasteway Canal with an inverted siphon
- Redundant shut off capability



# Water Delivery System: Headworks




CONCEPT DESCRIPTION

- CONSTRUCT A CONCRETE HEADWORKS BAY, AS PART OF THE LAGUNA WATER DELIVERY SYSTEM, WITHIN THE WESTERN-MOST SLUICING BAY OF THE GILA DIVERSION STRUCTURE SLUICING WORKS. THE HEADWORKS WOULD BE DIRECTLY INTEGRATED WITH AND WOULD ACT AS AN EXTENSION OF THE EXISTING SLUICE GATE PORT.
- THE EXISTING SLUICE GATE WOULD BE OPENED TO ALLOW WATER TO ENTER THE HEADWORKS BAY, WHERE THE WATER WOULD THEN PASS INTO THE INLET OF THE WATER DELIVERY SYSTEM PIPELINE.
- WHEN SLUICING IS REQUIRED, THE NEW SLUICE GATE TO THE WATER DELIVERY PIPELINE WOULD BE CLOSED AND SLUICING EVENTS WOULD BE ROUTED THROUGH THE HEADWORKS BAY VIA TWO, NEW SLUICE GATES WITHIN THE HEADWORKS BAY.
- WHEN LONG-TERM MAINTENANCE AND/OR INSPECTION IS REQUIRED WITHIN THE HEADWORKS BAY, THE EXISTING SLUICE GATE COULD BE CLOSED.

ADVANTAGES OVER PREVIOUS CONCEPT

- THE HEADWORKS BAY CAN BE CONSTRUCTED COMPLETELY IN THE DRY AND CONSTRUCTION WILL NOT IMPACT OPERATIONS OF THE GILA MAIN CANAL (I.E. NO DRAW-DOWN REQUIRED)
- THE CONCEPT USES EXISTING INFRASTRUCTURE (GATES, SLUICE PORTS, ETC.) AND DOES NOT REQUIRE BREACHING THE WATER WORKS (I.E. NO CONCRETE OR DIKE BREACHING).
- REDUCES PIPE LENGTH BY 275 FEET AND ELIMINATES THE NEED FOR A MANHOLE AND FILTER DIAPHRAGM

Natural Channel Design, Inc.
208 S. Elden Street
Flagstaff, AZ 86001
(928) 774-2336

Fred Phillips Consulting
401 S. Lenox Street, Flagstaff, AZ 86001 (928) 773-1530

DRAWN BY: G. CATHEY
DESIGNED BY: G. CATHEY
REVIEWED BY:

| REV | DATE | BY | REVISION |
|---|---|---|---|
| | | | |

ALTERNATIVE HEADWORKS CONCEPT: PLAN VIEW & NARRATIVE

LAGUNA DIVISION CONSERVATION AREA WATER DELIVERY SYSTEM PROJECT: HEADWORKS & OUTLET WORKS PLAN

PRELIMINARY NOT FOR CONSTRUCTION

UNAUTHORIZED CHANGES & USES
THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS.

CALL TWO WORKING DAYS BEFORE YOU DIG
263-1100
1-800-STAKE-IT
(OUTSIDE MARICOPA COUNTY)

DATE: 10-05-11
DRAWING NO: EX01
NCD PROJECT NO: 09-164-AZ
SHEET NO: 1 OF 2

# LDCA Irrigation Delivery

# Pipeline Installation

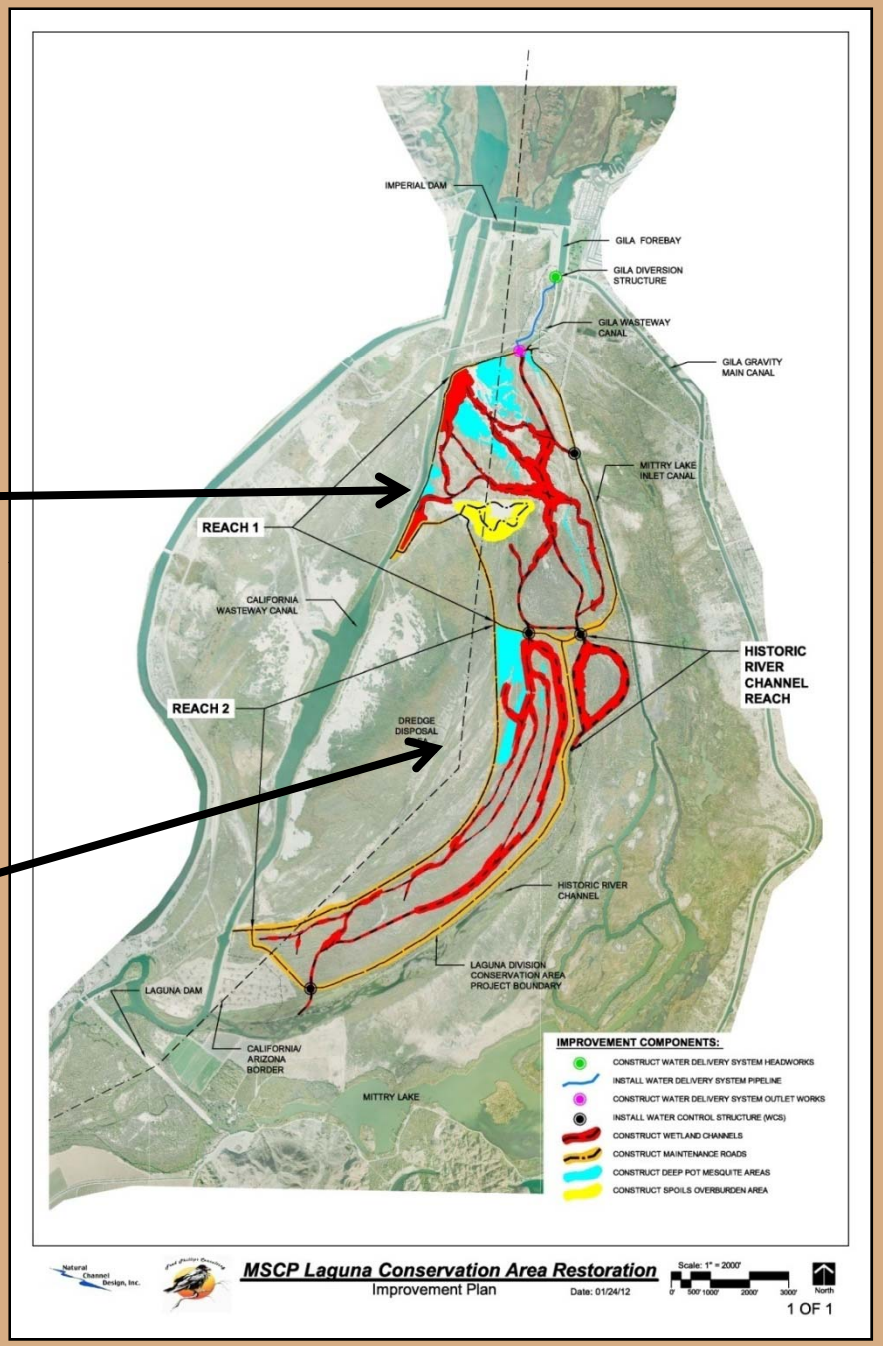
# Pipeline Installation

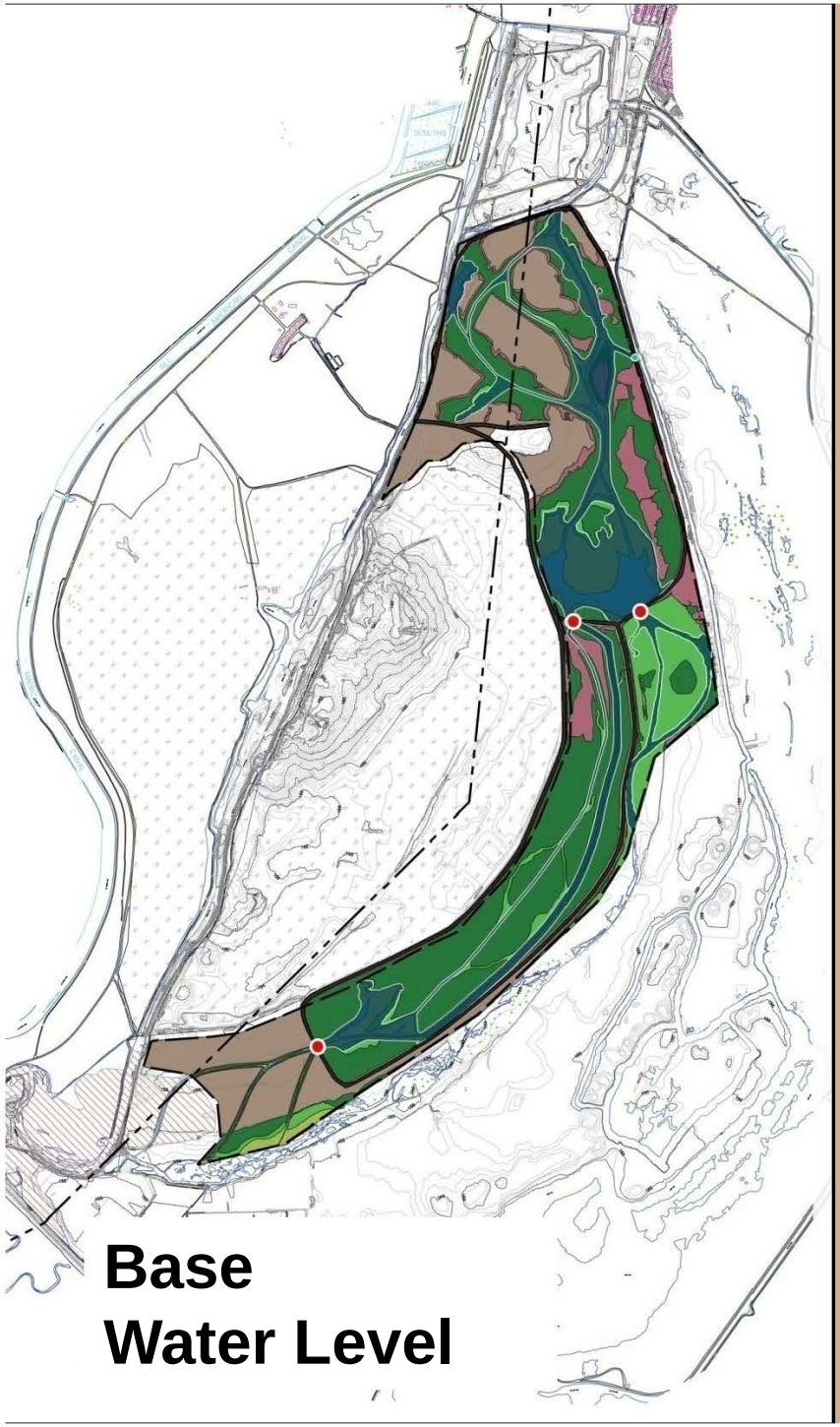
# LDCA Clearing Activities

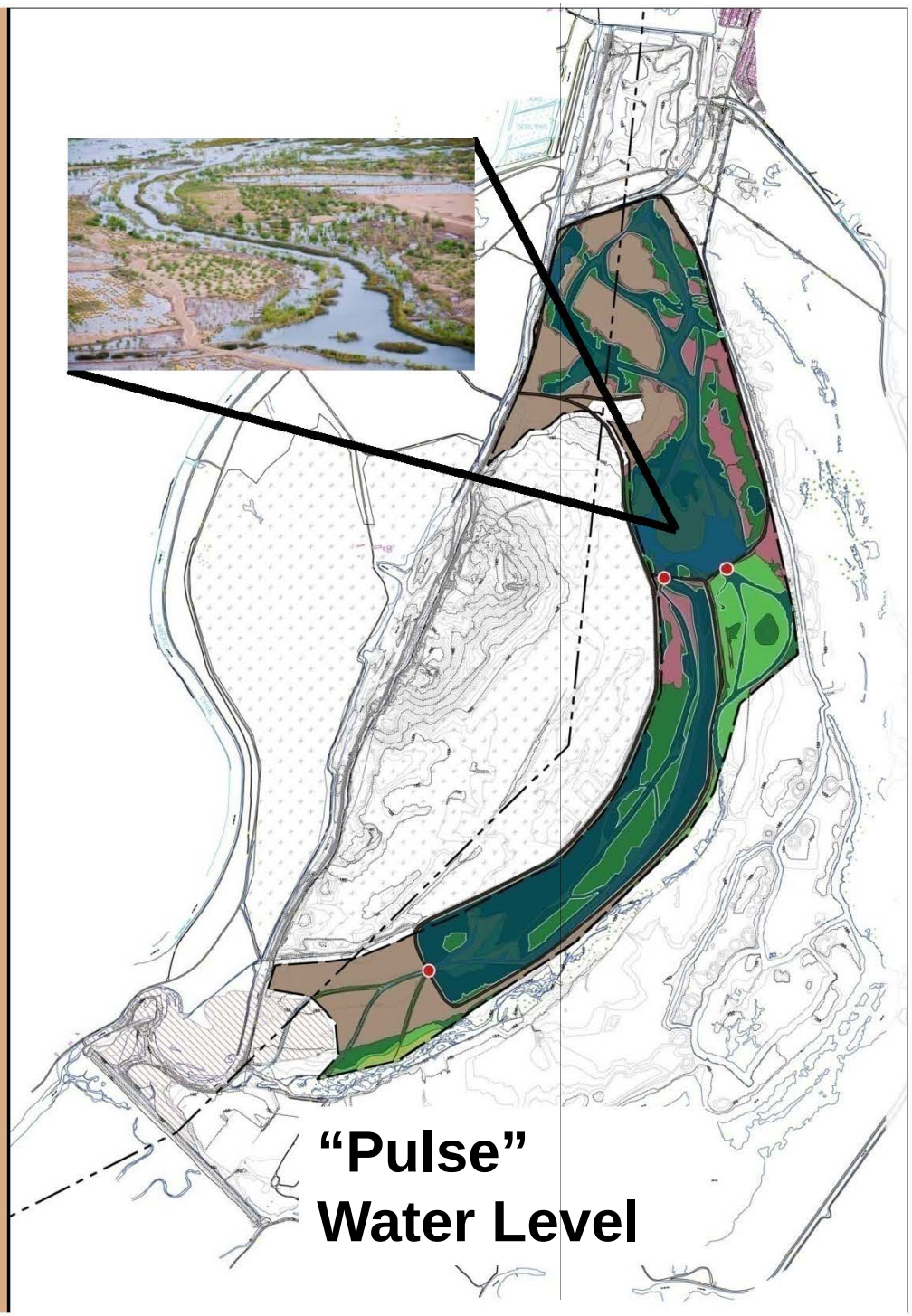
# Clearing Operations

# Laguna Division Conservation Area Schedule

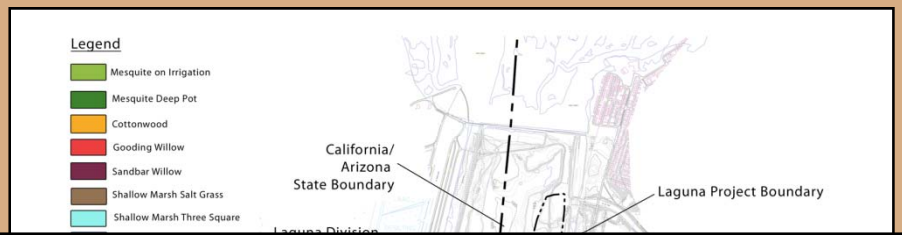
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | |
|---|---|---|---|---|---|---|---|
| JAN | | Clearing of Reach 1 & Historic Channel | Clearing of Reach 2 | Reach 1& Historic: Collect and Plant Poles | Reach 2: Collect and Plant Poles | | JAN |
| FEB | | | | Order Marsh for Reach 2 | | | FEB |
| MAR | | | Order Marsh for Reach 1 | Reach 1: Plant Riparian & Mesquites | | | MAR |
| APR | | | Test Flood Reach 1 | Reach 1: Plant Riparian & Mesquites | | | APR |
| MAY | | | | Test Flood Reach 2 | | | MAY |
| JUN | | | | | | | JUN |
| JUL | | | | | | | JUL |
| AUG | | | | Reach 2: Plant Marsh | | | AUG |
| SEP | | Clearing of Reach 2 | Reach 1: Plant Marsh | Reach 2: Plant Marsh | | | SEP |
| OCT | | | | | | | OCT |
| NOV | | | | | | | NOV |
| DEC | | | Reach 1& Historic: Collect and Plant Poles | Reach 2: Collect and Plant Poles | | | DEC |
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | |

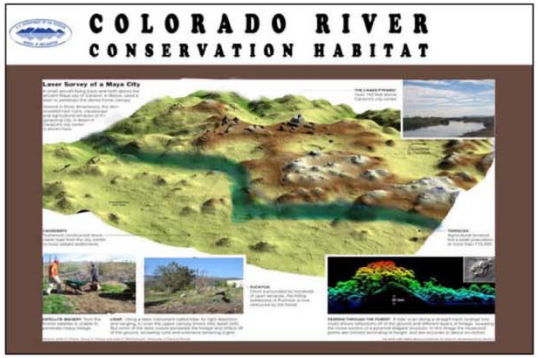


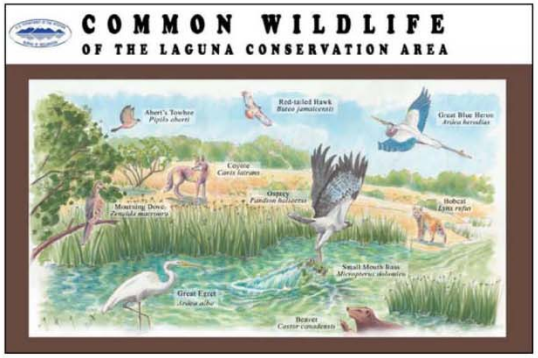

Base
Water Level


“Pulse”
Water Level

# LDCA Access








Designed By: FPC

LAGUNA DIVISION CONSERVATION AREA

PROPOSED INTERPRETIVE SIGNS

Figure 2

Date: 7/1/11

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***Laguna Division Conservation Area***

Proposed Access Plan

Figure 1

Date: 7/12/11

# Habitat Acreages

| | OPEN WATER | DEEP MARSH | TRANSITION ZONE/ FIRE BREAK | COTTONWOOD/ WILLOW | MESQUITE |
|---|---|---|---|---|---|
| Reach 1 | 46 | 63 | 35 | 164 | 57 (no irrigation) 159 (irrigation) |
| Reach 2 | 21 | 24 | 50 | 234 | 30 (no irrigation) 44 (irrigation) |
| Reach 3 | 4 | 10 | 8 | 14 | 0 (no irrigation) 102 (irrigation) |
| Historic River Channel | 0 | 0 | 81 | 14 | 11 (no irrigation) 6 (irrigation) |
| Project Totals | 71 | 97 | 174 | 426 | 98 (no irrigation) 311 (irrigation) |
| MSCP Targets | 50-100 | | | >200 | <500 |

# Questions?

**Updates available on the web -**
**http://www.lcrmscp.gov/conservation/laguna.html**