Laguna Division Conservation Area

Colorado River Citizens Forum

Yuma, AZ

March 7, 2012

Fred Phillips Consulting

Natural Channel Design, Inc.

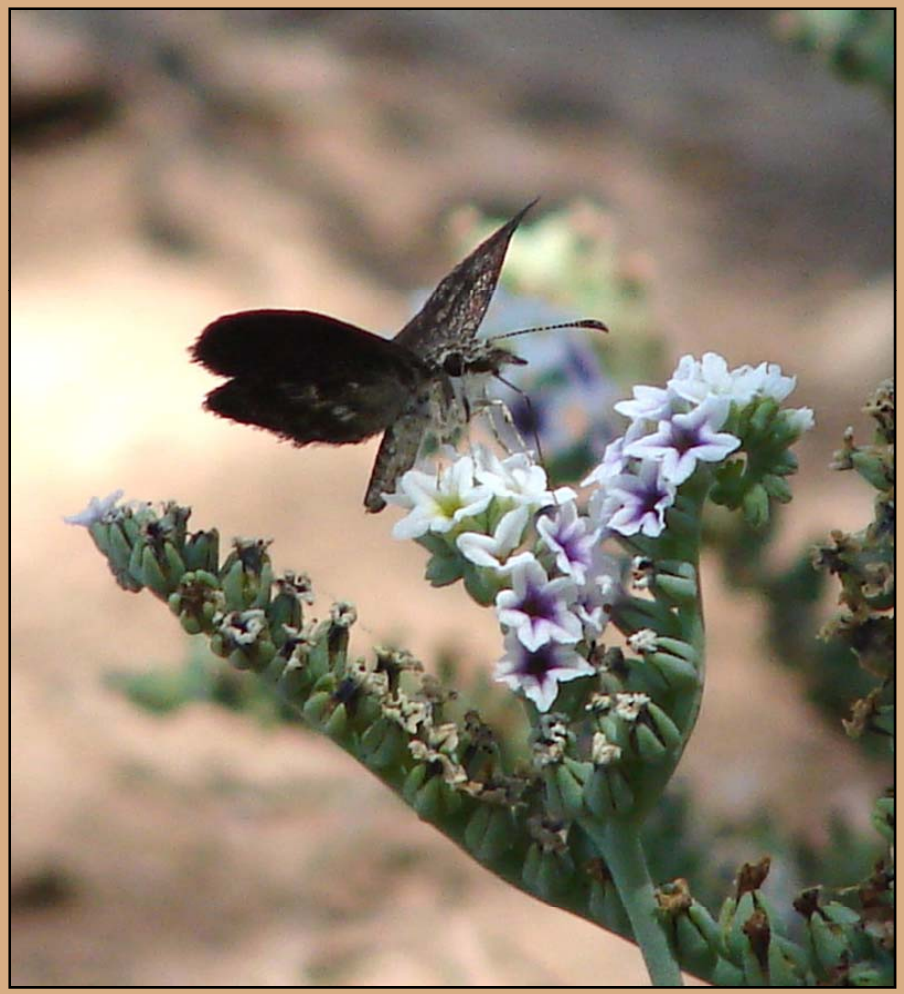
Lower Colorado River Multi-Species Conservation Program

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

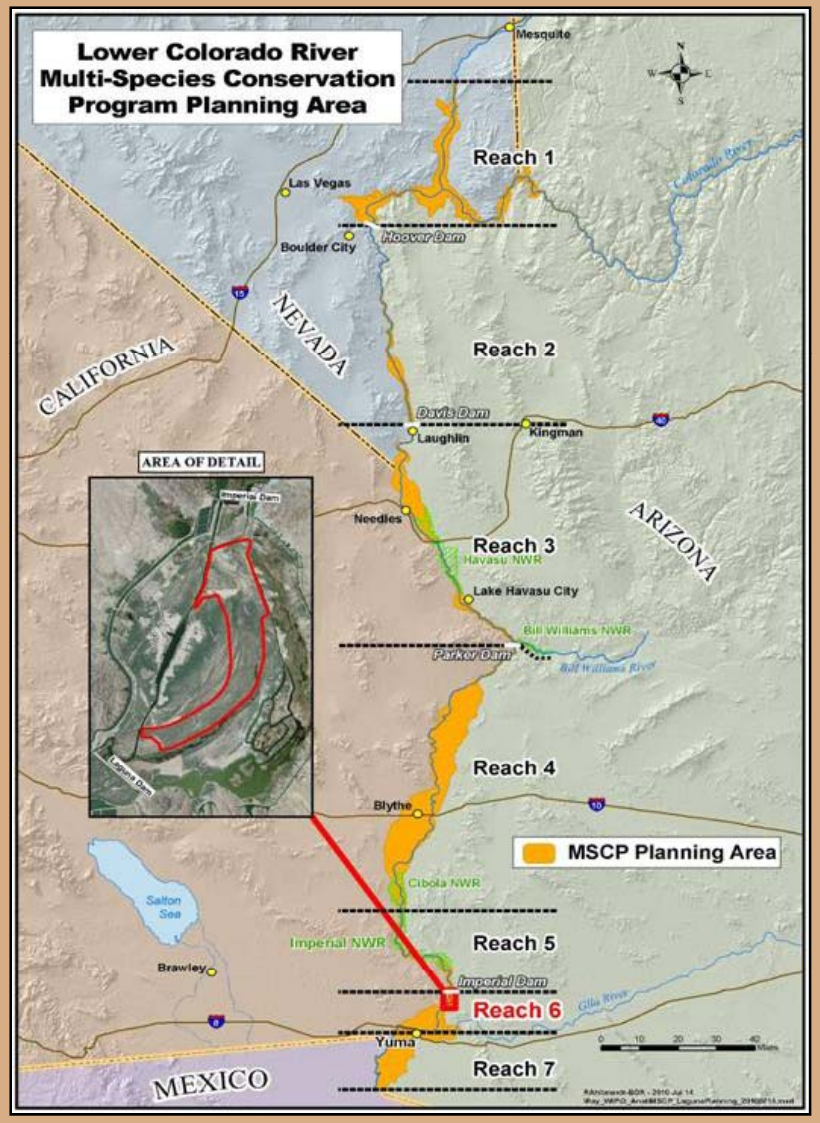
26 COVERED SPECIES

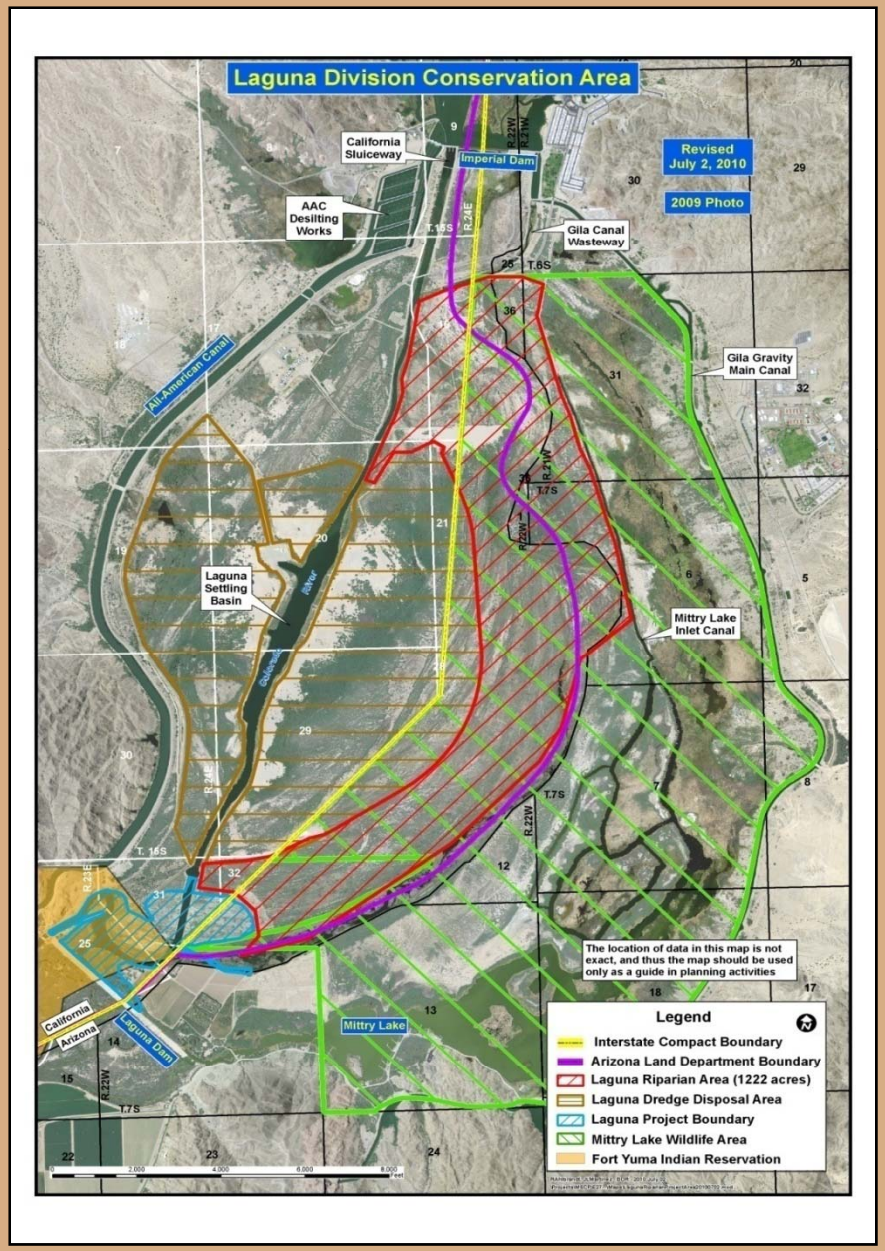
- 6 T&E species
  - 2 birds, 1 reptile, 3 fish
- 20 other species
  - 4 mammals, 10 birds, 2 reptiles, 1 fish, 1 insect, 2 plants
- 5 “evaluation species”
  - 3 mammals, 2 reptiles

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

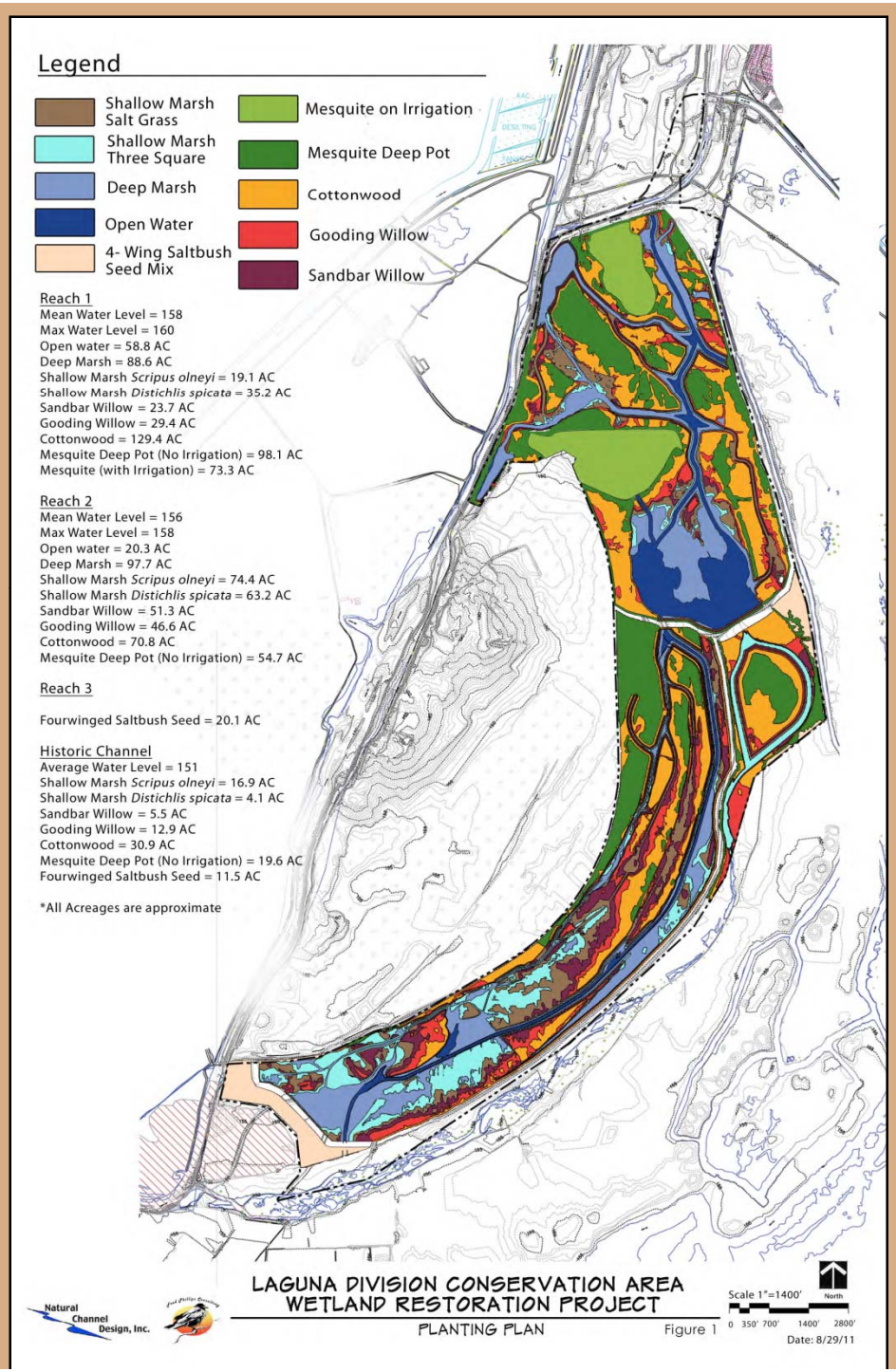
Laguna Division Conservation Area





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

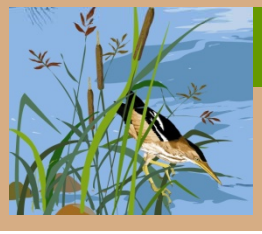
Yuma clapper rail

Southwestern willow flycatcher

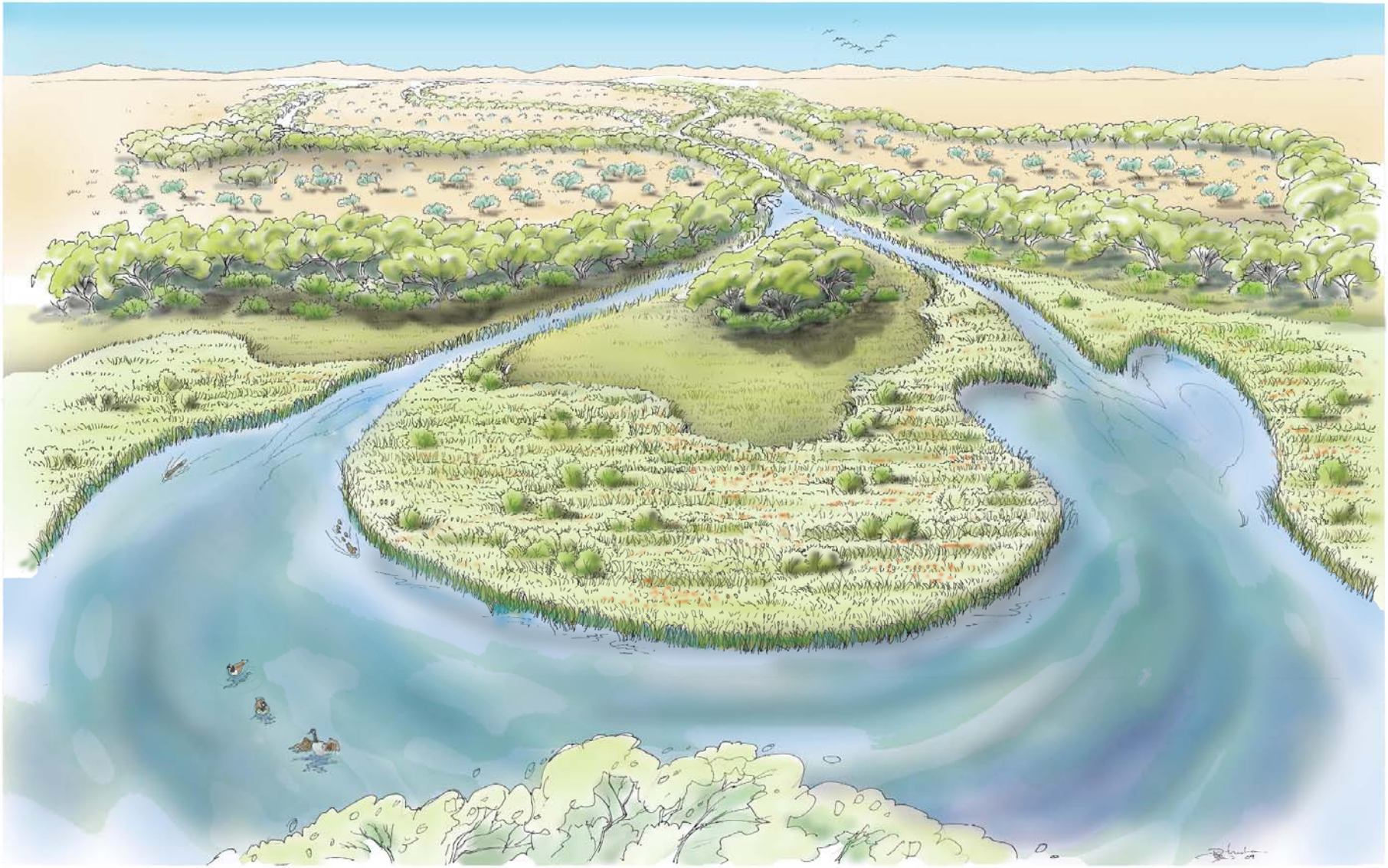
Yellow billed cuckoo

Yuma hispid cotton rat

Colorado River cotton rat



Western least bittern



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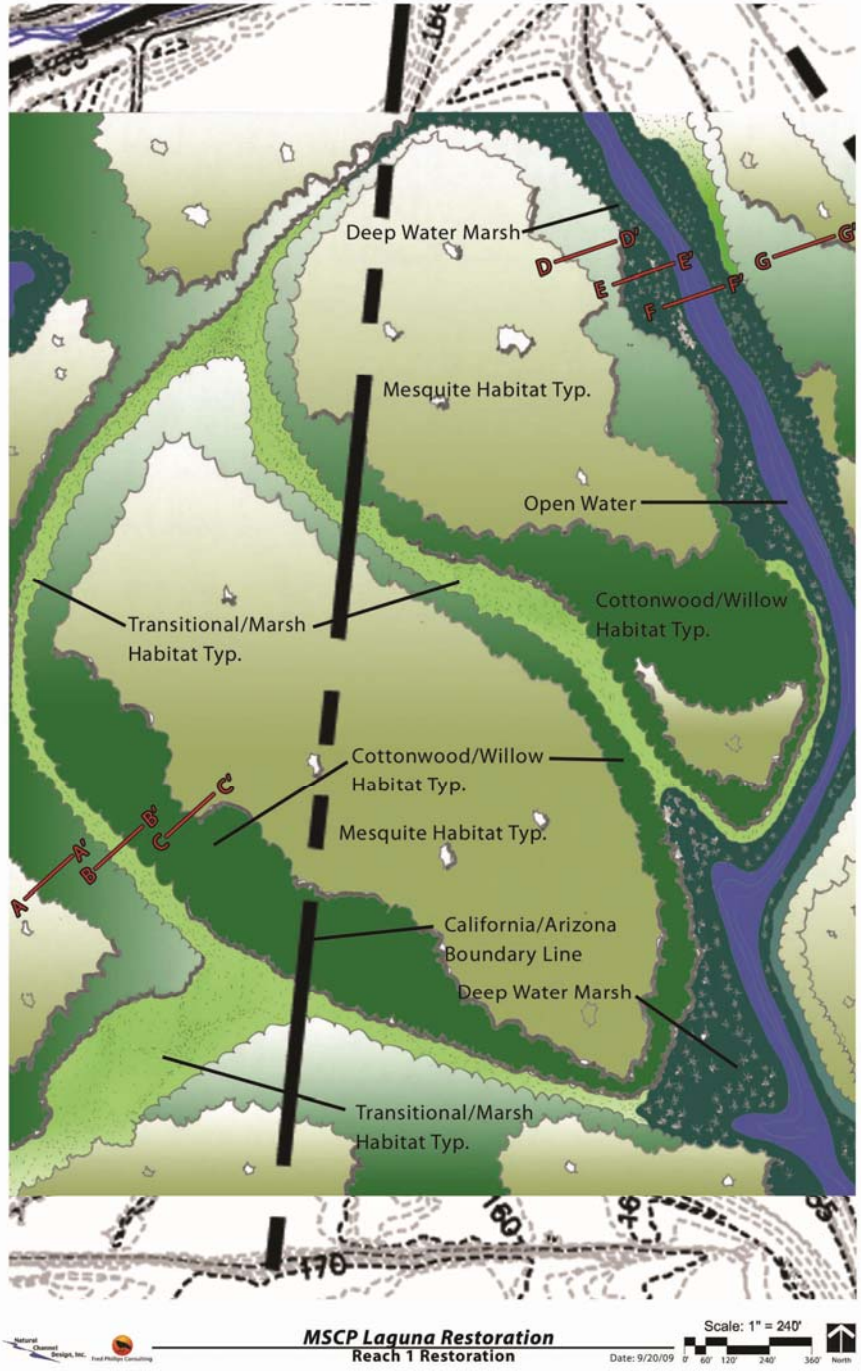
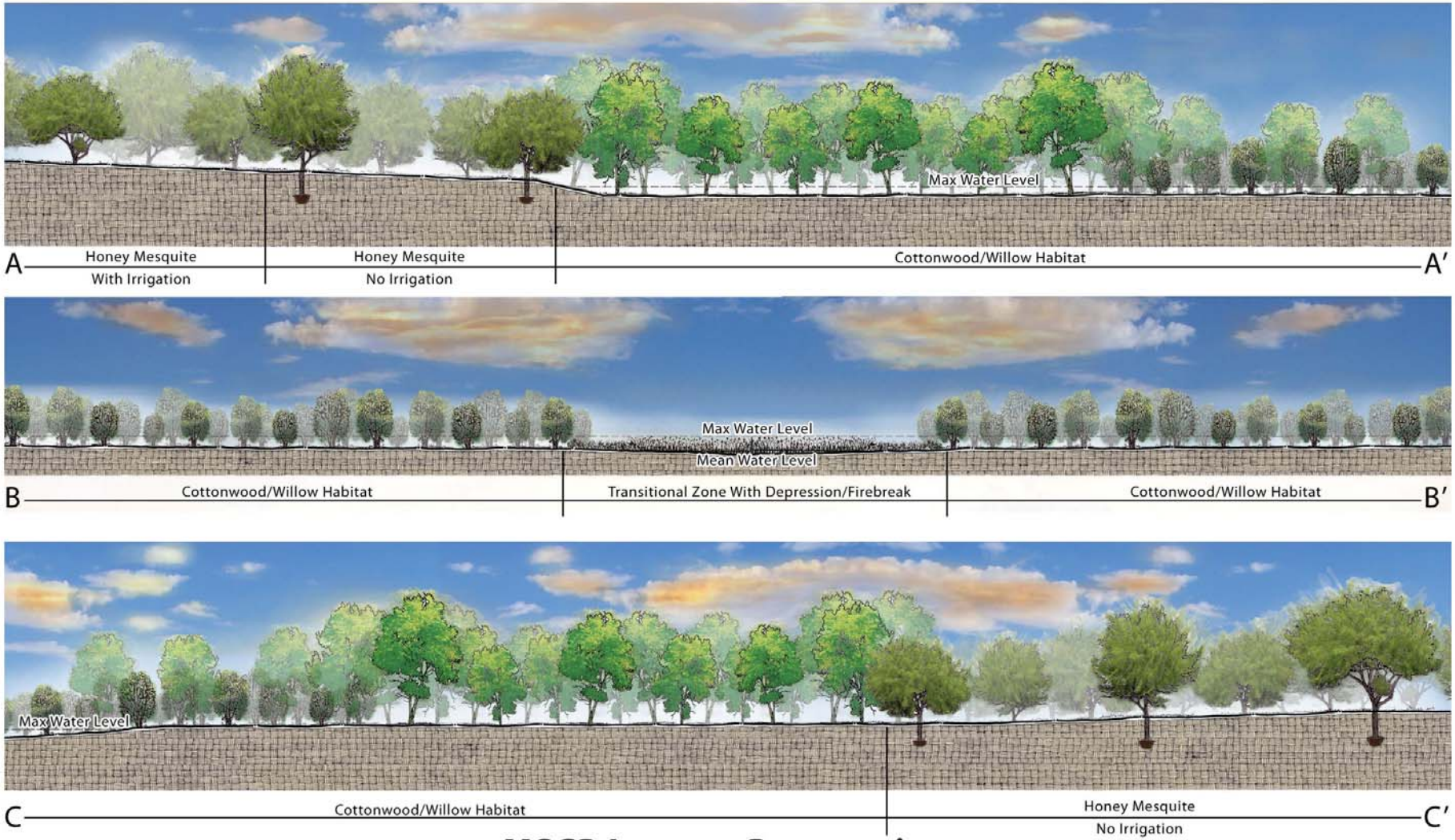
SWI Shephard & Wesnitzer, Inc.

MSCP Laguna Restoration

Reach 1 Concept Drawing

Date: 8/18/09


Deep Water Marsh
D
D'
E
E'
F
F'
G
G'
Mesquite Habitat Typ.
Open Water
Cottonwood/Willow
Habitat Typ.
Transitional/Marsh
Habitat Typ.
Cottonwood/Willow
Habitat Typ.
Mesquite Habitat Typ.
A
A'
B
B'
C
C'
California/Arizona
Boundary Line
Deep Water Marsh
Transitional/Marsh
Habitat Typ.
MSCP Laguna Restoration
Reach 1 Restoration
Date: 9/20/09
Scale: 1" = 240'
0' 60' 120' 240' 360'
North



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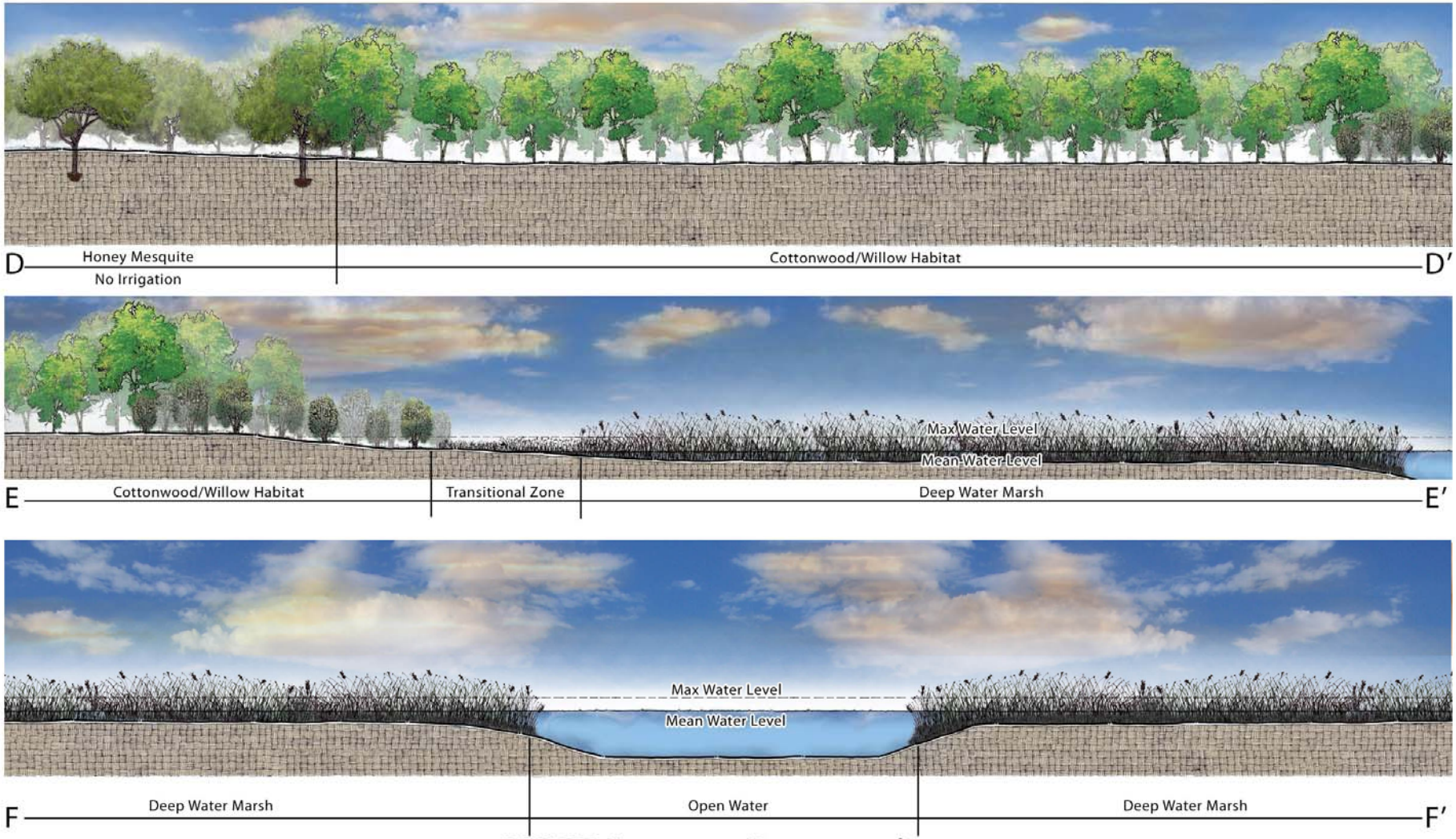
MSCP Laguna Restoration

Reach 1 Cross Sections

Date: 8/25/10

Scale: 1" = 120'

0' 30' 60' 120' 180'



Natural Channel Design, Inc.

Fred Phillips Consulting

MSCP Laguna Restoration

Reach 1 Cross Sections

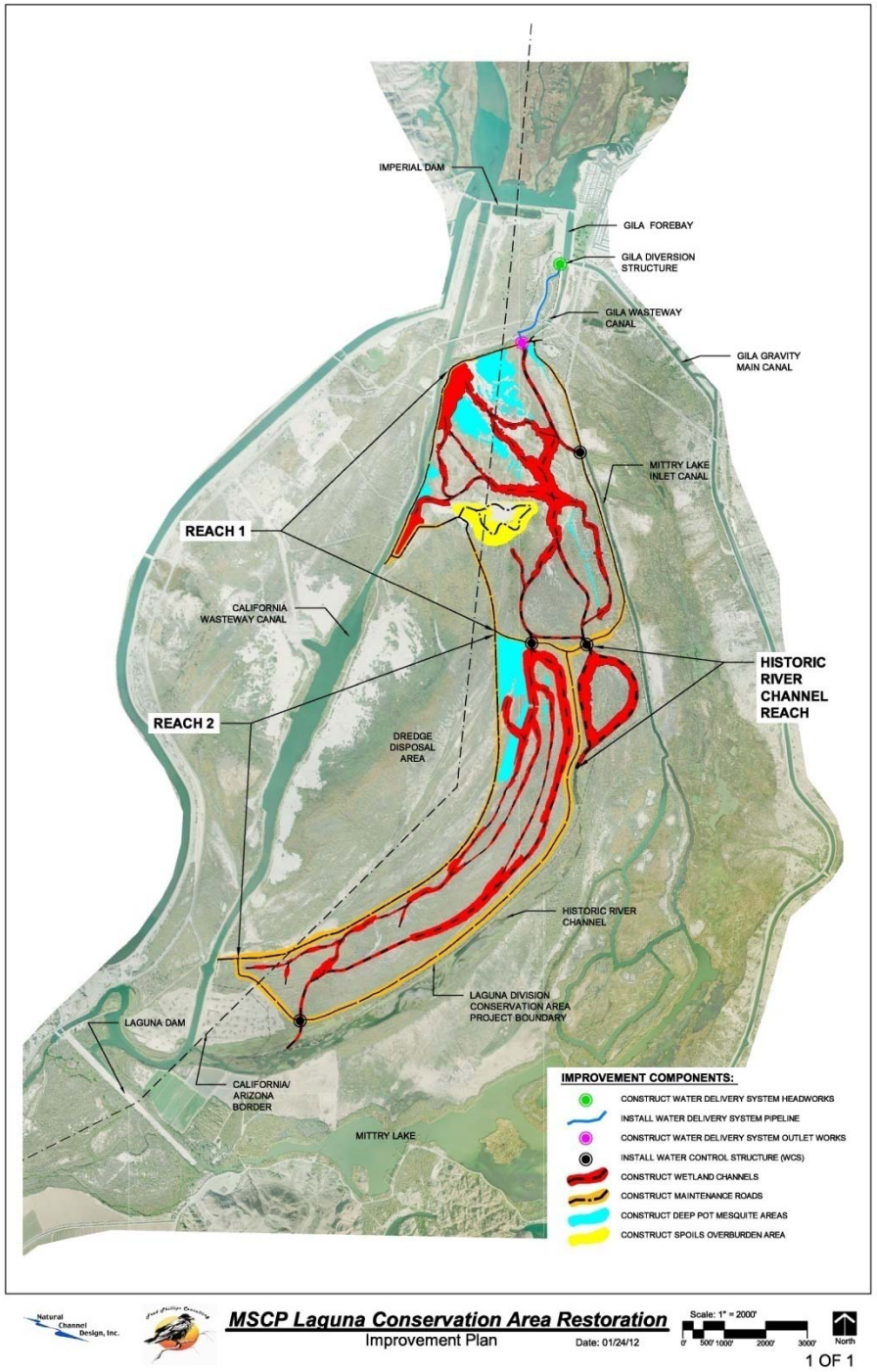
Date: 8/25/10

Scale: 1" = 120'

0' 30' 60' 120' 180'

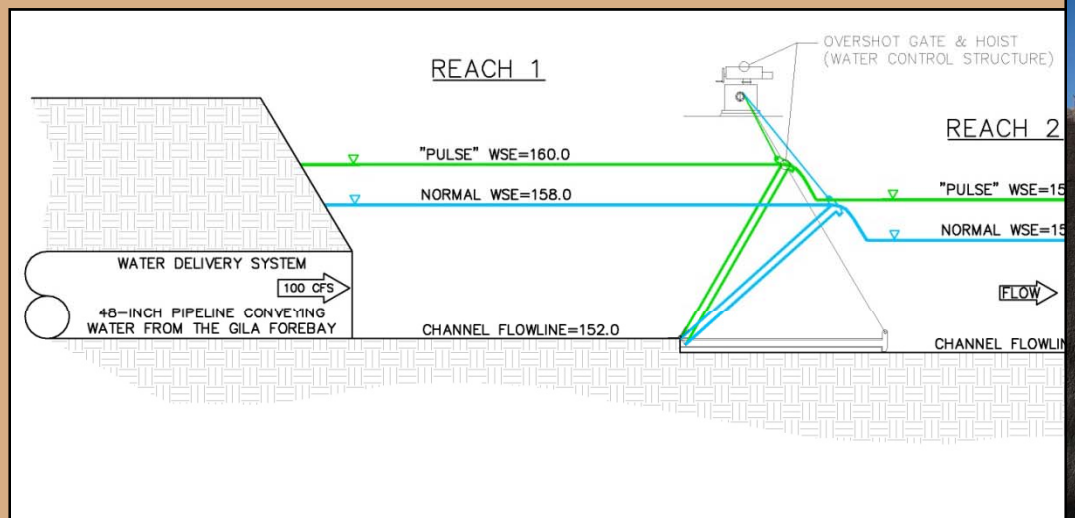
Construction Components

- 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



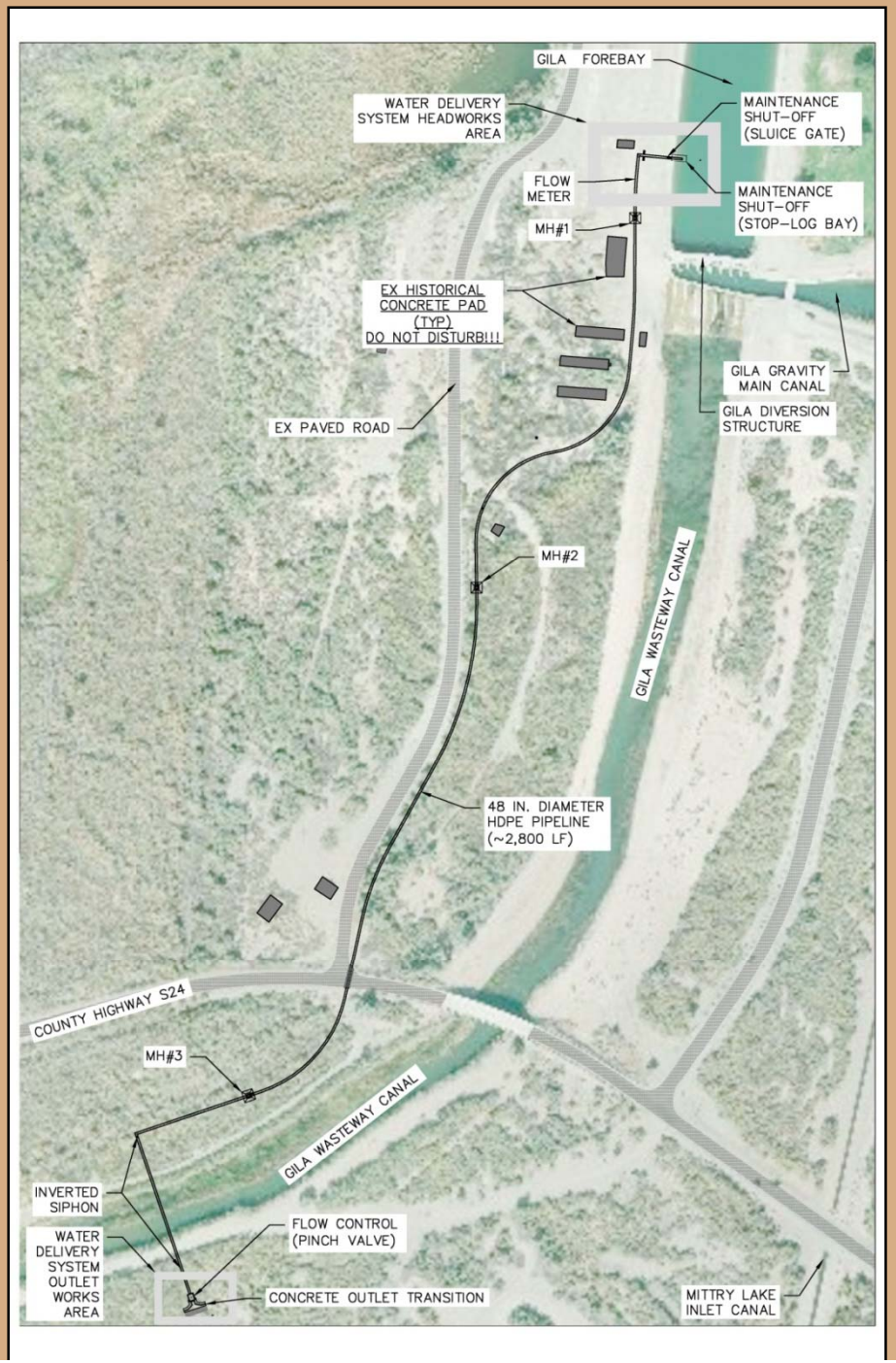
Current Design Concept: Overview

- 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

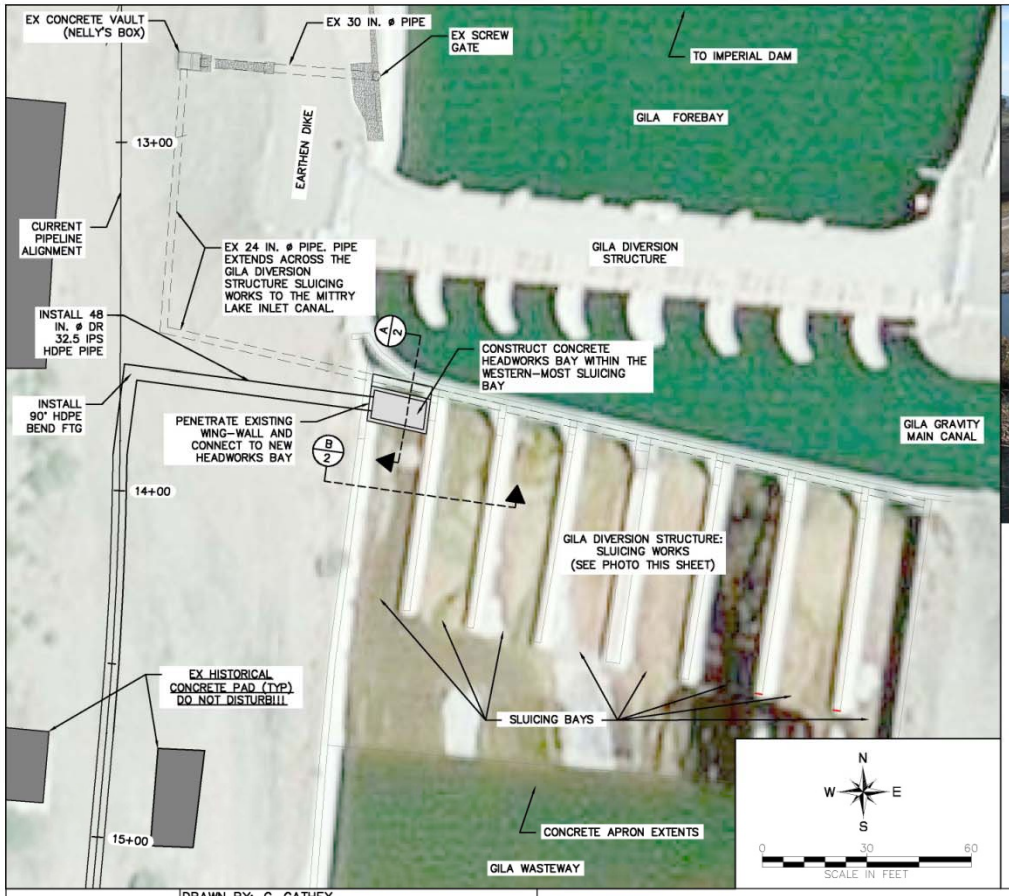


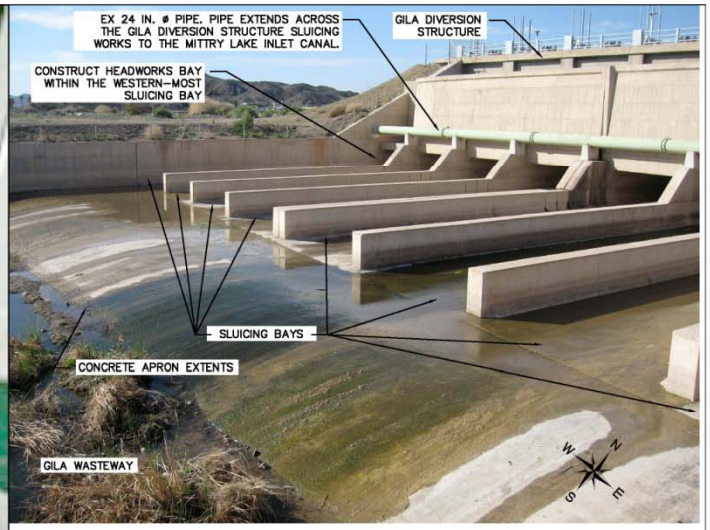
Water Delivery System Overview

- 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) 773-1535

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

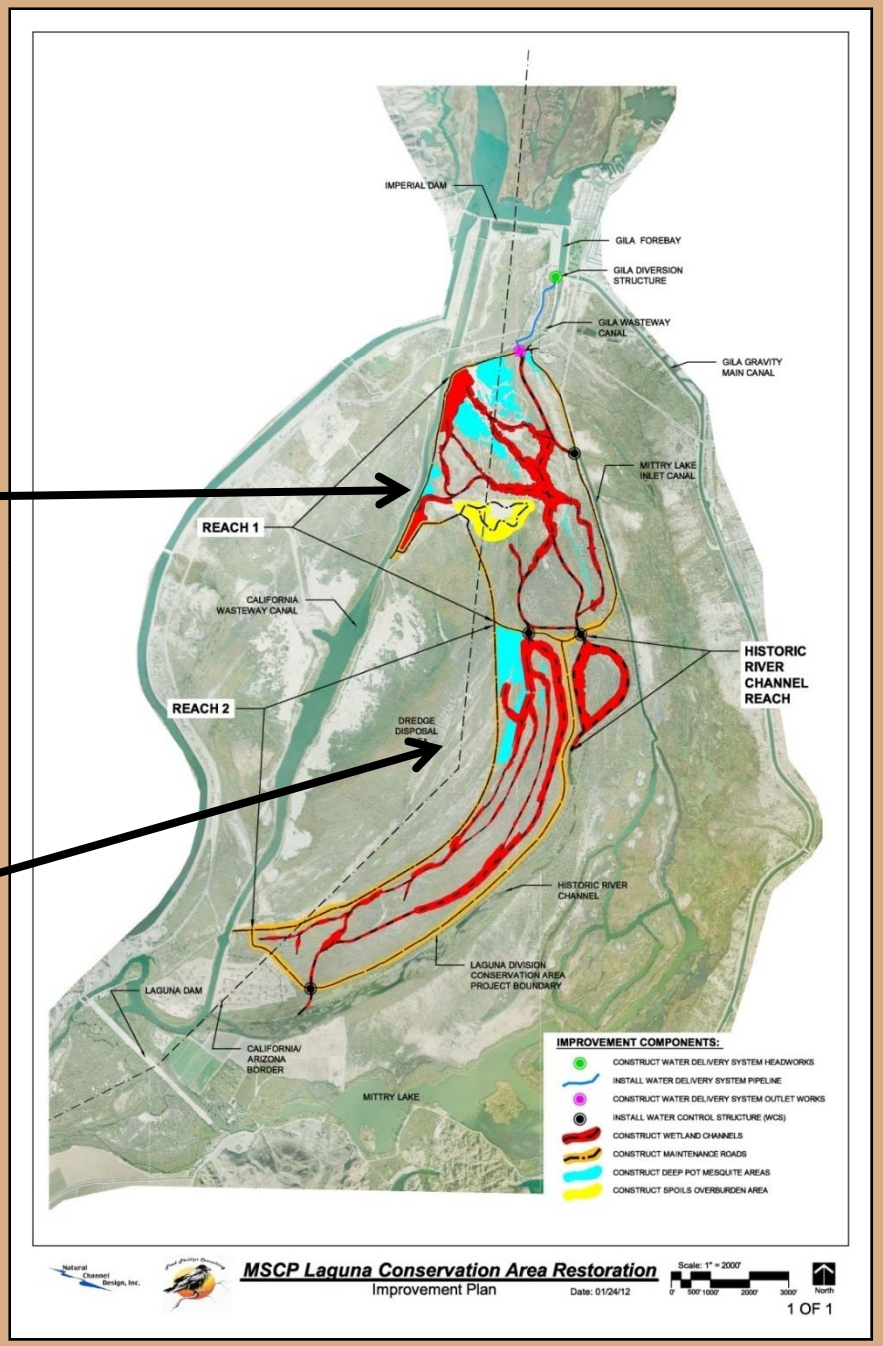
Pipeline Installation

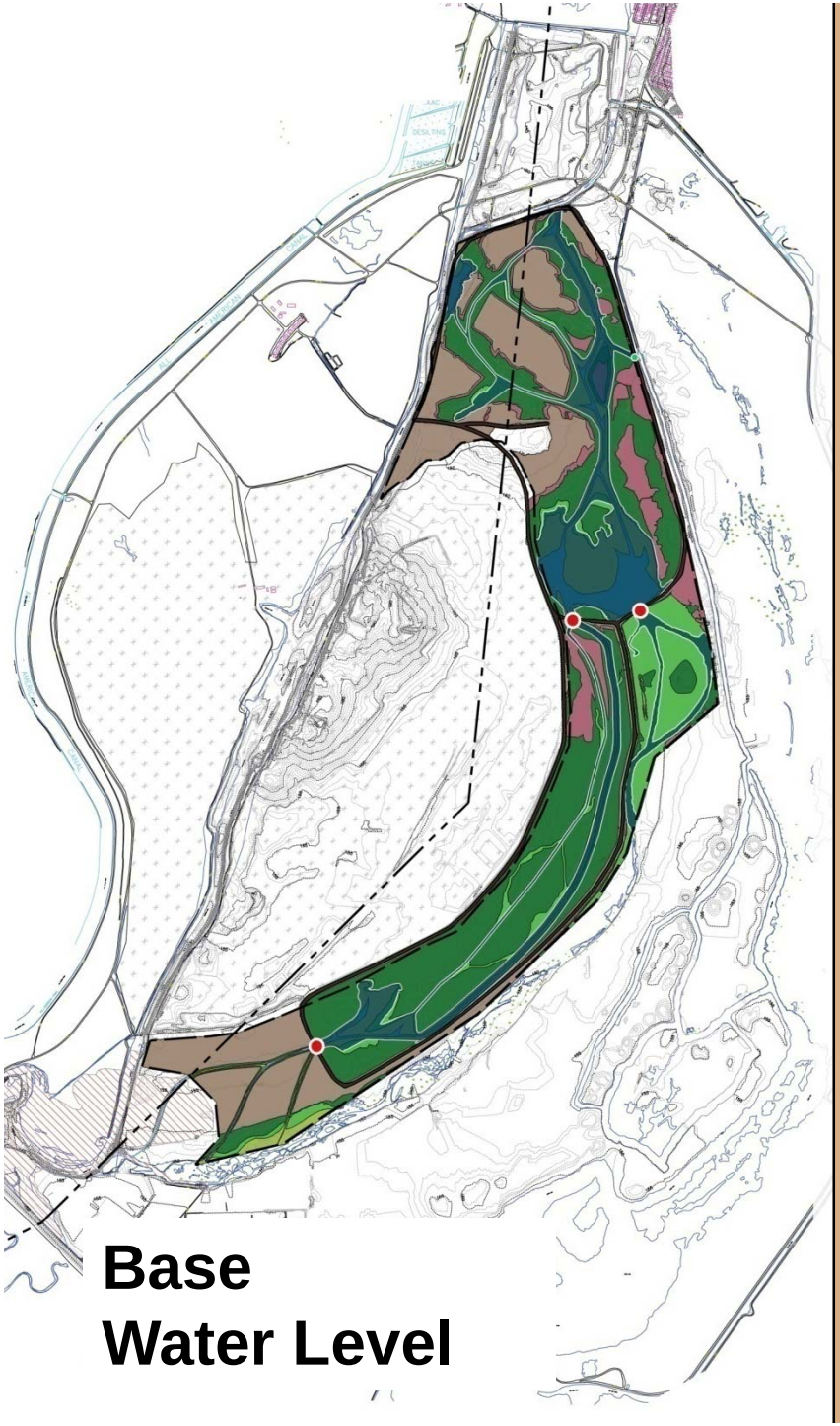
LDCA Clearing Activities

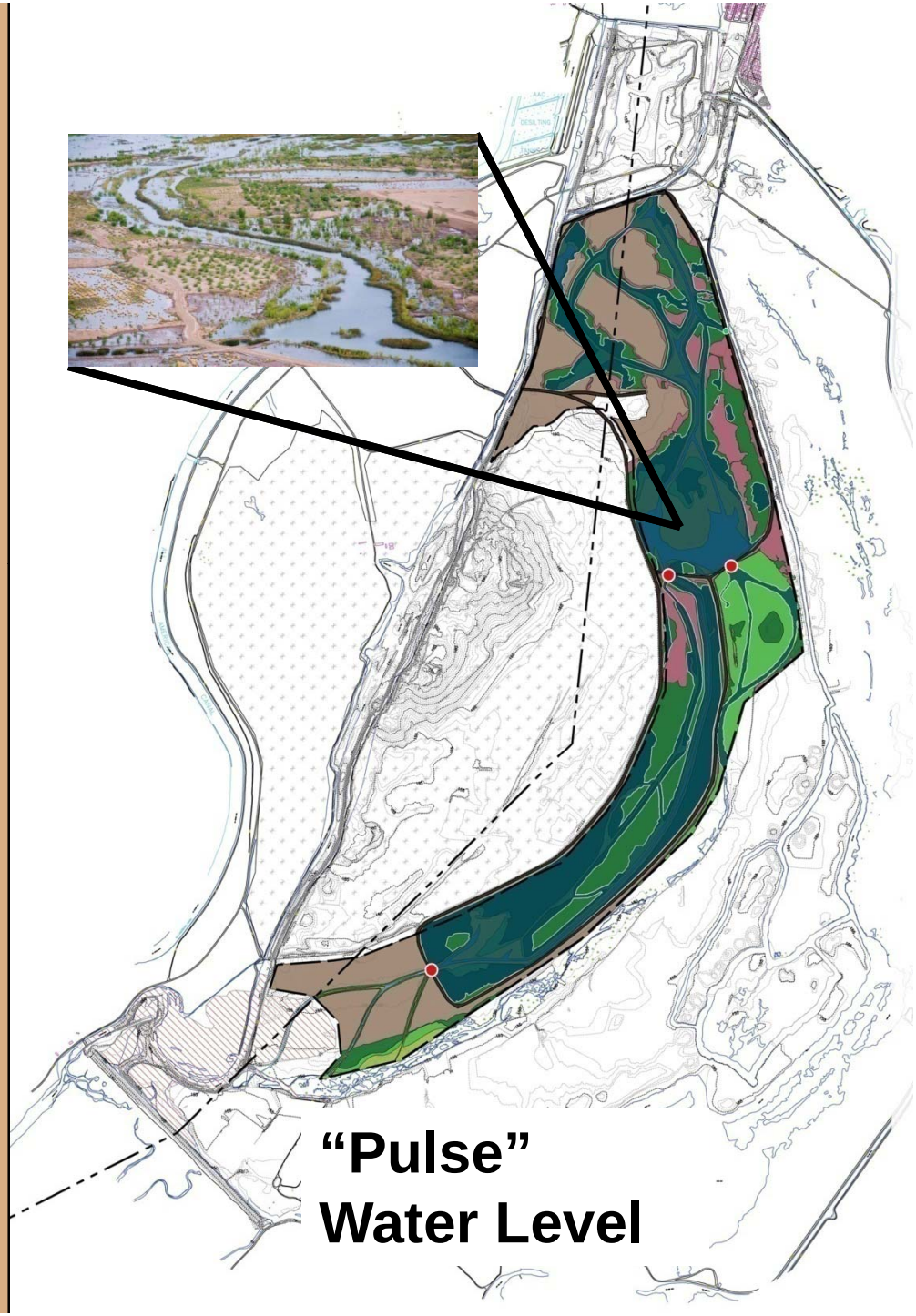
Clearing Operations

Laguna Division Conservation Area Schedule

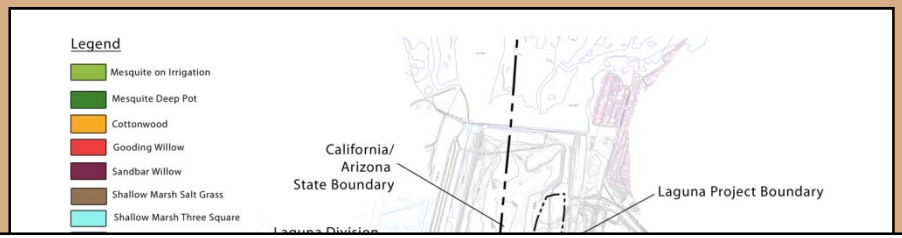
	2011	2012	2013	2014	2015	2016	
JAN		Clearing of Reach 1 & Historic Channel	Clearing of Reach 2	Reach 1& Historic: Collect and Plant Poles	Reach 2: Collect and Plant Poles		JAN
FEB				Order Marsh for Reach 2			FEB
MAR			Order Marsh for Reach 1	Reach 1: Plant Riparian & Mesquites			MAR
APR			Test Flood 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	

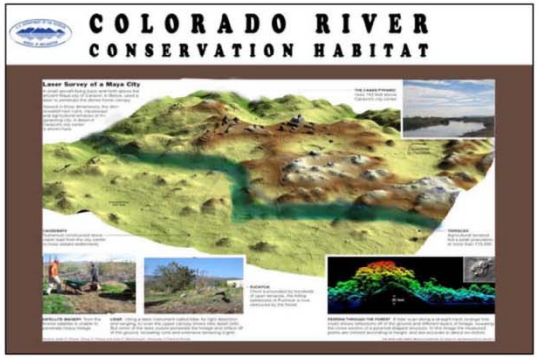


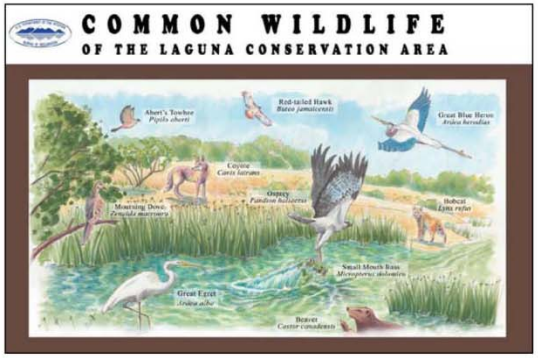

Base
Water Level


“Pulse”
Water Level

LDCA Access







Designed By: FPC

LAGUNA DIVISION CONSERVATION AREA

PROPOSED INTERPRETIVE SIGNS

Figure 2

Date: 7/1/11

Natural Channel Design, Inc.

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