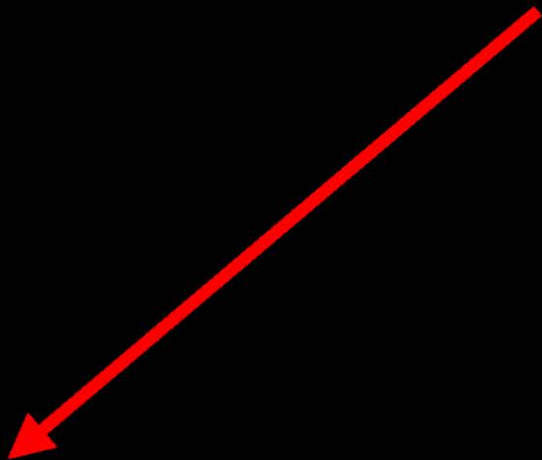


Hunters Hole Restoration in the Limitrophe Division LCR

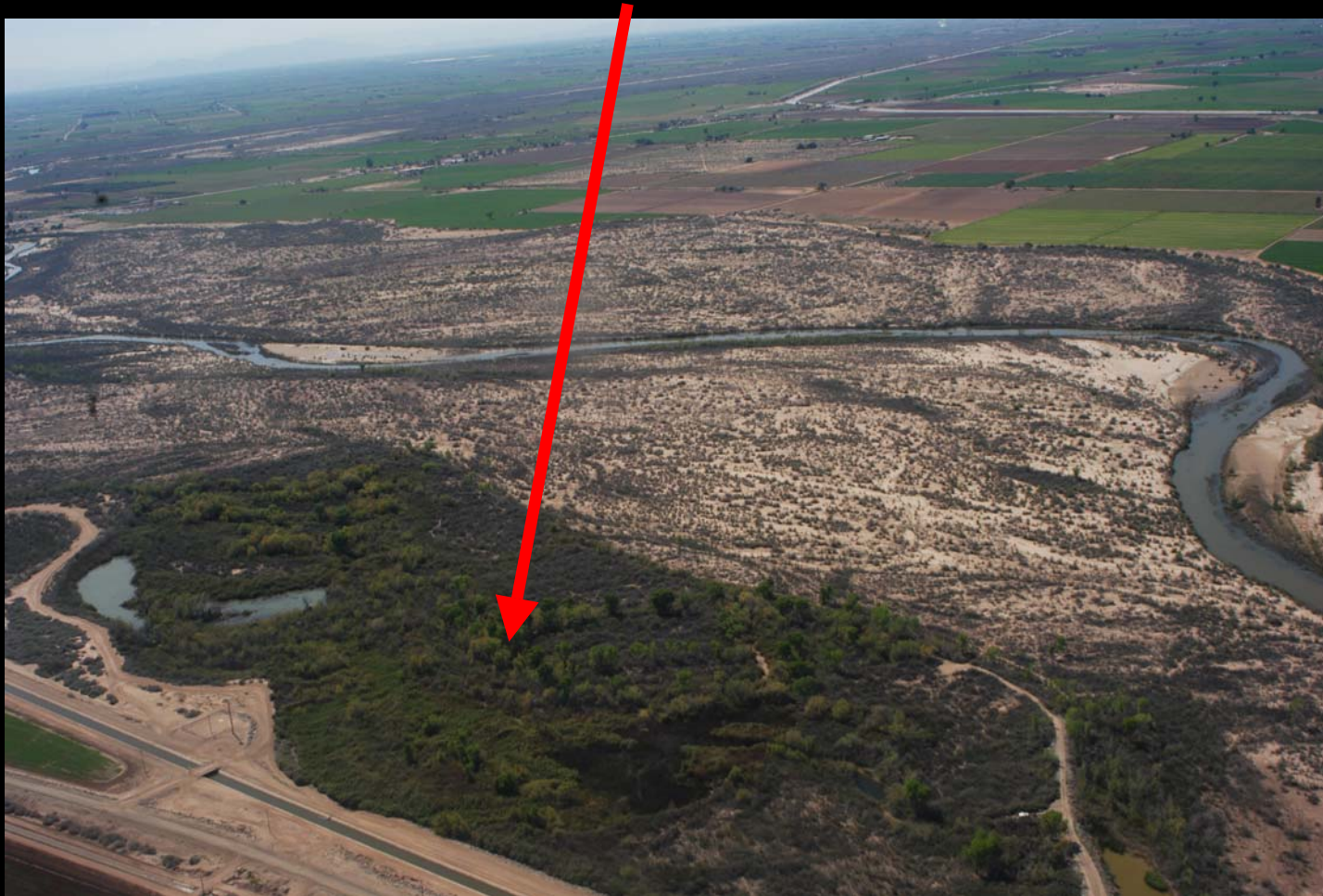


Morelos Dam





Hunters Hole



Excellent Native Habitat Maintained In Limitrophe:

- **Inadvertent Overruns**
- **Dam Seepage**
- **Ag. Returns**
- **Ground Water Inflows**



Challenges facing Hunters Hole Restoration:

- **Intense Illegal Activity**
- **Public Safety**
- **Water Needs**
- **Boundary Deliniation**
- **Ecological Degradation**
- **Protection of Existing Habitat**

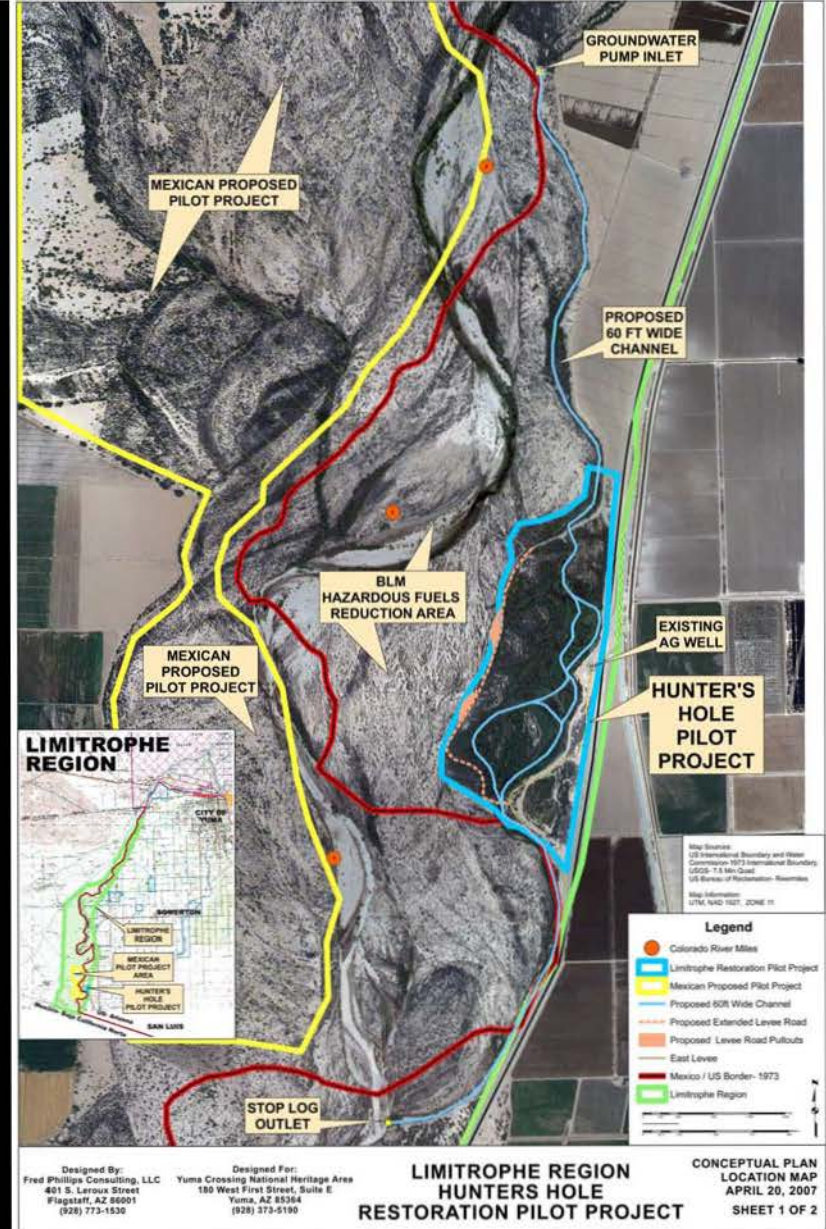
Hunter's Hole

- Existing Wetlands
- Large Area of Native Habitat
- Federal Land
- AZGFD Plan
- Major Security Issues in Area



Restoration Plan

- **Concept Design and Consensus**
- **Fundraising**
- **Design and Permits**
- **Implementation**
- **Combine dual goals**
 - **Security**
 - **Wildlife Habitat**



Hunters Hole Pilot Project

PILOT PROJECT NOTES:

SECURITY EXTENDED LEVEE ROADS- 3,542 LINEAR FEET
 Extended levee roads shall tie into the existing levee roads. The extended levee shall be 10 ft higher than the current levee grade. Extended levee roads shall be 20 ft wide at the top. The slope shall be 1/1 to native grade, armored with riprap.

SECURITY CHANNELS- 8,403 LINEAR FEET
 Dredged channels shall be 60' ft wide.

FLOODPLAIN AREAS- 20 ACRES
 Areas adjacent to the proposed channel shall be floodplain with wetland vegetation (rushes, sedges...). These areas shall be flooded by the use of stop log structures.

MESQUITE REVEGETATION- 40 ACRES
 These areas, which are currently solid stands of tamarisk, shall be completely cleared mechanically with bulldozers/mulchers. The areas shall then be revegetated with Mesquites on 40' ft OC and seeded with alkali sacton. There shall be a visual corridor with a 2 - 12ft height range maintained.

COTTONWOOD / WILLOW AREAS- 30 ACRES
 All remaining areas shall be cleared with a combination of hand and mechanical clearing. These areas are mostly native cottonwood and willows. There shall be a visual corridor with a 2 - 12ft height range maintained.

EXTENDED LEVEE ROADS SHALL TIE INTO EXISTING LEVEE ROAD. THE EXTENDED LEVEES SHALL BE 10 FT HIGHER THAN CURRENT LEVEE GRADE.

STOP LOG STRUCTURE- TYPICAL

PROPOSED SECURITY CHANNEL - 60 FT WIDE

EXISTING MODE CANAL SIPHON INLET

EXISTING AGRICULTURE WELL WITH PUMP
 PROPOSED GROUNDWATER PIPE FROM PUMP TO CHANNEL

STOP LOG STRUCTURE- TYPICAL

ALL APPROVED AREAS OUTSIDE LEVEE SHALL BE COMPLETELY CLEARED FOR SURVEILLANCE

SECURITY LEVEE- 20 FT WIDE AT TOP. SLOPE SHALL BE 1/1 TO NATIVE GRADE. SLOPE SHALL BE ARMORED WITH RIP RAP

LEVEE PULLOUTS- AREAS SHALL BE RAISED 10 FT HIGHER THAN LEVEE (SECURITY OVERLOOK)

ALL APPROVED AREAS OUTSIDE LEVEE SHALL BE COMPLETELY CLEARED FOR SURVEILLANCE

STOP LOG STRUCTURES- 72" IN CULVERTS WITH STOPLOGS FOR ALL STRUCTURES- TYPICAL

Map Sources:
 US International Boundary and Water Commission- 1973 International Boundary
 USGS- 7.5 Min Quad
 US Bureau of Reclamation- Rivermiles
 Map Information:
 UTM, NAD 1983, ZONE 11

Legend

- Colorado River Miles
- Mexico / US Border- 1973
- Limitrophe Restoration Pilot Project
- Extended Levee Road
- Levee Road Pullouts
- Proposed Channel- 60ft Wide
- Floodplain / Wetland Restoration
- Cottonwood / Willow Revegetation
- Mesquite Revegetation
- Proposed Stop Log Structure
- Ag Well Ground Water Pipe
- Existing Agriculture Well
- MODE Canal Siphon Inlet

Designed By:
 Fred Phillips Consulting, LLC
 401 S. Leroux Street
 Flagstaff, AZ 86001
 (928) 773-1530

Designed For:
 Yuma Crossing National Heritage Area
 180 West First Street, Suite E
 Yuma, AZ 85364
 (928) 373-5190

LIMITROPHE REGION HUNTERS HOLE RESTORATION PILOT PROJECT

CONCEPTUAL PLAN
 DESIGN MAP
 APRIL 20, 2007
 SHEET 2 OF 2

Hunter's Hole, Existing Conditions



Yuma East Wetlands Serving as Pilot Project Following work completed in 3.5 Years









South Channel Project Area, October 2005































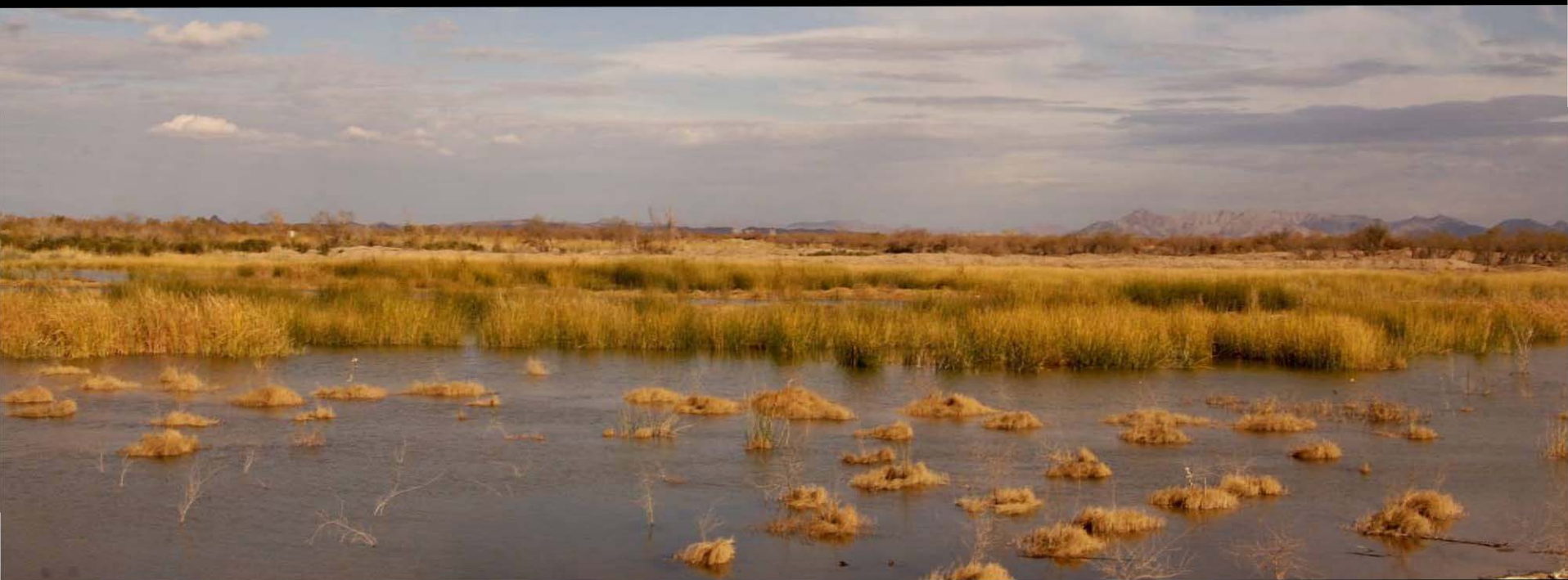












YEW 6 am March 18



YEW 8am March 19

















YWW 2000



YWW 2006



Example of what Limitrophe dense areas can be restored to
with Cottonwood/willow revegetation.



Native tree grove 6 years after planting. (Area dense tamarisk
before restoration)

YUMA EAST WETLANDS RESTORATION PROJECT



Shade Ramada Elevation



SCALE 1"=40'



Trail and Observation Blind Perspective



YEW CULTURAL CENTER AND NATURE PARK CONCEPT PLAN







7 Year Old Revegetation

‘Ahakhav Tribal Preserve



Restored wetlands and cottonwood forest 7 years after planting.
(Area all exotic species before restoration)

‘Ahakhav Tribal Preserve



Restored mesquite forest understory 7 years after planting.
(Area all exotic species before restoration)

















