INTERNATIONAL BOUNDARY AND WATER COMMISSION, UNITED STATES AND MEXICO

Steve Smullen, Principal Engineer

Rio Grande Citizens' Forum

August 9, 2007

Rio Grande Canalization Project

- Constructed 1938-1943
- Water delivery and flood control project
- 106 river miles from Percha Dam, NM to American Dam at El Paso, TX
- 130 miles of flood control levees

Rio Grande Rectification Project

- Constructed in 1930s
- El Paso, TX-Cd. Juarez to Ft. Quitman, TX
- Boundary stabilization and flood control project
- 85 miles of U.S. levee

Flood Mapping

- FEMA is updating flood insurance rate maps
- FEMA requires levees to contain the 100-year flood with 3 ft. freeboard
- USIBWC notified FEMA last year that it could not certify all levees as meeting this requirement
- FEMA will map flood risk as if the levees did not exist at all
- Water surface elevation for 100 year flood is projected until it intercepts ground elevation on both sides of river

Dona Ana

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The projection used in the preparation of this map was Texas State Plane, Central zone. The horizontal datum was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey, SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit their website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was provided by the Texas Department of Transportation. This information was photogrammetrically compiled at a scale of 1:9,353 from aerial photography dated 2003.

Based on updated topographic information, this map reflects more detailed and up-to-date stream channel configurations and floodplains delineations than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unnamed streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

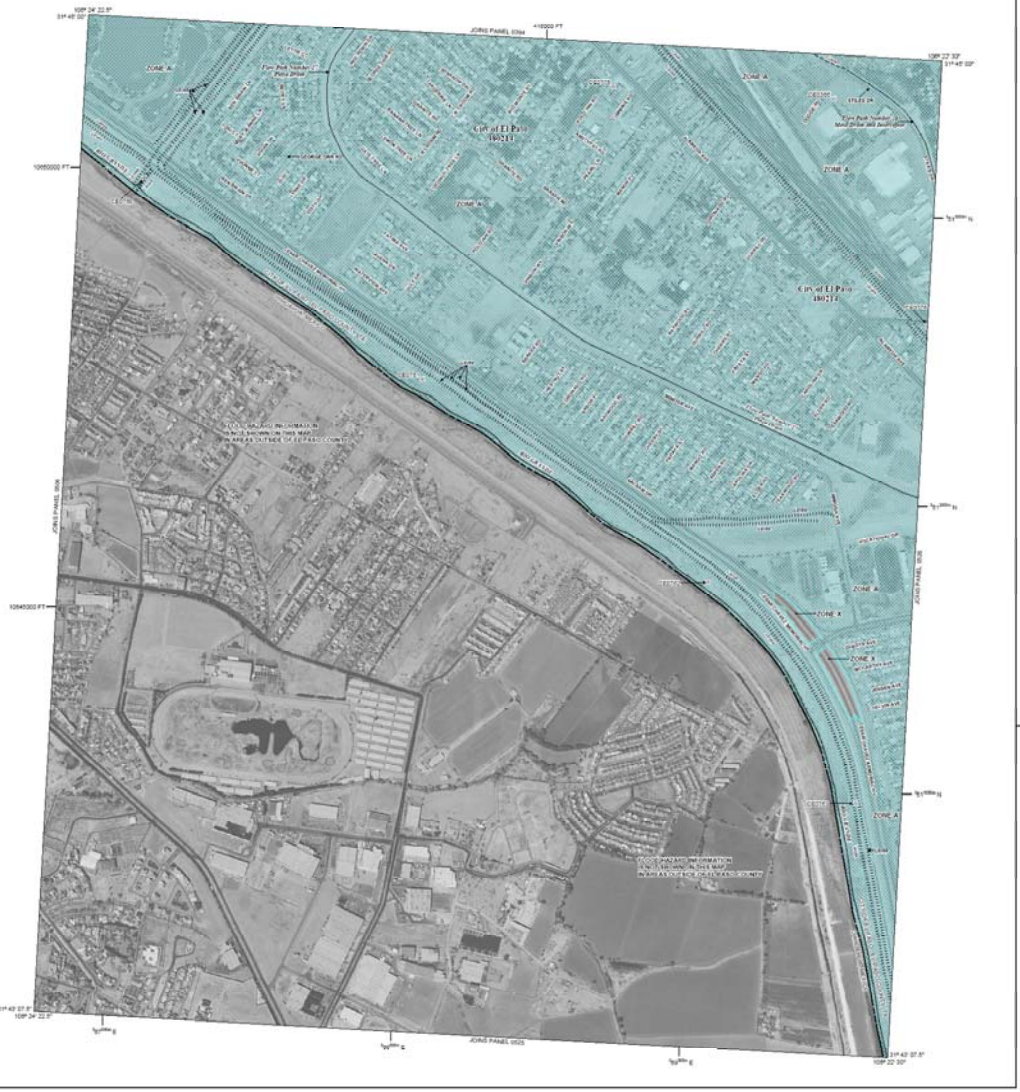
Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov.

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877- **FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

NOTE TO USERS

FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A — No Base Flood Elevations determined.
ZONE AE — Base Flood Elevations determined.
ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99 — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increase in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
Base Flood Elevation line and value; elevation in feet*
Base Flood Elevation value where uniform within zone; elevation in feet*
*Referenced to the North American Vertical Datum of 1988
Cross section line
Transect line
Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
1000-meter Universal Transverse Mercator grid values, zone 13
5000-foot grid ticks: Texas State Plane coordinate system, Central zone (FIPSZONE 4203), Lambert Conformal Conic
Bench mark (see explanation in Notes to Users section of this FIRM panel)
River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP PANEL

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For communities map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

PANEL 0507F

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, TEXAS AND INCORPORATED AREAS

PANEL 507 OF 800

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO, CITY OF	480214	0507	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
48141C0507F

EFFECTIVE DATE

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

Flood Mapping

- FEMA has a public appeal and protest process
- USIBWC believes FEMA's model may overestimate flood risk
- Simplified methodology does not take into account levees in place, volume of flow, attenuation due to infiltration, or the lower water surface which is present in a wider floodplain.
- USIBWC will propose additional modeling to accurately map flood risk

Flood Mapping

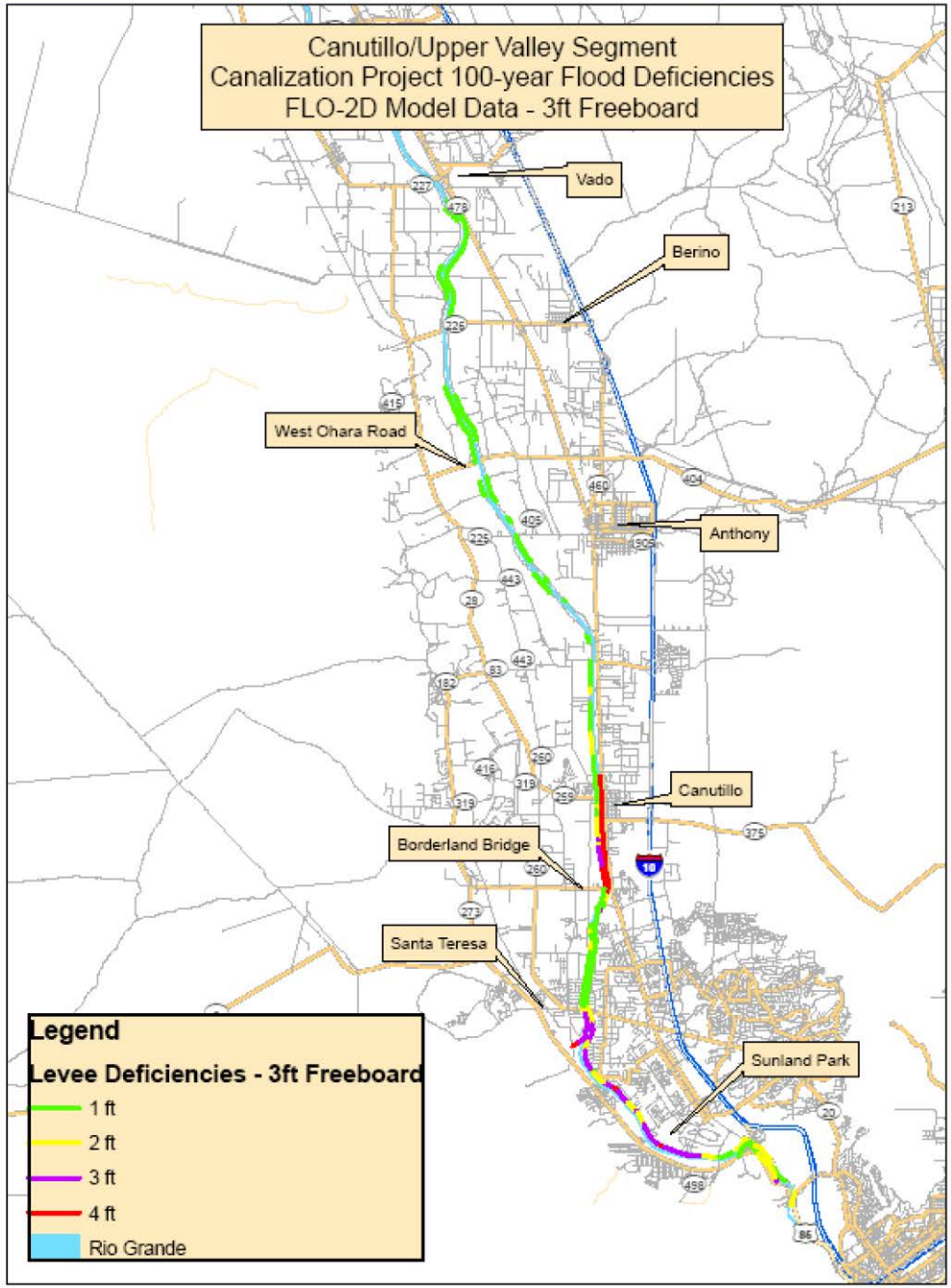
- Draft maps for Doña Ana County released April 2007
- FEMA issued second of two notices on July 11 to begin the 90 day appeal period.
- Based on the severity of the city's and county's concerns, and due to the intervention of Senator Bingaman, FEMA agreed to halt the FIRM process and fully review the methods and analysis leading to the release of the DFIRMs. There is a chance that FEMA will issue revised maps and will meet again with the county and others to answer follow-up questions. The 90-day appeal period will not begin until after that.
- Draft maps for El Paso County were released July 2007
- FEMA public meeting scheduled for August 22, 6 pm at City Hall

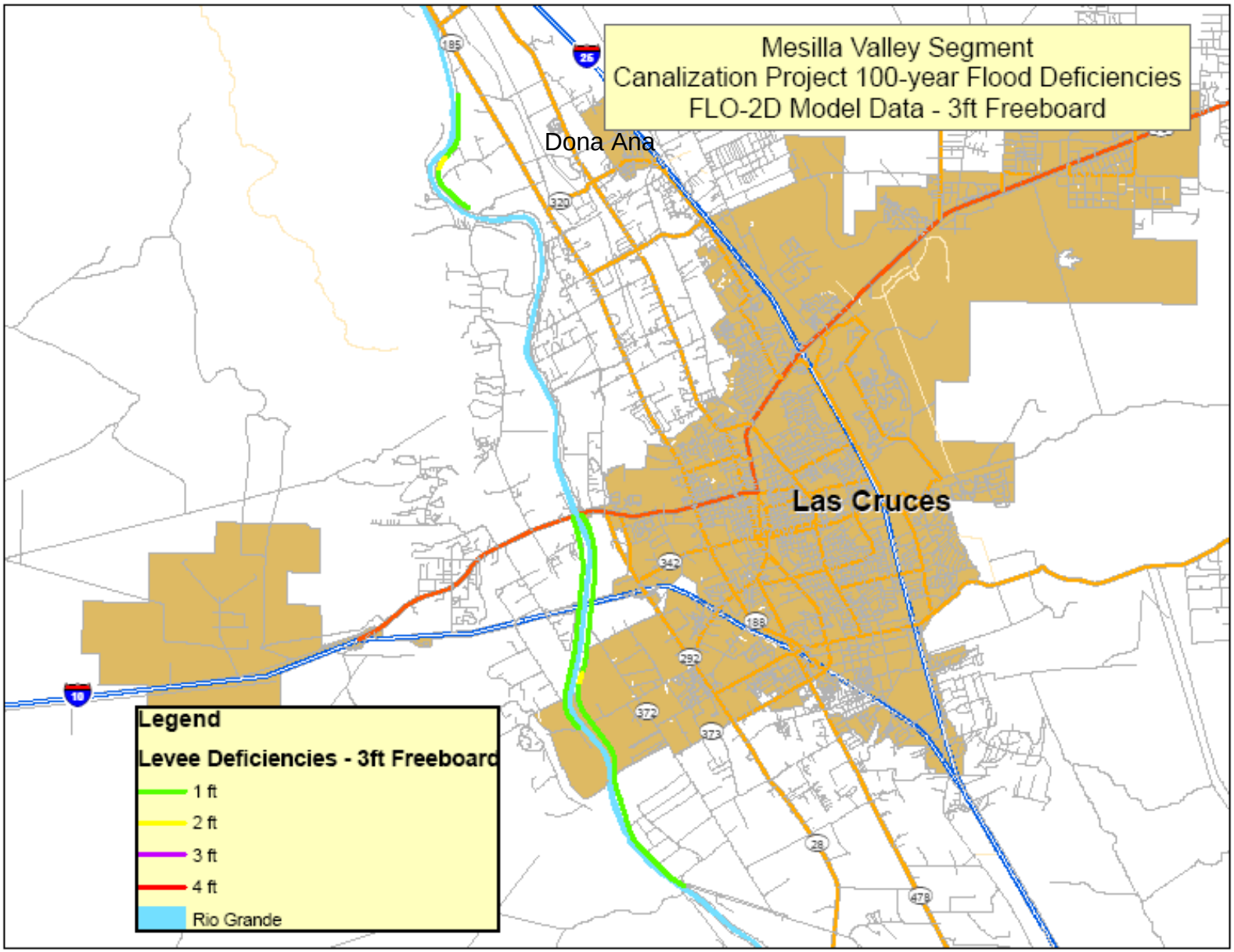
FEMA Interagency Report

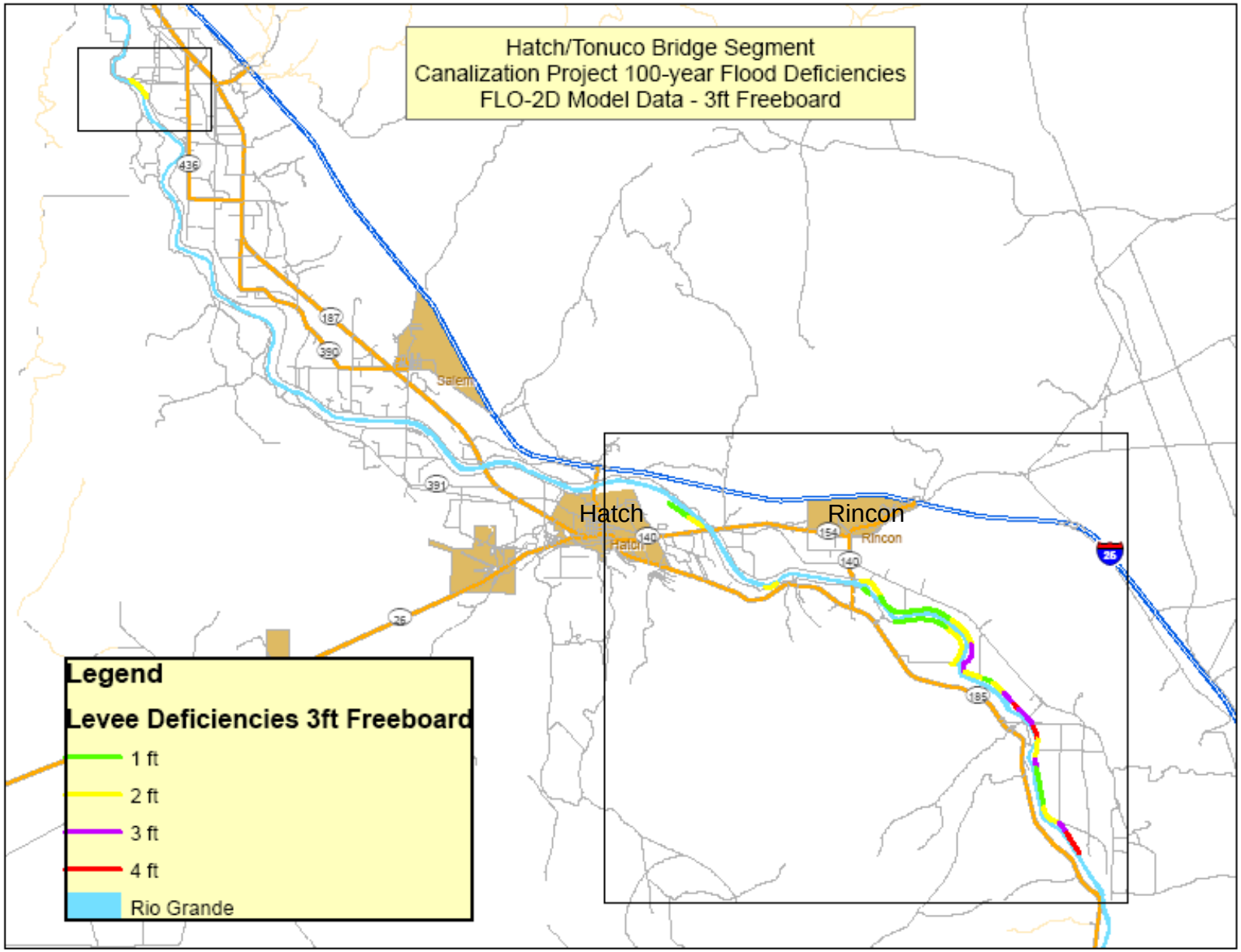
- FEMA released in September 2006
- Proposes a risk based approach to include depth of flooding, number of people affected, type and density of development, etc. and a phase out of the 100 year 3 feet freeboard requirement
- Suggests possibly greater return frequencies in urban areas, ie 500 year flood
- Recommends levee inventory; 10 year inspection report to FEMA

Levee Status – Doña Ana County

- Structural integrity is acceptable, levee height is deficient for 38 miles in Doña Ana County
- USIBWC proposes to raise levees:
  - Vado to American Dam – 16 miles in New Mexico ($8.9 million)
  - Mesilla Valley – 11.55 miles ($4.3 million)
  - Hatch/Rincon/Tonuco Bridge area – 10.48 miles ($6.5 million)


Canutillo/Upper Valley Segment
Canalization Project 100-year Flood Deficiencies
FLO-2D Model Data - 3ft Freeboard
Vado
Berino
West Ohara Road
Anthony
Canutillo
Borderland Bridge
Santa Teresa
Sunland Park
Legend
Levee Deficiencies - 3ft Freeboard
1 ft
2 ft
3 ft
4 ft
Rio Grande


Mesilla Valley Segment
Canalization Project 100-year Flood Deficiencies
FLO-2D Model Data - 3ft Freeboard
Dona Ana
Las Cruces
Legend
Levee Deficiencies - 3ft Freeboard
1 ft
2 ft
3 ft
4 ft
Rio Grande


Hatch/Tonuco Bridge Segment
Canalization Project 100-year Flood Deficiencies
FLO-2D Model Data - 3ft Freeboard
Hatch
Rincon
Legend
Levee Deficiencies 3ft Freeboard
1 ft
2 ft
3 ft
4 ft
Rio Grande

Funding and Priorities–Doña Ana Co

- Levee raising subject to federal appropriations, Senate is proposing $11.7M to raise New Mexico levees

- If fully funded this will allow levee raising in NM from Leasburg to Courchesne Bridge. Should partial funding be appropriated, focus will be on Leasburg to Texas line using USIBWC force account personnel.

Environmental Considerations – Canalization Project

- Rio Grande Canalization Project EIS analyzes alternatives for environmental enhancements to accompany levee work
- Selection of an alternative/Record of Decision is on hold pending outcome of collaborative process between environmental groups and EBID
- Environmental enhancements subject to availability of federal appropriations

Environmental Considerations – Canalization Project

- Vegetative growth typically increases water surface elevations
- USIBWC is currently using FLO2D hydraulic model to evaluate dense growth throughout the floodplain and its effect on levee deficiency
- Evaluation of future potential condition for levee raising

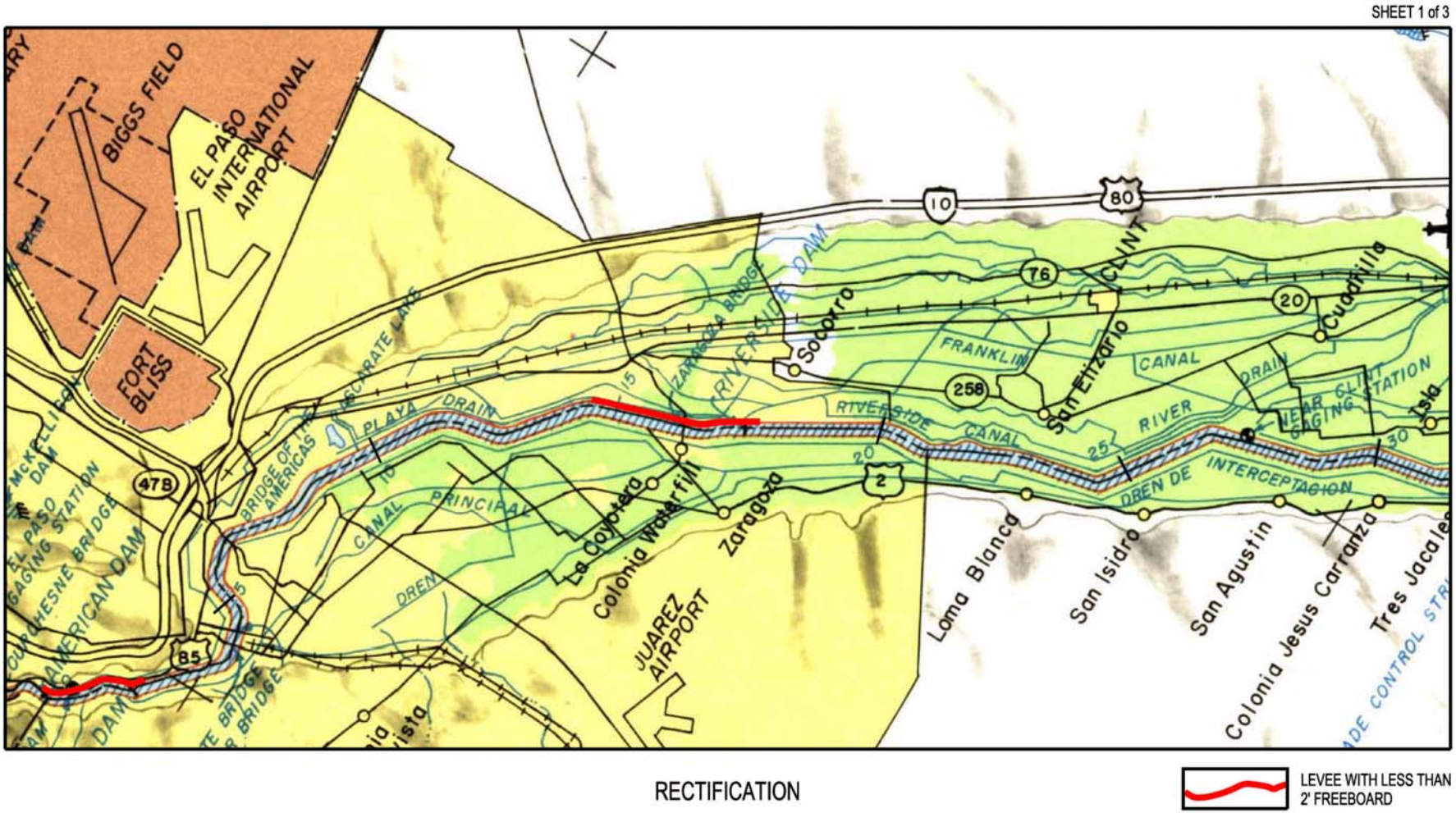
Environmental Considerations – Rectification Project

- Draft PEIS out for public comment until September 24, 2007
- Public meeting scheduled for August 21, 2007 at 6:00 pm at USIBWC Headquarters
- Three alternatives under consideration
  - Enhanced Operation and Maintenance
  - Integrated Water Resources Management
  - Multipurpose Project Management

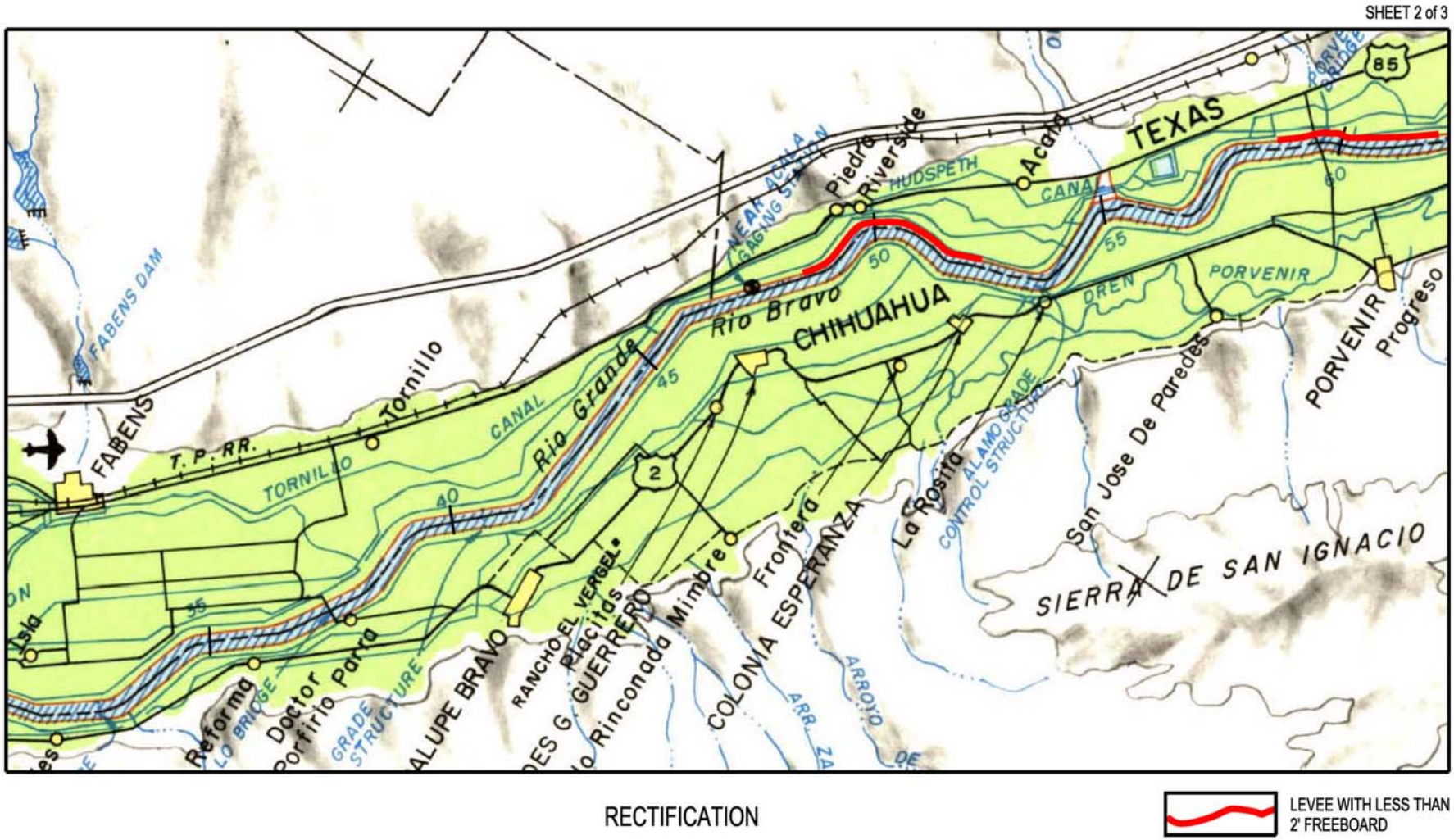
Levee Status – El Paso County

- Structural integrity is acceptable, levee height is deficient for 26 miles in El Paso County.
- Cost to raise levees in El Paso County is estimated $21.3 million
- Senate is proposing $15.0M for Texas levees, much of which will be allocated to similar projects in the LRG Valley, however a portion will be used in El Paso County
- USIBWC proposes to raise levees:
  - Upper Valley – 13 miles ($6.5 million)
  - Canutillo Floodwall – 1.5 miles ($13.3 million), currently reviewing alternatives to reduce costs

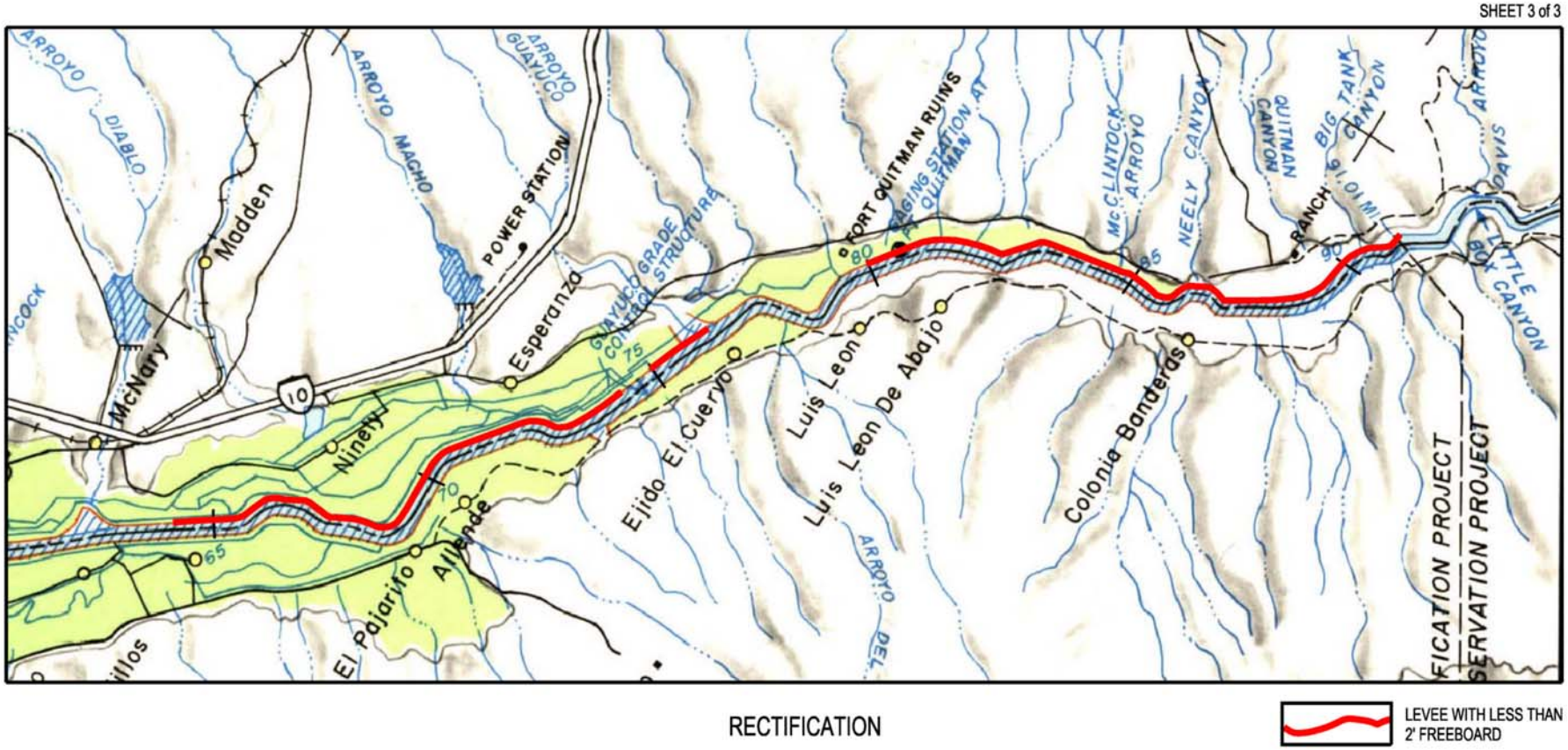
Rectification Project- Levee Deficiency



Rectification Project - Levee Deficiency

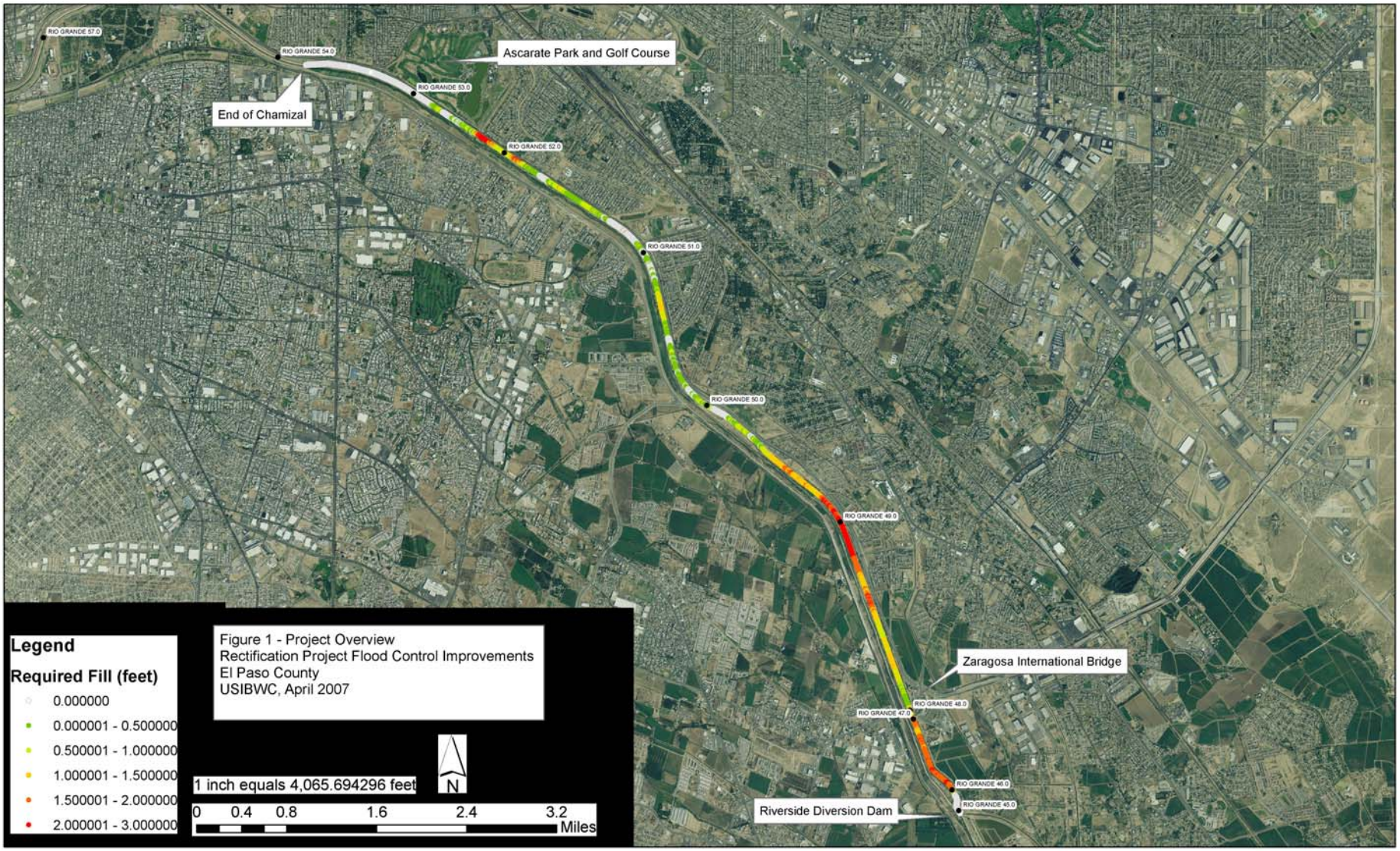


Rectification Project - Levee Deficiency



Rectification Project –Partial Certification

- USIBWC plans to certify Rectification levee from International Dam to Ysleta-Zaragoza Bridge area by Dec 2007.
- Affected Area:
  - .5 miles of improvements from International Dam to the beginning of the Chamizal (in progress)
  - 7.4 miles of levee raising from end of Chamizal (upstream of Ascarate Park) to Ysleta-Zaragoza Bridge (completed)
- Estimated Completion – September 2007
- Estimated Cost - $1.0 million
- Pending – closure of Ascarate WW, floodwall construction at Harts Mill WW, City of El Paso drain closures (all expected by end of calendar year)


RIO GRANDE 57.0
RIO GRANDE 54.0
Ascarate Park and Golf Course
RIO GRANDE 53.0
End of Chamizal
RIO GRANDE 52.0
RIO GRANDE 51.0
RIO GRANDE 50.0
RIO GRANDE 49.0
Zaragosa International Bridge
RIO GRANDE 48.0
RIO GRANDE 47.0
RIO GRANDE 46.0
RIO GRANDE 45.0
Riverside Diversion Dam
Legend
Required Fill (feet)
0.000000
0.000001 - 0.500000
0.500001 - 1.000000
1.000001 - 1.500000
1.500001 - 2.000000
2.000001 - 3.000000
Figure 1 - Project Overview
Rectification Project Flood Control Improvements
El Paso County
USIBWC, April 2007
1 inch equals 4,065.694296 feet
N
0 0.4 0.8 1.6 2.4 3.2
Miles

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BOUNDARY &
WATER
COMM.

Sediment Removal – Dona Ana County

- Sediment has been removed at selected arroyo mouths within the Canalization Project and above Mesilla Dam and American Dams in 2006 and 2007
- Additional sediment removal will be performed as funding becomes available.
- Collaborative study for Canalization EIS is addressing the timing and amount of dredging required within areas of the project.

Sediment Removal – El Paso Co. Chamizal Project

- 100,000 cubic meters.
- Estimated cost: $0.65 million.
- Work being performed by Mexico under agreement between the two Sections of the Commission
- Work is approximately 40% complete

INSTITUTO NACIONAL DE MIGRACION

INTERNATIONAL BOUNDARY AND WATER COMMISSION, UNITED STATES AND MEXICO

U.S. Section

(915) 832-4100

www.ibwc.state.gov