

Leon Creek Watershed Interim Feasibility Report and Integrated Environmental Assessment San Antonio, Texas

Project Briefing for Civil Works Review Board

COL Charles H. Klinge
District Commander, Fort Worth District

27 March 2014

Headquarters, US Army Corps of Engineers
Washington, DC



US Army Corps of Engineers
BUILDING STRONG



Presentation Outline

- Purpose of the Briefing
- BLUF: Bottom Line Up Front
- Background
- Study Area Overview
- Plan Formulation
- Environmental Considerations
- Review and Policy Process
- Summary of Recommended Plan



Leon Creek at Commerce - Looking downstream



Purpose of the Briefing

- Provide an overview of the Leon Creek Feasibility Study and the Recommended Plan
- Answer questions and address comments
- Obtain CWRB approval for State & Agency Review
- Discuss the next steps in the approval process toward a Chief's Report



Vertical Teaming



Non Federal Sponsor:

The San Antonio River Authority

Ms. Suzanne Scott, General Manager

Mr. Steve Graham, Assistant General Manager

Project Management

Planning

- Plan Formulation
- Economics
- Environmental Analysis

Real Estate

Office of Counsel

ATR Teams

Independent External Peer Review

Engineering

- Structural
- Hydrology & Hydraulics
- Geotechnical
- Cost
- Environmental

OWPR

SWD

SWD RIT



Study Authority

The Leon Creek Feasibility Study is in partial response to the Guadalupe and San Antonio Rivers and Tributaries, Texas, Resolution adopted by the **Committee on Transportation and Infrastructure, U.S. House of Representatives, House Resolution docket 2547, March 11, 1998**, which reads:

Resolved by the Committee on Transportation and Infrastructure of the United States House of Representatives, That, the Secretary of the Army is requested to review the report of the Chief of Engineers on the Guadalupe and San Antonio Rivers, Texas, published as House Document 344, 83rd Congress, 2nd Session, and other pertinent reports, with a view to determining whether any modifications to the recommendations contained therein are advisable at the present time, with particular reference to providing improvements in the interest of flood control, environmental restoration and protection, water quality, water supply, and allied purposes on the Guadalupe and San Antonio Rivers in Texas.

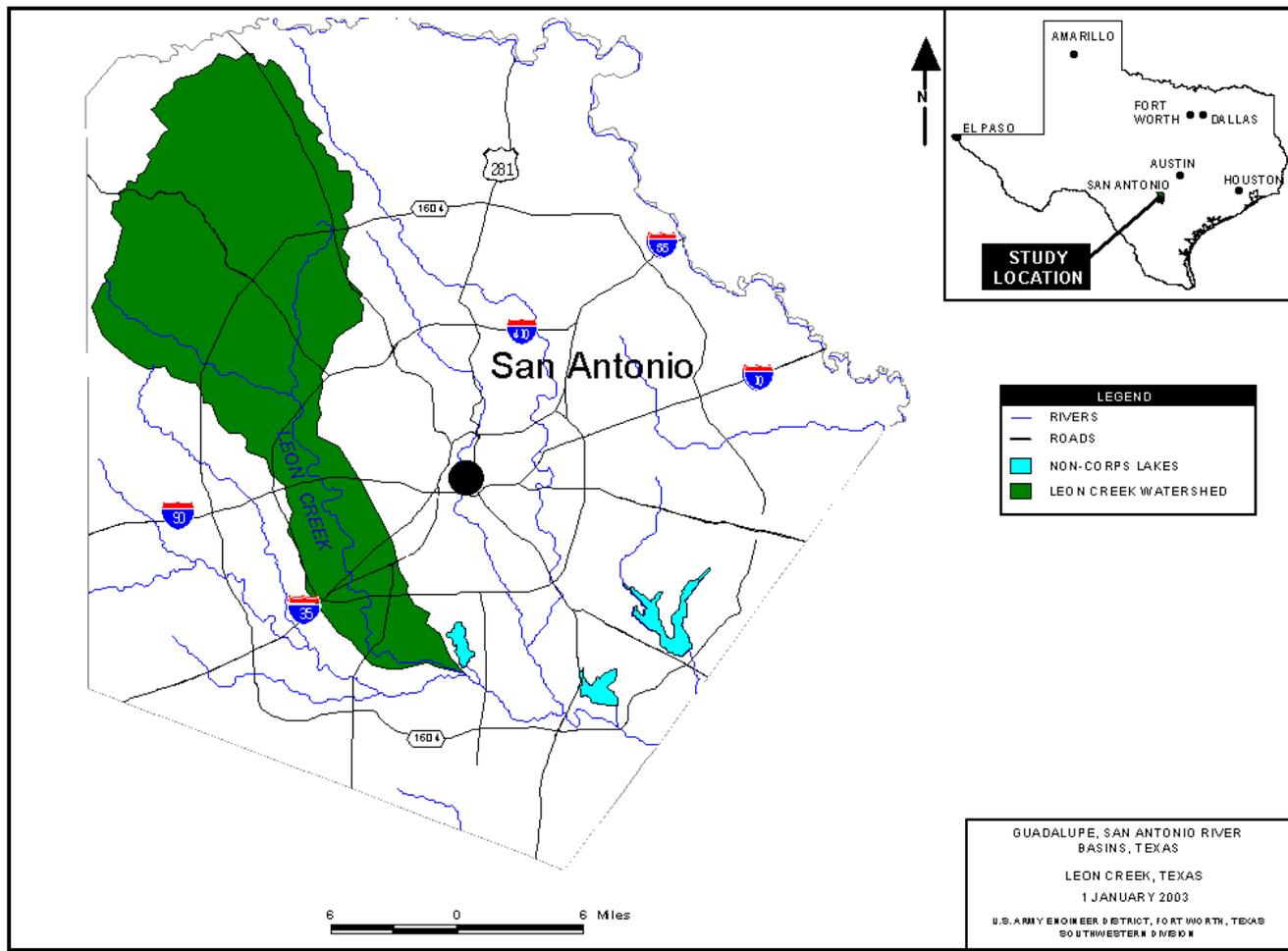


BLUF

- NED and Recommended Plan :
 - ▶ 1% (AEP) Levee with Channel Modification
 - ▶ Nonstructural Buyout
- \$28.2M Total Project Cost
- Reduces annual damages by \$2.143M
- \$859,000 in annual net benefits
- BCR 1.7-to-1 at 3.5%
- Partnership approach to flood-risk management and life safety
- No locally preferred plan



Leon Creek Watershed



Leon Creek Study Area



- Northwestern Bexar County
- Runs south-southeast 57 miles to the confluence with the Medina River
- Watershed is 238 square miles
- Study area comprises the 500-year floodplain, which is 32 square miles

- Watershed Boundary
- 500 year floodplain



Project Purpose

Reduce risk of flood damages within the Leon Creek Watershed and reduce the risk to life, health, and welfare for the Leon Creek Watershed residents.



Flooding at Port San Antonio



Test Cell Facility flooding at Port San Antonio



Flooding at Port San Antonio

1986-87 - \$476,000 in damages

- Led to the construction of the current berm (less than 25-year protection)

2002 – \$300,000 in damages at Jet Engine Test Cell Facility

2013 – \$1,600,000 in damages

- \$1M in damages at Jet Engine Test Cell Facility
- Test cell facility shut down for 2 weeks losing \$100,000 in revenue
- \$600,000 at other Port facilities



Problems and Opportunities

PROBLEMS

- Substantial flood damage by a 1% AEP event in and around the city of San Antonio.
- Short warning times and high velocity flood flows.



OPPORTUNITIES

- Reduce risk of flood damages in the Leon Creek Watershed.
- Contribute to greater public awareness of the hazard presented by flood flows.



Objectives

- Reduce risk of flood damages & protect structures to extent practicable within the Leon Creek Watershed.
- Reduce risk to life, health, and welfare of Leon Creek Watershed residents by decreasing flood risk to the extent practicable.



No Action Plan

Future without Project Conditions

- Climate - models are highly variable towards changes in annual precipitation. Climate models do however, consistently predict higher intensity precipitation events with increasingly prolonged periods of drought.
- Flooding - increased urbanization is expected to contribute to the potential for flooding in the future
- Land Use – significant increases in land dedicated to urban development over the next 25 years
- Flood Risk Management - Damages of \$13.8M annually (Oct 2013 price level)



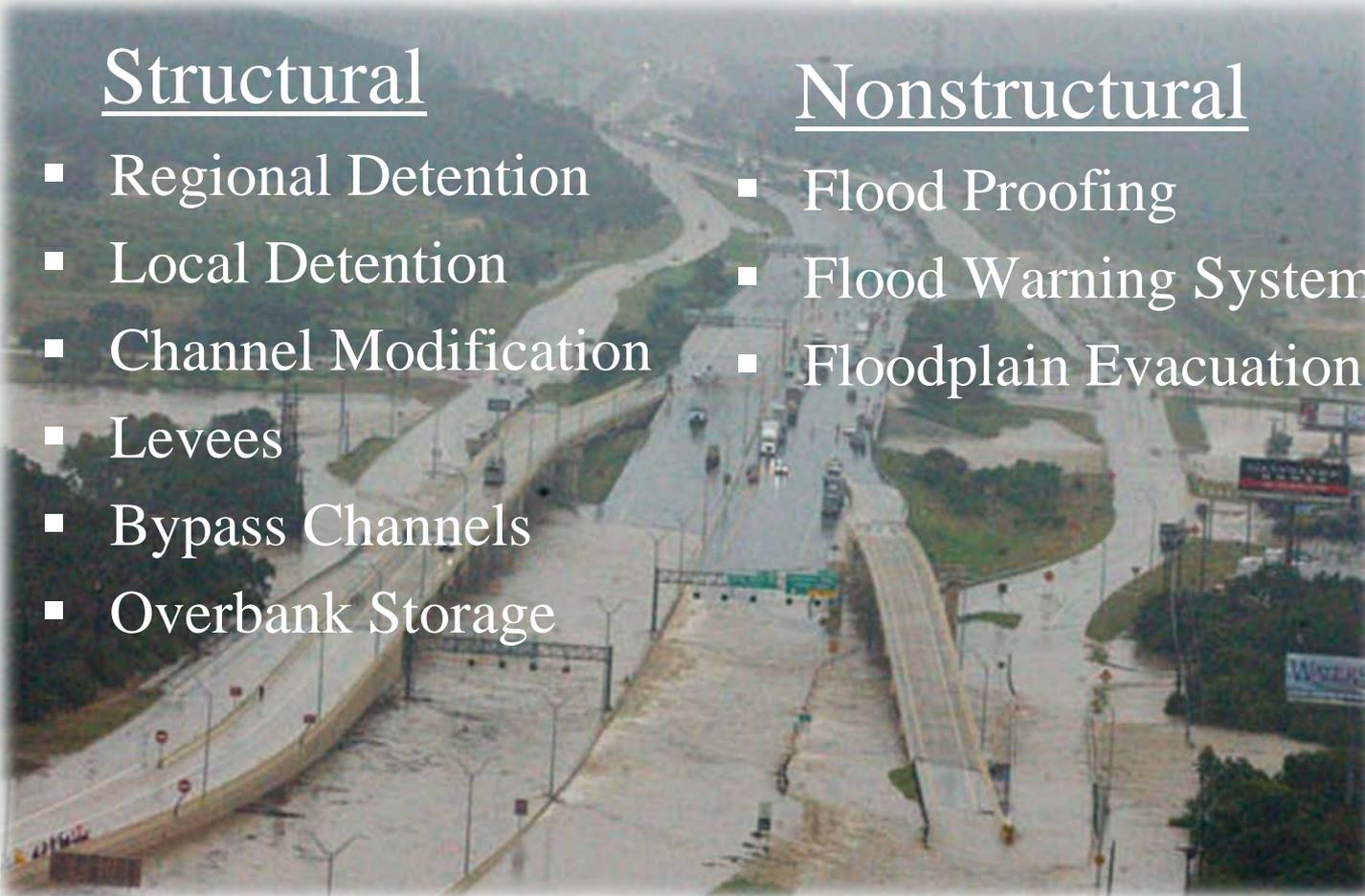
Plan Formulation – Initial Measures

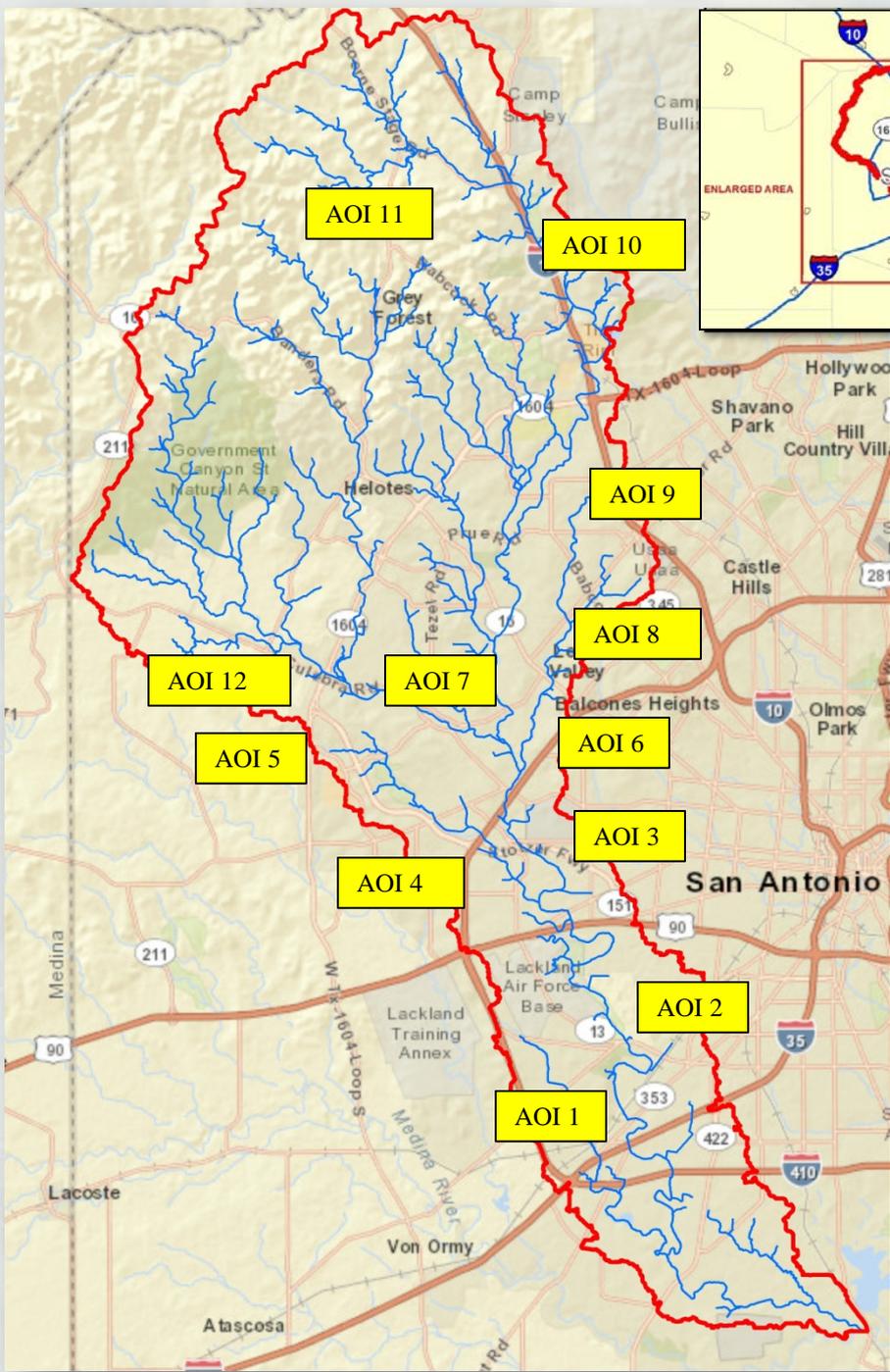
Structural

- Regional Detention
- Local Detention
- Channel Modification
- Levees
- Bypass Channels
- Overbank Storage

Nonstructural

- Flood Proofing
- Flood Warning System
- Floodplain Evacuation

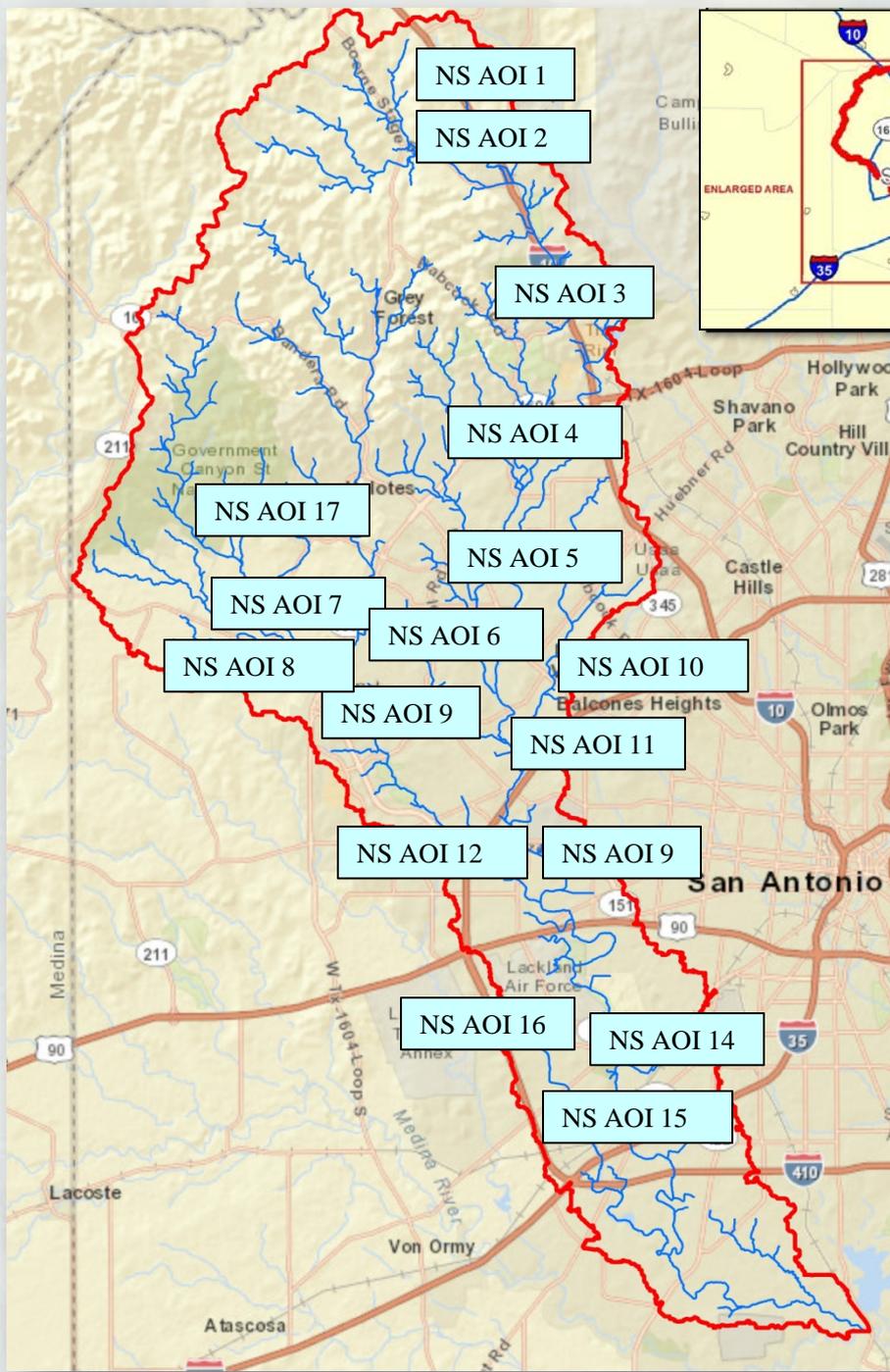




Structural Areas of Interest



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Nonstructural Areas of Interest



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Decision Making Process

- **NED Analysis**

- ▶ Flood Damages in small pockets scattered throughout the watershed
- ▶ Hierarchical approach to structural measures
- ▶ Identified specific locations based on damageable properties for nonstructural
- ▶ 12 Structural AOIs identified
- ▶ 16 Nonstructural AOIs
- ▶ AOIs evaluated based on NED contributions



Decision Making Process

- **Reducing Flood Risk**
 - Infrequent, high intensity rainfall causing flooding in populated areas
 - Economically efficient structural alternative
 - Economically efficient nonstructural alternative
- **Environmental Considerations**
 - Minimize adverse impacts (mitigation required)



Plan Formulation

Management Measures

Channel Modification, Bypass Channels, Levees, Regional Detention, Local Detention, Overbank Storage, Nonstructural

Initial Array

No Action
8 Detention Plans
6 Levee Plans
1 Bypass Channel Plan
5 Channel Modification Plans
16 Nonstructural

Final Array

No Action
2 Levee/Interior Drainage
1 Levee/Bypass Channel
2 Levee/Channel Modification Combo Plans
3 Levee/Channel Mod/Bypass Combo Plans
9 Nonstructural

Recommended Plan

1 Levee/Channel Modification Combo Plans
1 Nonstructural Buyout Plan



Final Array of Structural Alternatives

Port San Antonio– AOI 2

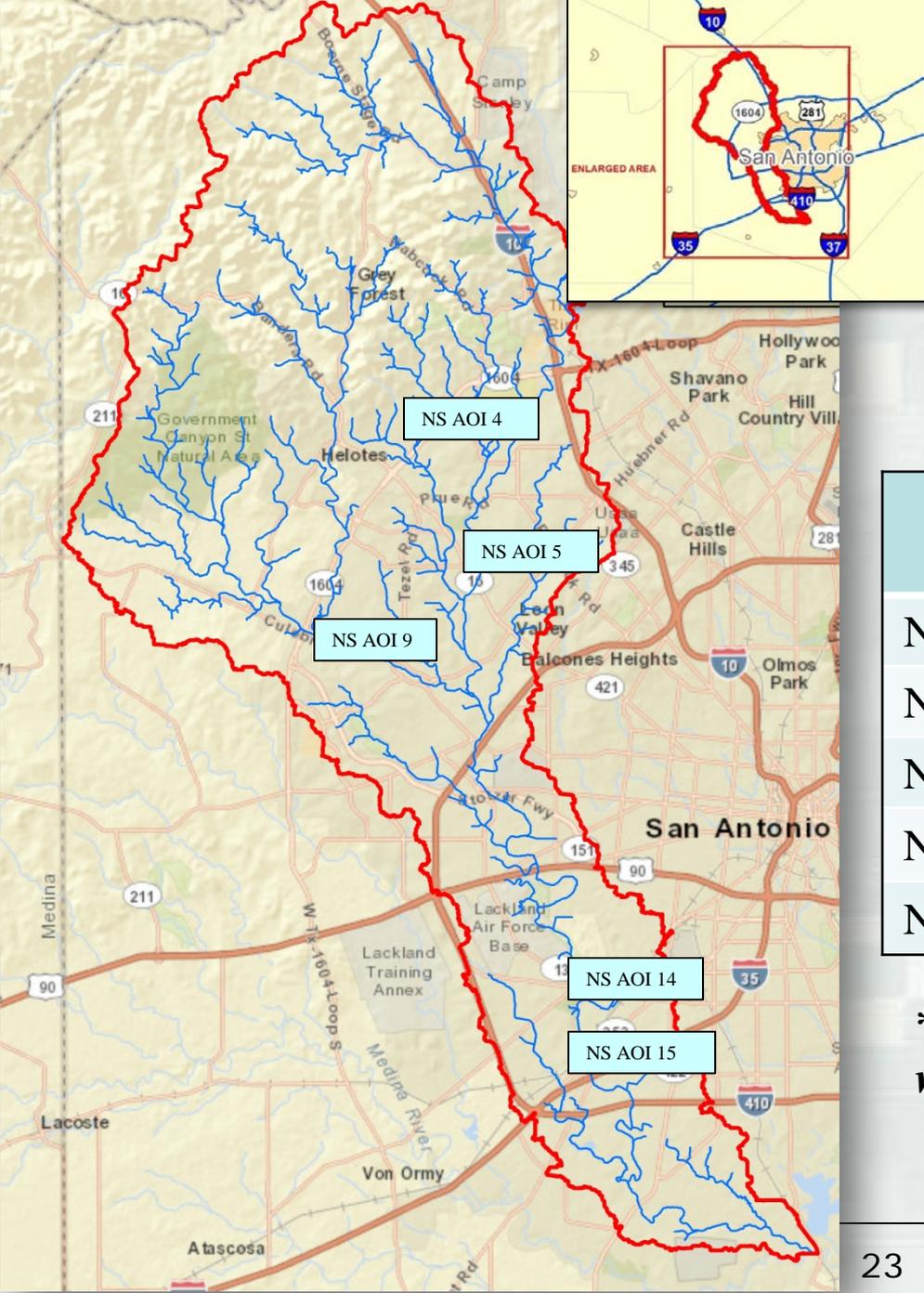
- Levee with Interior Drainage
- Levee with a Bypass Channel
- Levee with Channel Modification*
- Levee with Channel Modification and a Bypass Channel

Levees were assessed at the 2%, 1%, 0.4% and the 0.2% AEP in various combinations with other structural measures

**The NED Structural Component consists of a 1% AEP Levee with Channel Modification*



Final Array of Nonstructural Alternatives



	20% AEP	10% AEP	4% AEP
NS AOI 4	X	X	X*
NS AOI 5			X
NS AOI 9		X	
NS AOI 14		X	X
NS AOI 15		X	X

**The NED consists of a buyout of structures within the 4% AEP in AOI 4*



Net Benefits for Final Structural Array

Description	Annual Benefits	Annual Costs	Net Benefits
1% AEP Levee with Interior Drainage	\$1,520,880	\$907,600	\$613,280
1% AEP Levee* & Bypass	\$1,751,490	\$976,200	\$775,290
2% AEP Levee* and Channel Modification	\$1,634,340	\$681,642	\$952,698
1% AEP Levee and Channel Modification	\$1,749,500	\$682,387	\$1,067,113
1% AEP Levee* and Channel Modification and Bypass	\$1,750,260	\$866,343	\$883,917
0.2% AEP Levee* and Channel Modification	\$1,933,800	\$1,329,800	\$604,000
0.4% AEP Levee* and Channel Modification and Bypass	\$1,935,420	\$879,228	\$1,056,192
0.2% AEP Levee* and Channel Modification and Bypass	\$1,938,090	\$937,227	\$1,000,863



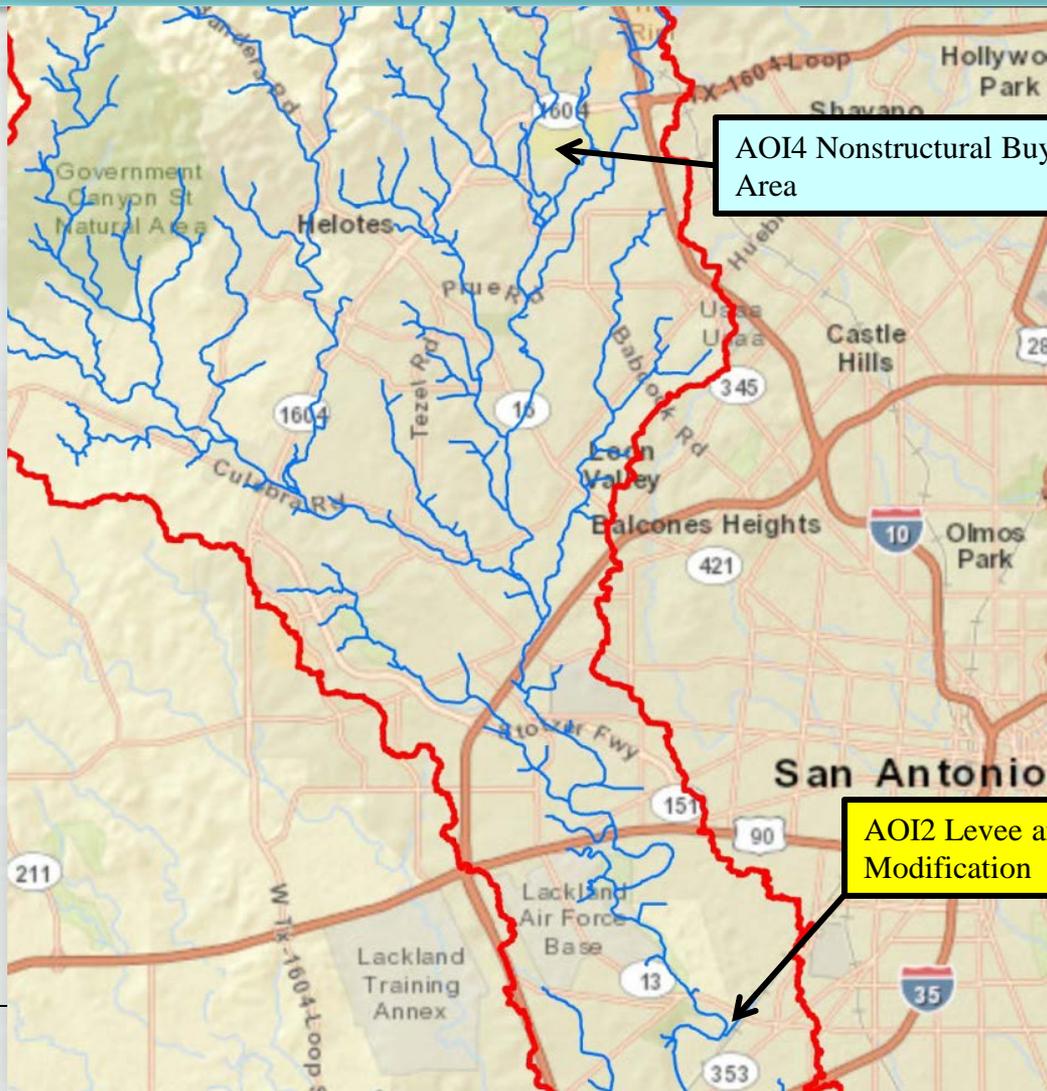
* Includes Interior Drainage

Net Benefits for Final Nonstructural Array

Description	Annual Benefits	Annual Costs	Net Benefits
NS AOI-4 20% AEP	\$71,468	\$58,053	\$13,415
NS AOI-4 10% AEP	\$98,832	\$101,296	(\$2,464)
NS AOI-4 4% AEP	\$358,580	\$138,525	\$220,055
NS AOI-5 4% AEP	\$258,690	\$467,524	(\$208,834)
NS AOI-9 10% AEP	\$50,460	\$91,550	(\$41,090)
NS AOI-14 10% AEP	\$275,490	\$423,722	(\$148,232)
NS AOI-14 4% AEP	\$293,620	\$464,125	(\$170,505)
NS AOI-15 10% AEP	\$30,440	\$71,968	(\$41,528)
NS AOI-15 4% AEP	\$141,710	\$181,153	(\$39,443)

Recommended Plan Map

AOI 2 - 1% AEP Levee and Channel Modification, and Buyouts in
Nonstructural AOI 4



AOI4 Nonstructural Buyout Area

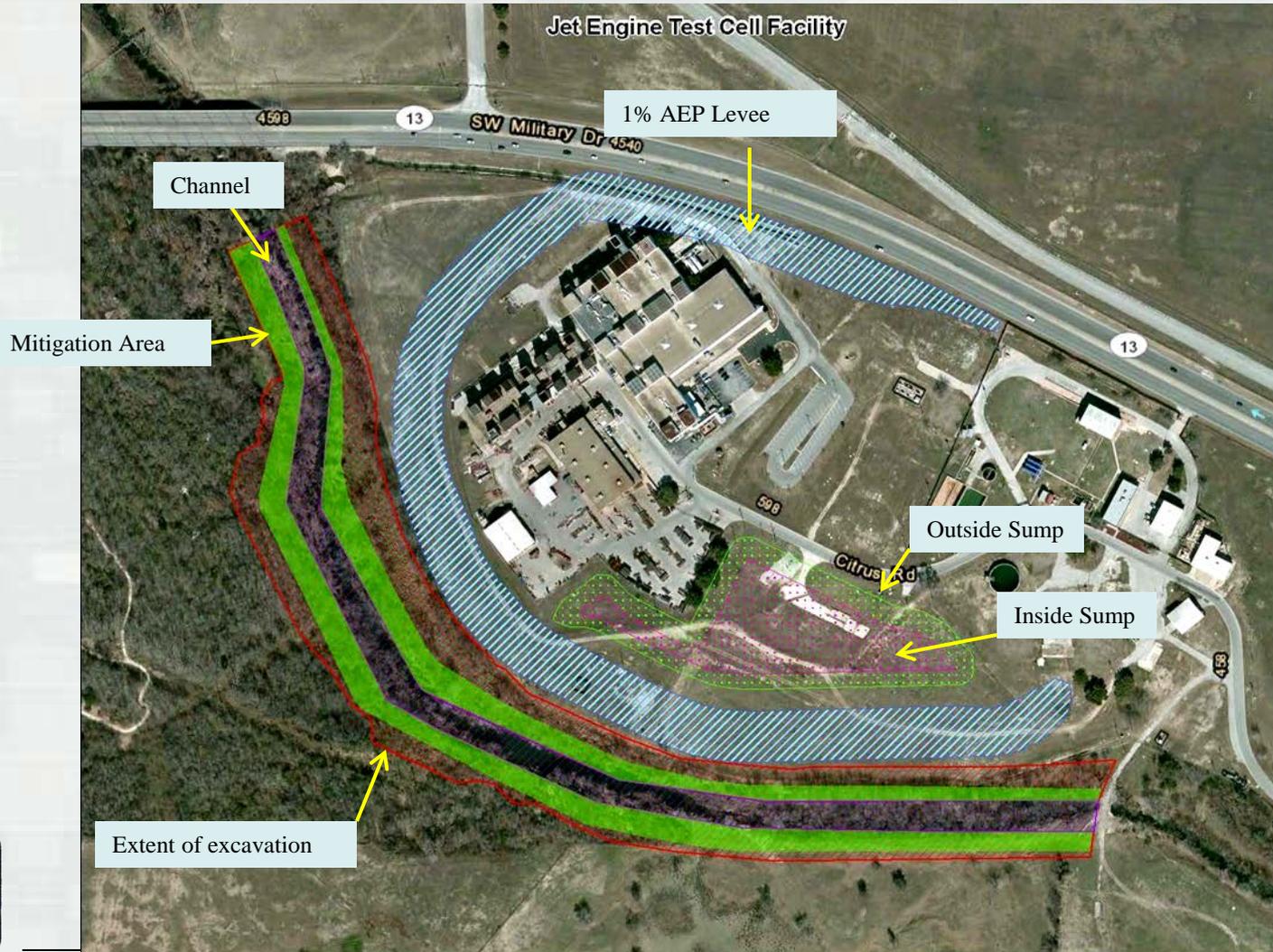
AOI2 Levee and Channel Modification



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Recommended Plan Structural

Structural: 1% AEP Levee and Channel Modification

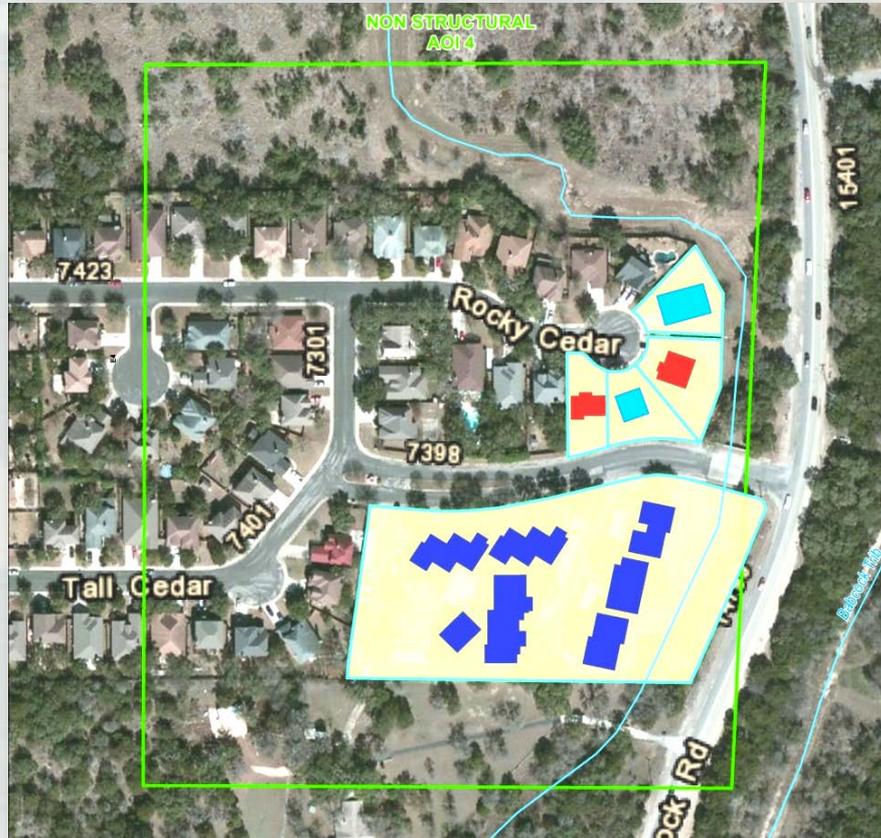


Recommended Plan Nonstructural

Nonstructural: Buyout of 4 Single Family Homes and 32 Townhomes

NS AOI - 4

-  5 Year Flood Event
-  10 Year Flood Event
-  25 Year Flood Event
-  Buyout Parcels



Details of Recommended Plan

- Structural – Levee with Channel Modification
 - 3,700-foot-long earthen levee at Port San Antonio and 21 feet high near the existing low point at Station 21+50
 - 2,850 linear feet of channelization with 60-foot bottom width immediately downstream of S.W. Military Drive
- Nonstructural - Permanent Evacuation
 - 4 single family homes
 - 32 townhomes
- Total Project First Cost is estimated at \$28,175,000



Cost and Benefits by Project Components

(50 year period of analysis – 18 to 24 month construction period)

October 2013 Prices

	Structural		Nonstructural	
	3.50%	7.00%	3.50%	7.00%
Estimated First Cost	\$22,303,000	\$22,303,000	\$5,872,000	\$5,872,000
Total Annual Charges	\$1,024,000	\$1,747,000	\$251,000	\$435,000
Total Annual Benefits	\$1,763,000	\$1,698,000	\$380,000	\$357,000
Net Benefits	\$739,000	(\$49,000)	\$129,000	(\$78,000)
Benefit-to-Cost Ratio	1.7	1.0	1.5	0.8
Combined Structural & Nonstructural				
	Estimated First Cost	\$28,175,000	\$28,175,000	
	Total Annual Charges	\$1,284,000	\$2,211,000	
	Total Annual Benefits	\$2,143,000	\$2,056,000	
	Net Benefits	\$859,000	(\$155,000)	
	Benefit-to-Cost Ratio	1.7	0.9	



Project Cost Apportionment

Feature	Federal	Non-Federal	Total
Nonstructural Subtotal	3,816,000	2,055,000	5,872,000
Structural Subtotal	14,497,000	7,806,000	22,303,000
Total Cost Apportionment	\$18,314,000	\$9,861,000	\$28,175,000
Cost Percentage	65%	35%	100%



Residual Risk

- Recommended Plan reduces annual flood damages by just over \$2M
 - \$1.8M reduction in AOI-2 (Port San Antonio) – 90 percent reduction
 - \$0.3M reduction in AOI-4 – 9 percent reduction
 - Residual damages are estimated at \$11.7M annually
 - Existing berm has a 96% chance of overtopping within 10 years. The NED levee has a 7% chance of overtopping within 10 years, and 32% within 50 years.



Managing Residual Risk

- City of San Antonio and Bexar County
 - Participates in the National Flood Insurance Program and
 - Enforce zoning regulations for development in the floodplain.
- Bexar Regional Watershed Management Partners (SARA, COSA, Bexar County + 20 municipalities)
- Leon Creek Watershed Master Plan (SARA, COSA, Bexar County)
- Low Impact Development (LID) are encouraged and strongly promoted
- Best Management Practices (BMP) for stormwater
- SAFE System (San Antonio Flood Emergency) COSA's public education and flood preparedness program
- Real-time flood warning system developed by SARA and Bexar County.



Environmental Assessment

Scoping Meetings

- 26 May 2009
- 8 June 2011

Public Meeting

- 4 Dec 2013

Public Notice of Environmental Assessment

- 1 November 2013

Draft FONSI included in report

The Recommended Plan includes mitigation for aquatic and riparian habitat impacts associated with the channelization utilizing Natural Channel Design (NCD) concepts to “self-mitigate” aquatic impacts.



ATR and IEPR**

■ ATR

- ATR Conducted for FSM, AFB, and Draft Report
- ATR for Final Report
 - 20 February 2014 – Comments Received
 - 24 February 2014 – All Comments Resolved
 - 25 February 2014 – ATR Certification

■ IEPR

- 14 February 2014 – 14 Comments Received
- 24 February 2014 – All Comments Resolved
- 26 February 2014 – IEPR Final Report

**Details to be briefed by respective ATR/IEPR reps



Environmental Operating Principles

- **Foster Sustainability as a Way of Life** – Recommended plan includes a buyout component that removes susceptible properties from the floodplain and allows for development of open space and a more natural environment
- **Proactively Consider Environmental Consequences** – The environmental consequences of measures to reduce flood risks in the Leon Creek watershed have been carefully considered during the planning process. Minor aquatic impacts associated with the channel feature will be fully mitigated
- **Create Mutually Supporting Solutions**– The buyout and the mitigation features of the Recommended Plan demonstrates mutually supportive economic and environmental solutions, simultaneously reducing flood damages and risks by removing susceptible properties from the floodplain and providing the opportunity to restore a small portion of the floodplain to a more natural condition
- **Continue to Accept Responsibility and Accountability** – Recommended Plan fully complies with legal and policy requirements to consider the impact of Corps of Engineers’ projects on the human and natural environment
- **Employ Risk Management and a Systems Approach**– Risk was included in analyses and communicated in Report and EA.
- **Leverage Knowledge**– Engaged all stakeholders, interest groups and agencies to develop an environmentally sustainable project
- **Employ a Transparent Process that Respects all Views**– Views of the public and agencies were solicited throughout the process



Strategic Campaign Plan

Goal 2: Deliver Enduring and Essential Water Resources Solutions through Collaboration with Partners and Stakeholders

- Leon Creek Watershed Feasibility study analyzed potential effects over a 32-square-mile area.
- Close collaboration with local sponsor and agencies throughout study.
- State and Federal resource agency professionals familiar with nature of flash flooding in Texas integrally involved in the evaluation and development of the Recommended Plan.

Goal 3: Deliver Innovative, Resilient, Sustainable Solutions to the Armed Forces and the Nation

- Developed plans to be sustainable over long-term
- Utilized latest development in engineering, economic, and environmental modeling
- Review and inspection of work will be conducted during design and construction
- Project design based upon risk analyses conducted throughout study
- Independent review of the project documents and analyses was performed internally by USACE and externally by professionals from academia and expert consultants.

Goal 4: Build and cultivate a competent, disciplined, and resilient team equipped to deliver high quality solutions

4a – Multidisciplinary PDT enhanced technical competencies to model hydraulics and conduct economic inventories & analyses

4b – Communicating with teams, stakeholders, and the public strategically and transparently, including integrated vertical teaming

4d – Used established tools and systems to model hydraulics and economics, developing highly skilled regional workforce



Project Implementation

Remaining Milestones

- 31 March 2014 S&A Review Starts
- 2 May 2014 S&A Review Ends
- 30 May 2014 Final Report Package forwarded to the Chief of Engineers
- **30 June 2014 Chief Signs Report**



Summary of Recommended Plan

The NED Plan consists of:

- Approx 3,700-foot levee designed to protect against 1% AEP at AOI-2, along with approx 2,850 linear feet of channel widening immediately d/s of levee.
- Mitigation Utilizing Natural Channel Design Concepts
- Permanent evacuation of Four Single-Family Homes and 32 Townhomes within the 4% AEP
- Total project first cost of \$28,175,000
- Total annual net benefits of \$859,000
- BCR 1.7-to-1 at 3.5%.



Recommendation

That the Civil Works Review Board approve the release of the Leon Creek Watershed Interim Feasibility Report and Integrated Environmental Assessment for State and Agency Review.



Questions?





SAN ANTONIO

RIVER AUTHORITY

Leaders in Watershed Solutions

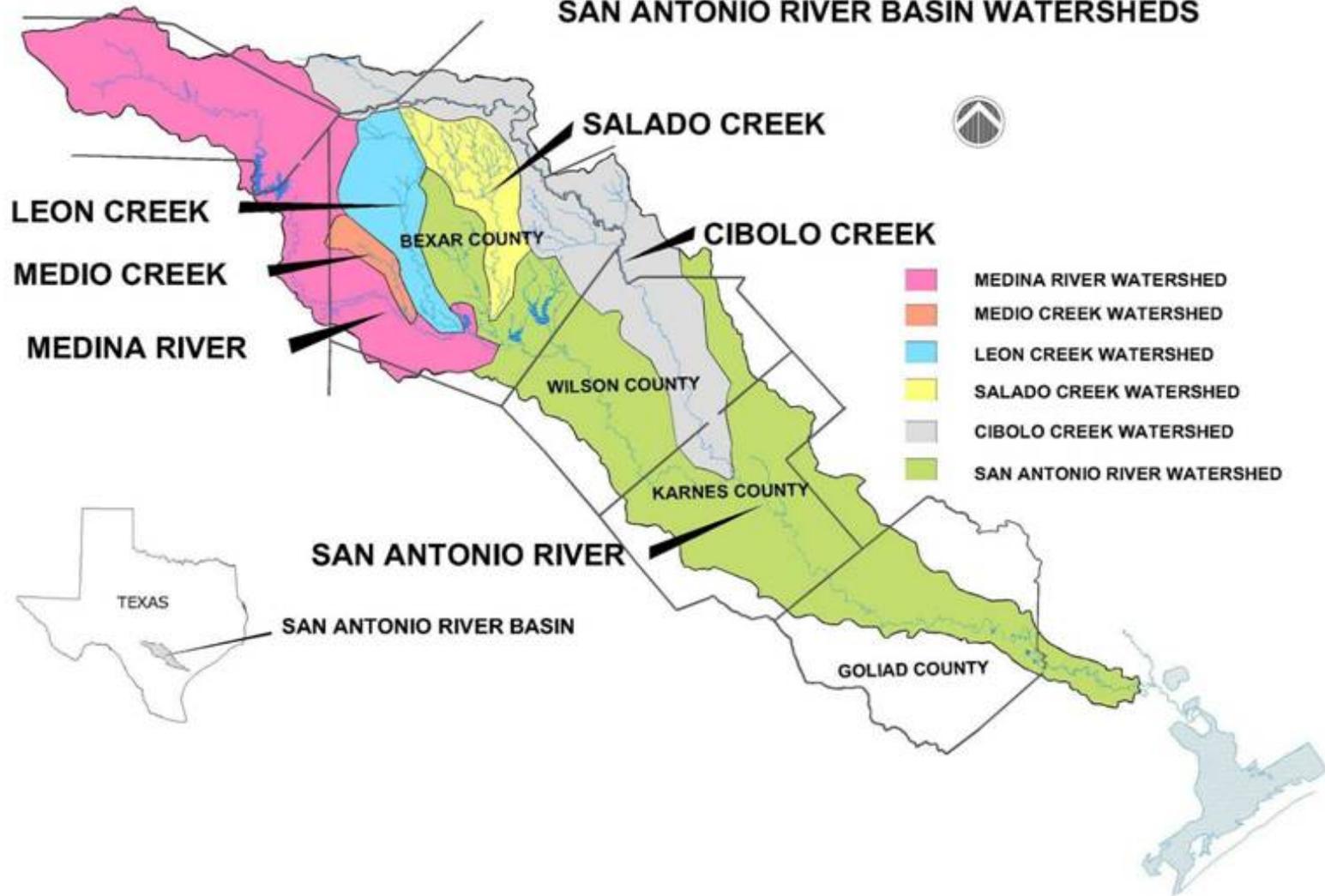
Leon Creek Feasibility Study

March 27, 2014

History

- San Antonio River Basin
 - Drainage Area: ~4,000 sq. miles
 - Jurisdiction: 4 Counties, ~ 3,600 sq. miles
 - Stream Miles: ~ 9,000
- Major Floods (Recent)
 - 1998, 2002, 2007, 2013

SAN ANTONIO RIVER BASIN WATERSHEDS



1998 Flood



Leon Creek - IH10 near Camp Bullis & La Cantera Rd.

SARA's Bexar Regional Watershed Management (BRWM) Role

- Maintain and deliver flood mapping and modeling system
- Leon Creek Watershed Masterplan (Develop Next Generation of Regional Capital Projects)
 - 2,950 structures in floodplain
 - Total damages (1% storm): \$82,394,000
 - Annualized damages: \$2,844,000
 - Number of projects identified: 13
 - Number of structures removed: 1,030
- Real-time Flood Mapping and Response System (Flood Works)
- Strengthen partnership with FEMA
 - Letter of Map Revision (LOMR) Delegation
 - RiskMAP

SARA & USACE History



1954

SACIP authorized



1960's - 1970's

Channelization of 31 miles of the San Antonio River and its tributaries



1980's - 1990's

Completion of SPC and SAR underground flood tunnels. SAR tunnel pays for itself after one event

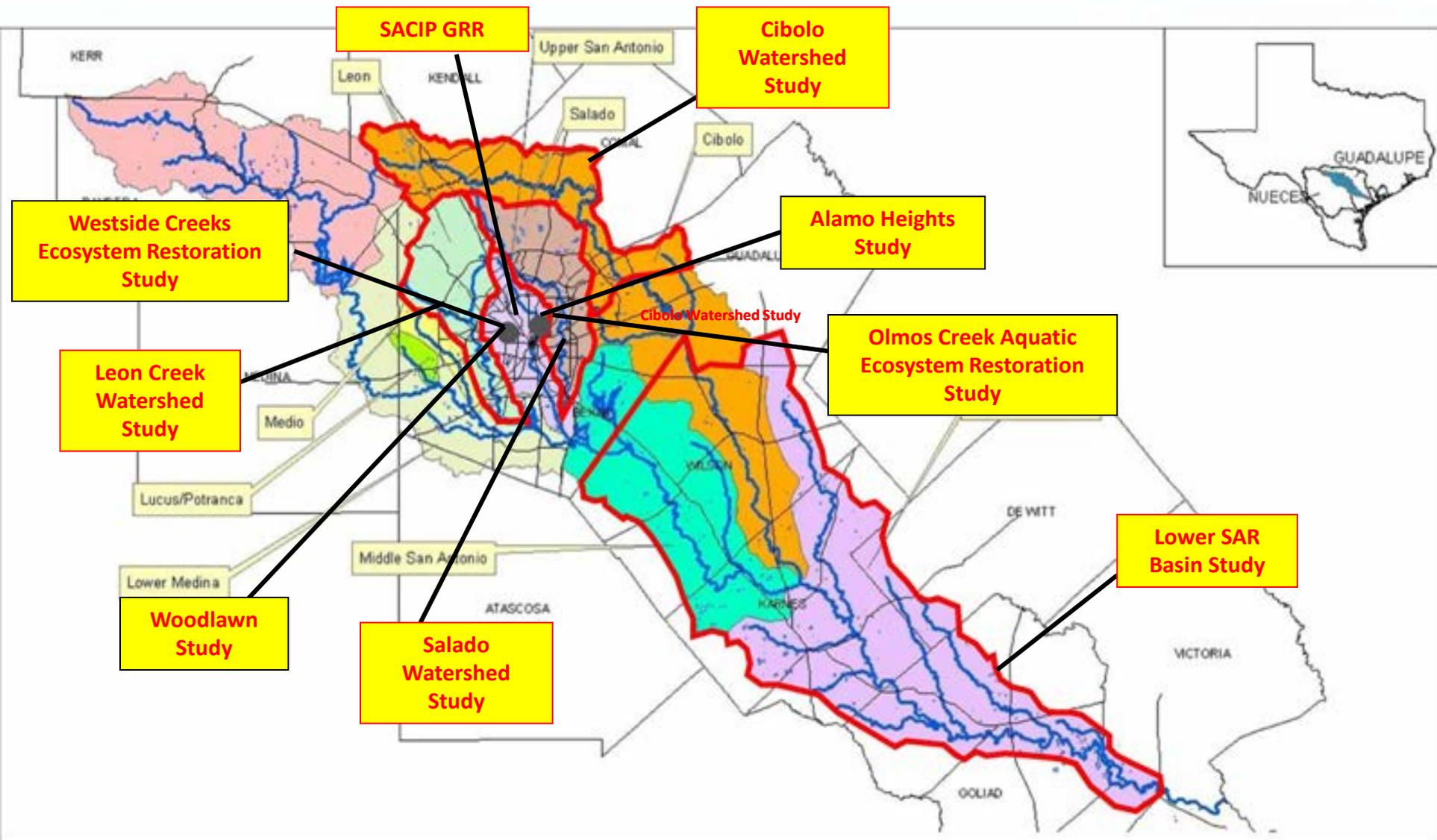
Late 1990's

- SARA and Bexar County, in cooperation with City of San Antonio complete the San Antonio River Flood Control Channel Modifications Preliminary Engineering Analysis Report
- San Antonio River Oversight Committee is formed

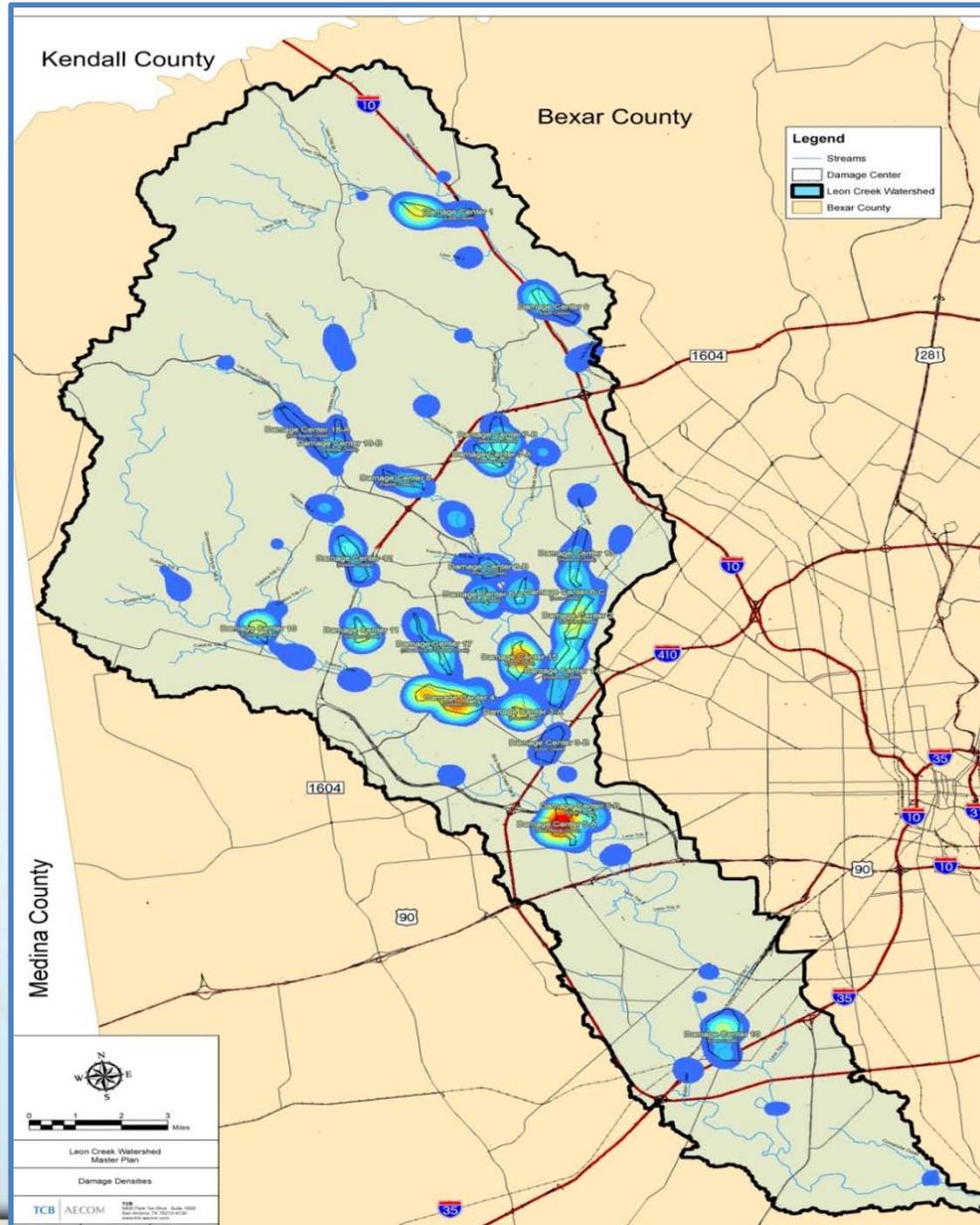
2000 - Present

- Congress passes the Water Resources Development Act of 2000 to expand project to include ecosystem restoration and recreation
- USACE completes GRR
- USACE and SARA complete PED
- USACE and SARA complete Eageland & Mission Reach
- Westside Creeks Restoration Feasibility Study, National Pilot
- Leon Creek Feasibility Study

SARA & USACE History



Damage Density Map



Leon Creek Feasibility Study Recommendations

The NED Plan consists of:

- 1% AEP Levee with a Modified Channel Hydraulic Conveyance
 - Mitigation Utilizing Natural Channel Design Concepts
- Buyout of Four Single-Family Homes and 32 Townhomes

Port Authority Need

1986-87 - \$476,000 in damages

- Led to the construction of the current berm (less than 25-year protection)

2002 – \$300,000 in damages at Jet Engine Test Cell Facility

2013 – \$1,600,000 in damages

- \$1M in damages at Jet Engine Test Cell Facility
- Test cell facility shut down for 2 weeks losing \$100,000 in revenue
- \$600,000 at other Port Facilities

Port Authority

- Political Subdivision of the State of Texas
 - Under the Texas Local Government Code as a base redevelopment authority
- Board of Directors appointed by San Antonio City Council
- Over 80 customers employing ~12,000
 - Aerospace, military/government and logistics/manufacturing

Local Support

- Funding partners for the recommended projects include:
 - City of San Antonio
 - Bexar County
 - Port Authority
- Local partners have advanced federal funding on other projects of significance

Federal Delegation

Congress of the United States
Washington, DC 20515

June 18, 2013

The Honorable Jo Ellen Darcy
Assistant Secretary of the Army for Civil
Works
U.S. Army Corps of Engineers
108 Army Pentagon, Room 3E446
Washington, DC 20310-0108

Lt. Gen. Thomas P. Bostick
Commanding General and Chief of Engineers
U.S. Army Corps of Engineers
441 G. Street, NW
Washington, DC 20314-1000

Dear Assistant Secretary Darcy and General Bostick:

In the wake of yet another damaging flood, we write to express our deep concern with the continuing delay in the completion of the Chief's Report for the Leon Creek flood control project in San Antonio, Texas. We understand there is currently a draft report that is nearly complete. The timeline outlined in Assistant Secretary Darcy's letter of April 26, 2013, which calls for yet another year of delay, is unacceptable. Given the severe impacts of this recurrent flooding and the consequences of continued delay, we request that the Army Corps complete and transmit the Chief's Report to Congress by no later than July 31, 2013.

While the completion of the study remains delayed, heavy rainfall at the end of May again caused severe flooding of Leon Creek. As captured in the attached images, the flooding caused extensive damage at one of the region's most important economic and national security assets, Port San Antonio, a major aerospace and defense hub that is responsible for approximately 14,000 jobs.

This most recent flood represents the fourth time in the last ten years that overflow from Leon Creek has caused significant damage at Port San Antonio. The flooding has a particularly severe impact on the Port's Jet Engine Test Cell facility, the centerpiece of the Port's aviation complex and a critical national security asset used to test military engines undergoing maintenance, repair and overhaul. As a result, in addition to lives and property, the recurring flooding risks thousands of jobs, as it is threatening the ability of major employers and contracts to remain at the Port.

As you know, the timeline proposed for completing the Chief's Report would likely prevent Congress from being able to authorize the project for construction through the upcoming Water Resources Development Act, which we anticipate will be considered later this year. Missing this opportunity will result in further multi-year delay.

We are also concerned by what we understand to be the reasons for this delay. In particular, we understand that a primary factor is the Army Corps' desire to repeat the flood modeling to assess a 50-year flood event although the study already models the impact of a more extensive 100-year flood event. We believe additional flood modeling is unnecessary.

Completing the Chief's Report by July 31, 2013 is critical to being able to deliver the Leon Creek project in a timeframe that reflects the continuing risk to lives, property, unique national security assets and thousands of jobs. We therefore respectfully request a meeting with Lt. Gen. Bostick to discuss the status of the study and the Army Corps' plan to complete the Chief's Report by this date.

We ask that your staff contact Mr. Ben Thomas of Representative Castro's staff at (202) 225-3236 or Ben.Thomas@mail.house.gov to make the required arrangements. Thank you for your prompt attention to this matter.

Sincerely,



JOAQUIN CASTRO
Member of Congress

HENRY CUELLAR
Member of Congress

LLOYD DOGGETT
Member of Congress

PETE GALLEGO
Member of Congress

LAMAR SMITH
Member of Congress

cc. [Colonel Charles H. Klinge, Jr.](#)
[Commander, District Engineer](#)
[Fort Worth District](#)

Conclusion

- San Antonio River Authority supports and encourages the Civil Works Review Board's approval of the Leon Creek Feasibility Study recommended plan.

Leon Creek FRM Feasibility Study - Division Commander's Briefing

THOMAS W. KULA
Brigadier General, USA
Southwestern Division
27-March-2014



US Army Corps of Engineers
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SWD Rationale for Supporting Recommendation

- LEGAL AND POLICY COMPLIANCE:
 - ▶ Report complies with all applicable policies and laws in place at the time of its completion
 - ▶ Project is consistent with the Environmental Operating Principles and supports the Strategic Campaign Plan.
 - ▶ District Counsel's legal certification: February 2014



SWD Rationale for Supporting Recommendation (cont.)

- NED Plan provides positive economic benefits
- NED Plan supported by Sponsor and other agencies



SWD Quality Assurance Activities

- Coordinated with vertical team to ensure that project is technically and policy compliant
- Reviewed DQC, ATR and IEPR comments/responses to ensure appropriate resolution
- Worked with SWF to successfully resolve HQ review comments during various phases of study
- Review Plan (RP) for Feasibility Studies updated and approved by MSC on December 2012. RP for PED to be finalized once the PED phase is initiated.



Importance of the Project

- The project would:
 - ▶ reduce expected annual flood damages along Leon Creek by \$2.1 M, with greatest reduction occurring d/s in Reach AOI-2 (Port San Antonio).
 - ▶ would also reduce the threat to loss of life through non-structural permanent flood plain evacuation at Reach AOI-4 of 4 single family residences, and 32 town homes
- Within our Core Mission to reduce flood risk damages



SWD Recommendation

- The Civil Works Review Board approve the release of the Leon Creek Flood Risk Management Study, San Antonio, TX Feasibility report and Environmental Assessment for State and Agency Review.



Leon Creek Watershed Interim Feasibility Report and Integrated Environmental Assessment San Antonio, Texas

Agency Technical Review Briefing for Civil Works
Review Board

Eric Thaut
Deputy Director, Flood Risk Management
Planning Center of Expertise (FRM-PCX)

27 March 2014

Headquarters, US Army Corps of Engineers
Washington, DC



ATR/Model Review Outcomes

- ATR
 - ▶ Cost Engineering MCX Certification on 13 Feb 2014
 - ▶ Final ATR Statement of Completion on 25 Feb 2014
 - ▶ Final District ATR Certification on 24 Feb 2014
- Planning Models
 - ▶ Qualitative Habitat Evaluation Index (QHEI) approved for single use by HQUSACE on 11 Feb 2014
 - ▶ All other planning models used were previously certified or approved



ATR Events

- Jan 2010 Feasibility Scoping Milestone (FSM)
- Nov 2012 Alternative Formulation Briefing (AFB)
- Nov 2013 Draft Feasibility Report/EA
- Feb 2014 Final Feasibility Report/EA
 - Final ATR was conducted concurrently with Independent External Peer Review (IEPR)



ATR Team Composition

Team Member	Discipline(s)	Organization
Michelle Kniep	ATR Lead, Planning	CEMVP
Rob Browning	Economics, Risk Analysis	CESPA
Arden Sansom	Economics	CESPN
Ken Cook	Environmental Resources	CEMVS
Teri Allen	Environmental Resources	CEMVS
Peter LaCivita	Environmental Resources	CESPN
Jim Barnes	Cultural Resources	CEMVS
Andrew Richter	Hydrology and Hydraulics	CEMVS
Dan Hernandez	Hydrology and Hydraulics	CESWT
Charles Bishop	Geotechnical Engineering	CEMVR
Darren Mulford	Civil Engineering	CEMVS
Jeff Hansen	Cost Engineering	CEMVP
Jim Neubauer	Cost Engineering	CENWW
Karen Vance	Real Estate	CEMVK
Mike Henry	HTRW	CEMVS



Major ATR Issues/Resolution

- Nonstructural FRM Plan Formulation, Evaluation, and Documentation
 - ▶ Concern: The methodology used and results of the formulation and evaluation of nonstructural measures may not be reasonable/policy compliant
 - ▶ Resolution: PDT considered ATR concerns in subsequent work and revised report documentation to better explain the methodology and results



Major ATR Issues/Resolution

- Risk Analysis Documentation
 - ▶ Concern: The risk analysis and residual risk documentation appears incomplete and/or inconsistent
 - ▶ Resolution: PDT validated risk analyses and modified the report documentation to address ATR concerns



Major ATR Issues/Resolution

- Vehicle Damage Evaluation
 - ▶ Concern: The evaluation of vehicle damages follows non-standard methodology, which may result in overestimated vehicle flood damages/benefits
 - ▶ Resolution: PDT reviewed the analyses and corrected some discovered deficiencies; performed a sensitivity analysis and determined the recommended plan decision was unchanged; and revised documentation to better describe the methodology and findings



Independent External Peer Review (IEPR) Leon Creek Watershed Feasibility Study, San Antonio, Bexar County, Texas, Feasibility Report

Presented to the USACE CWRB on March 27, 2014

Karen Johnson-Young, PMP
Program Manager

Richard Uhler, PMP
Project Manager



IEPR - Panel and Schedule

Leon Creek Panel Members	Panel Discipline
Bill Rudolph, P.E., G.E. (Panel Lead)	Geotechnical Engineering
David Luckie	Economics/Civil Works Planning
Larry Fluty, P.E., Ph.D.	Hydrology and Hydraulic Engineering
David Young	Biological Resources and Environmental Law Compliance

Leon Creek IEPR was conducted in January/February 2014

- The Panel reviewed the November 2013 version of the documents.

IEPR Bottom Line Up Front

The Panel concurred with all PDT Responses to the Final Panel Comments.

IEPR - Results

Final IEPR Report submitted on February 14, 2014

Results:

- 14 Final Panel Comments
 - 1 high significance
 - 11 medium
 - 2 low significance

Post-Final Panel Comments/Response Results documented on February 26, 2014

Results:

- PDT Evaluator Responses to Final Panel Comments
 - 14 concurs
- Panel BackCheck Responses to the PDT Responses
 - 14 concurs

IEPR - Notable Findings

- The limited number of structural and non-structural management measures identified for the project resulted in a smaller number of alternative plans which impacts the array of alternatives and ultimately the selection of the Recommended Plan.
- The reliance on 2008 data to describe the affected environment and using 2035 as the future condition year introduces uncertainty to forecast patterns and trends for the future without- and future with-project conditions.
- The Helotes Creek Quarry Pond alternative has not been described or analyzed in sufficient detail to assess the potential benefits, impacts, and costs associated with its use as a stormwater detention facility.
- The impact of poor ground conditions on the design and stability of the levee is not fully addressed in the conceptual design and may result in an underestimation of project costs.
- The potential impacts of soil, stream sediment, and groundwater contamination have not been fully addressed in the DFR/EA.

Leon Creek Watershed, San Antonio, TX

HQUSACE POLICY REVIEW CONCERNS

Civil Works Review Board

Andrea Walker
Office of Water Project Review
Planning and Policy Division
Washington, DC – 27 March 2014



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HQUSACE Team Reviews:

- FSM was held in May 2010
- AFB was held in April 2013
- Draft report review December 2013
- Final Feasibility Report & Integrated EA March 2014



Policy Issues from AFB & Draft Report Reviews

- ❑ Authorization
- ❑ Planning Objectives
- ❑ Non-Structural Measures
- ❑ Measures vs. Alternative Plans
- ❑ Plan Formulation
- ❑ Discount Rate/Price Levels
- ❑ Base Year
- ❑ **Hydraulic Mitigation**
- ❑ Residual Risk/Damages
- ❑ **EO 11988 Compliance**
- ❑ Storm-water Management
- ❑ Mitigation
- ❑ **HTRW**
- ❑ Datum
- ❑ Environmental Compliance
- ❑ **Single Beneficiary**



Significant Areas of Policy Concern:

- Hydraulic Mitigation
- E.O. 11988 Compliance
- HTRW
- Single Beneficiary



Hydraulic Mitigation

CONCERN: The recommended plan increased water surface elevations in certain areas compared to the without project condition. Channel modification features were included to mitigate for the increased water elevations. There was concern about justification of the hydraulic mitigation measures.

REASON: USACE guidance allows for cost sharing of hydraulic mitigation measures if there is: 1) a takings determination, 2) economic justification of the mitigation, and/or 3) an overriding social concern.

RESOLUTION: The PDT followed USACE guidance. Report revisions demonstrate economic justification of the channel modification features.

RESOLUTION IMPACT: Concern is resolved.



E.O. 11988 Compliance

CONCERN: The draft report did not properly document compliance with E.O. 11988 – Wise Use of Floodplains.

REASON: ER 1165-2-26 contains guidance for implementing the E.O. Examples of requirements include an 8-step decision making process, discussion of residual risk, and documenting the rationale and need for development in the floodplain, among others.

RESOLUTION: The report was revised to properly document all requirements of ER 1165-2-26.

RESOLUTION IMPACT: Concern is resolved.



HTRW

- **CONCERN:** There is no indication if sites with possible HTRW are in the footprint of any of the final alternatives, specifically the sites of the recommended plan. It appeared as if some investigation has occurred, but neither the HTRW appendix, nor the main report, indicate what was found in relation to the final alternatives.
- **REASON:** As stated in ER 1165-2-132, civil works projects should avoid known HTRW sites.
- **RESOLUTION:** The results of the analysis were summarized in the main report in such a manner as to show how the project has avoided HTRW.
- **RESOLUTION IMPACT:** Concern is resolved.



Single Beneficiary

- **CONCERN:** AOI-2 appears to be an industrial complex for the Jet Engine Test facility which may fall under a single beneficiary (property) situation, per ER 1105-2-100, 3-3b(7).
- **REASON:** "The Corps will not participate in structural flood damage reduction for a single private property" with the caveat that the Corps can consider participating in "measures protecting a single, non-Federal, public property."
- **RESOLUTION:** Further explanation has been added to the final report to explain the owner of the property (Port San Antonio) is a quasi-governmental entity and that there are multiple tenants at this location.
- **RESOLUTION IMPACT:** Concern is resolved.



HQUSACE POLICY COMPLIANCE REVIEW TEAM RECOMMENDATION

**Approval to release the draft Chief's Report –
Feasibility Report and EA for S&A Review.**



CWRB Discussion/Action



SWF Lessons Learned

What Went Well

- District is implementing checklists and SOP's to ensure Agency coordination is done early and followed throughout the study.
- Data generated by the Corps study was integrated into the local watershed master plan.
- Vertical team integration utilized the concurrent reviews that are now associated with SMART planning to help expedite to meet USACE commitments.
- Comprehensive watershed approach that considered nonstructural and structural projects.



SWF Lessons Learned

Areas for Improvement

- Consistent and Effective communication is required when conducting separate and parallel work efforts.
- Competing resources can make the tight timelines very difficult throughout the vertical team.
- Legacy project started in 2007 many changes in core PDT members causing data gaps in the report.
- More time needs to be scheduled for internal quality checks.
- Duration of the study 10 years and loss of institutional knowledge over time.



SWD Lessons Learned

- Project had successful collaboration vertically and with sponsor to meet our commitment to the sponsor and Congressionals.
- Resolved challenges successfully
 - ▶ Dealing with current culture
 - ▶ Incorporating SMART planning into a legacy study



ATR Lessons Learned

- DQC needs to be completed prior to ATR (per policy and for effective ATR)
 - ▶ Resolution of DQC issues can extend into ATR with clear communication/documentation
- ATR responses, discussion, and closeout processes/documentation can be improved
 - ▶ PCX initiative underway to provide field offices with supplemental guidance and examples (by end of fiscal year)

