Public Meeting Notice

Region 9 – Upper Colorado Regional Flood Planning Group
May 3, 2023
11:00 AM CST

Notice is hereby given of a regular meeting of the Region 9 – Upper Colorado Regional Flood Planning Group to be held May 3, 2023 at 11:00 AM at the City Hall Annex– Board Room – 1st Floor, 301 W. Beauregard Ave., San Angelo, Texas, for the purpose of considering the following agenda items.

Phone participation is available for public and non-voting representatives by the conference call information:
Call In: (325) 326–0870 Passcode / ID: 890 731 770#

The Meeting Agenda and the Agenda Packet are posted online at
https://www.cosatx.us/departments-services/water-utilities/region-9-upper-colorado-flood-planning-region

A recording of the meeting will be available to the public in accordance with the Open Meetings Act upon written request.

Members of the public may also submit Public Comment on agenda items by sending their written comments via email to astrube@crmwd.org or rfpg9.lance@gmail.com by noon May 2, 2023. The subject line must be in the following format: "Public Comment, [item number] – May 3, 2023." All emails must include your name and address. Please note all Public Comment emails relevant to posted agenda items received by the deadline will be published as part of the agenda packet prior to the meeting and are therefore public record.

Agenda:

1. Call to Order
2. Welcome
3. Public comments – limit 3 minutes per person
4. Approval of minutes from the previous meeting
5. Texas Water Development Board (TWDB) Update
6. Sponsoring agency update from City of San Angelo
7. Consider nominating and electing RFPG Chair, Vice Chair, Secretary, two members-at-large to serve on the Executive Committee, as applicable, per group bylaws
8. Technical Consultant Presentation for discussion, recommendation, and/or approval of the following items:
    a. Task 12 Update on Performing FMEs and Recommending Additional FMPs
    b. Discussion and potential action to recommend new recommended FMXs in the Region 9 Upper Colorado Amended Regional Flood Plan
    c. Task 13 Update on the Amended Region 9 Upper Colorado Flood Plan
9. Discussion and direction regarding Municipal interest category representative
10. Public comments – limit 3 minutes per person
11. Consider date and agenda items for next meeting
12. Adjourn

Additional information may be obtained from:
Allison Strube
astrube@crmwd.org
400 E. 24th Street
Big Spring, Texas 79721

Public Meeting Notice

Region 9 – Upper Colorado Regional Flood Planning Group
December 21, 2022
1:30 PM CST

Meeting held in person at the City Hall Annex – Board Room – 1st Floor, 301 W. Beauregard Ave., San Angelo, Texas. Additionally, participation was available via conference call at (325) 326-0870.

Roll Call:

Voting Member	Interest Category	Present (x) /Absent ( ) / Alternate Present (*)
Kenneth Dierschke	*Agricultural interests*	X
Rick Bacon	*Counties*	X
Henryk Alexander Olstowski	*Electric generating utilities*	
Shannon McMillan	*Environmental interests*	X
Vacant	*Flood districts*	
Morse Haynes	*Industries*	X - Virtually
Lance Overstreet	*Municipalities*	
David H. Loyd Jr.	*Public*	X
Scott McWilliams	*River authorities*	X
Chuck Brown	Small business	
Cole D. Walker	*Water districts*	X
Allison Strube	*Water utilities*	X

Non-voting Member	Agency	Present(x)/Absent( )/ Alternate Present (*)
John McEachern	Texas Parks and Wildlife Department	
Tim Frere	Texas Division of Emergency Management	
Lauren Mayse	Texas Department of Agriculture	
Ben Wilde	Texas State Soil and Water Conservation Board	
Jet Hays	General Land Office	
Tressa Olsen	Texas Water Development Board (TWDB)	X
Winona Henry	Texas Commission on Environmental Quality	
Anna Yakimovicz	Region 10 Liaison	

Others Present:

Paula Jo Lemonds – HDR (Consultant): In-Person

Emily Daniel – HDR (Consultant): In-Person
Wade Barns – Freese & Nichols (Consultant): In-person
Andy Vecellio – City of San Angelo: In-person
Heather Keister – Freese & Nichols (Consultant): Virtual

Quorum:
Quorum: **Yes**
Number of voting members or alternates representing voting members present: 7
Number required for quorum per current voting positions of 12: 7

Meeting agendas, packets, information and recordings are available at the link https://www.cosatx.us/departments-services/water-utilities/region-9-upper-colorado-flood-planning-region

- **AGENDA ITEM NO. 1: Call to Order**
  Chair Strube called the meeting to order at 1:39 PM CST. A roll call of the planning group members was taken to record attendance, and a quorum was established prior to proceeding with the agenda.

- **AGENDA ITEM NO. 2: Welcome**

- **AGENDA ITEM NO. 3: Public Comments**
  No Public Comments were made during this item.

- **AGENDA ITEM NO. 4: Approval of minutes from previous meeting.**
  Motion by Kenneth Dierschke and seconded by Commissioner Rick Bacon. Motion passed unanimously.

- **AGENDA ITEM NO. 5: TWDB Update**
  Tressa Olsen with TWDB updated the group on the submission requirements and newsletters that have been sent out to the group. Chair Strube added that the newsletter also mentioned the first meeting of the next year will have to include an item to elect new officers.

- **AGENDA ITEM NO. 6: Sponsor agency update from the City of San Angelo**
  Andy Vecellio, Assistant Director of Water Utilities for the City of San Angelo, provided an update pertaining to the contract amendment with HDR to allocated funds previously set aside for the sponsor agency to be shifted to HDR for work on the flood plan. Paula Jo added more information regarding Mr. Vecellio's statements and walked the group through the process of getting to the amendment process. Chair Strube discussed the amount in the amendment was for $104,000.

- **AGENDA ITEM NO. 7: Consider authorizing the Planning Group Sponsor (City of San Angelo) to execute an amendment to the Regional Flood Planning Grant contract (Budget Memo) with TWDB and the subcontract with the technical consultant**
  Previous agenda item discussion lead into Item 7. Chair Strube read the agenda item for all planning group. A motion was by Scott McWilliams to approve as presented and seconded by Shannon McMillan. Motion passed unanimously. David Loyd asked for clarification on the amendment, and Chair Strube explained the process.

- **AGENDA ITEM NO. 8: Technical Consultant Presentation by HDR Engineering, Inc. for discussion, recommendation, and/or approval on the following items: a. Public comments received on Draft Region 9 Upper Colorado Flood Plan and proposed responses; b. TWDB comments received on Draft Region 9 Upper Colorado Flood Plan and proposed responses; c. Consider approval of the responses to public and TWDB comments received; d. Update on the Final Region 9 Upper Colorado Flood Plan; e. Consider approval of revisions and authorize the City of San Angelo to submit the Final Region 9 Upper Colorado Flood Plan to TWDB by January 10, 2023; f. Update on Task 12**
  Paula Jo Lemonds provided an update and presented the presentation provided in the background material to the agenda. Paula Jo discussed the public comments received and proposed changes/responses to the comments. Discussion was held amongst several group members on Soil & Water Conservation Dams, and then Heather Keister added additional information on means of prioritizing these dams. A motion was made on Item 8.c. by Commissioner Rick Bacon and seconded by Cole Walker to approve as presented. Motion passed unanimously. A motion was made on Item 8.e. by Commissioner Bacon and seconded by David Loyd for the adoption of changes and authorize the City of San Angelo to submit the Final Region 9 Upper Colorado Flood Plan to TWDB by January 10, 2023. Motion passed unanimously. Paula Jo ended the presentation with work to occur after the January submission and schedule at a glance.

- **AGENDA ITEM NO. 9: Discussion and direction regarding Environmental interest category representative**
  Chair Strube brought it to the group attention that Shannon McMillan has switched employers. Mrs. McMillan has taken a new role with the Air Force – Department of Defense in an environmental role. A motion was made by Scott McWilliams and seconded by Commissioner Rick Bacon to allow Mrs. McMillan to maintain her representation as Environmental interest. Motion passed unanimously.

- **AGENDA ITEM NO. 10: Public Comments**
  No Public Comments were made during this item.

- **AGENDA ITEM NO. 11: Consider Date and Agenda Items for Next Meeting**
  A specific date for the next meeting was not set. Officer elections will occur at the next meeting.

- **AGENDA ITEM NO. 12: Adjourn**
  Motion by Kenneth Dierschke and seconded by David Loyd. Motion passed unanimously. Meeting was adjourned at 2:56 PM CST.

Approved by the Region 9 Upper Colorado RFPG at a meeting held on May 3, 2023.

_____
SECRETARY

_____
CHAIR

Upper Colorado Regional Flood Plan

Agenda Item No. 8

May 3, 2023

8a. Task 12 Update on Performing FMEs and Recommending Additional FMPs

- City of San Angelo
- City of Midland
- City of Andrews
- Dam rehabilitation
- Flood early warning systems

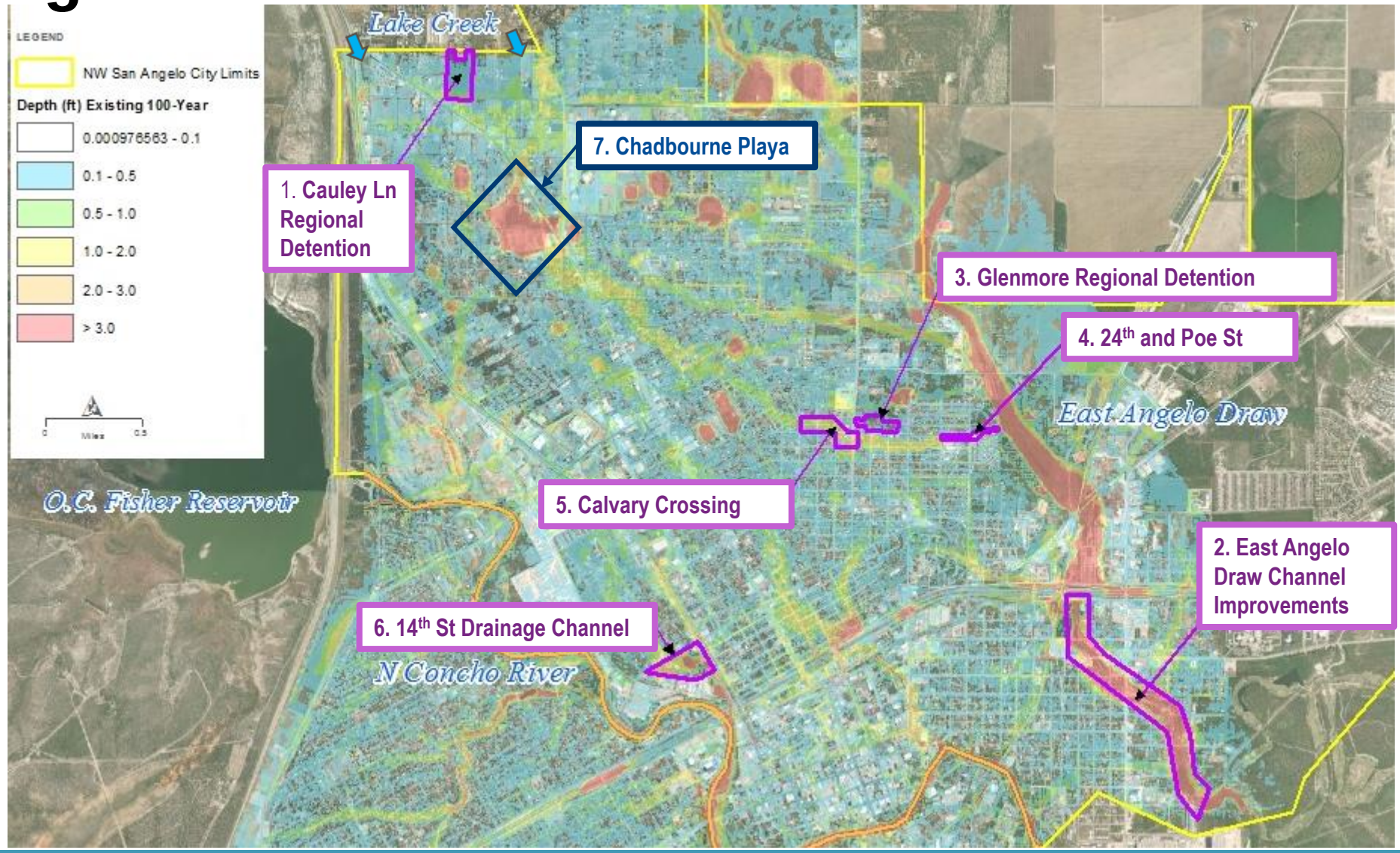
City of San Angelo Northwest 2D Flood Risk Evaluation - Overview

- Scope:
  - Develop 2D hydraulic model of the northwest sector
  - Review original 4 FMPs identified as part of the Region 9 Flood Plan
  - Recommend additional FMPs and FMEs
  - Identify potential improvements for recommended FMPs
- Progress:
  - 2 Additional FMPs developed
  - 1 Additional FME developed

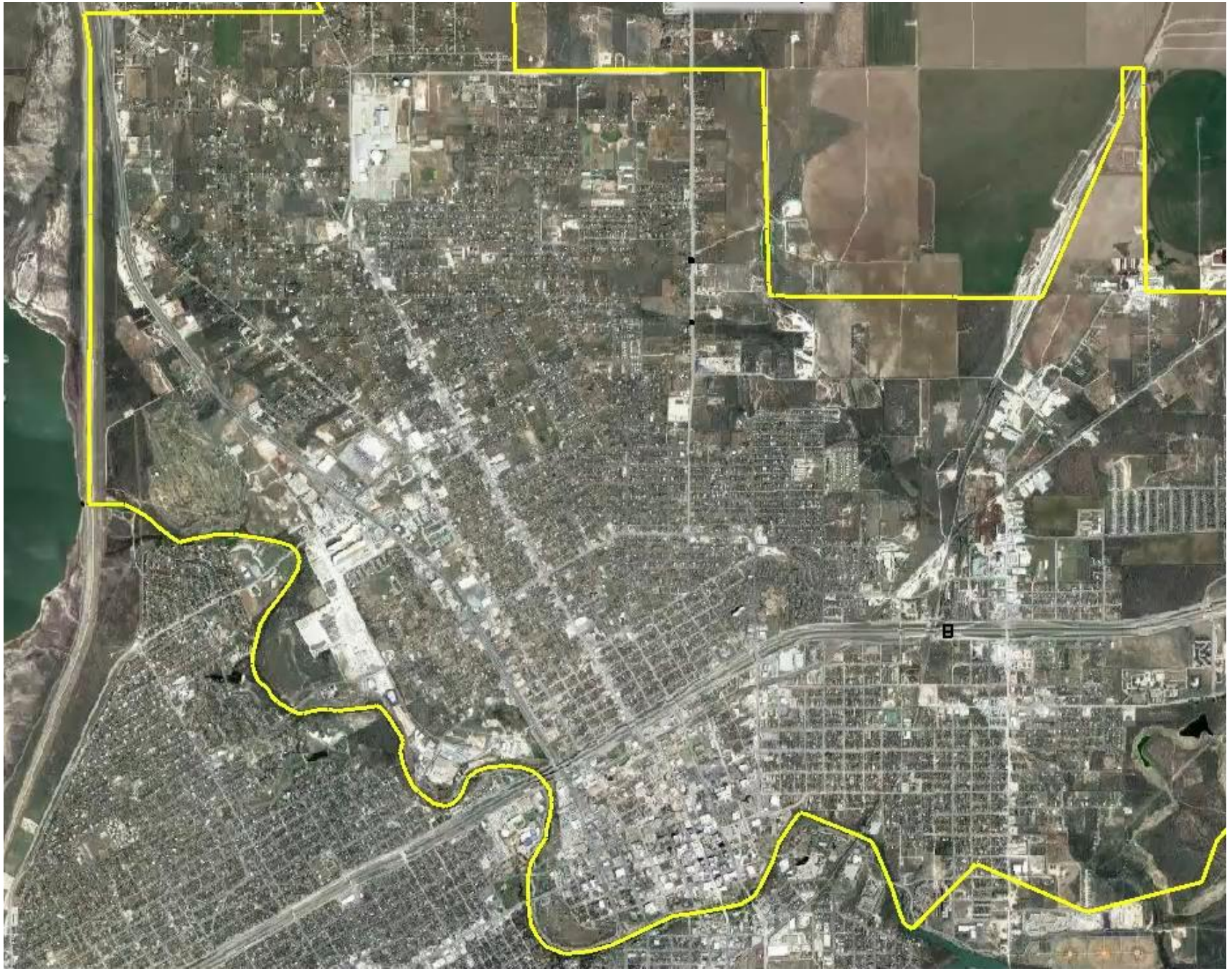
City of San Angelo Northwest 2D Flood Risk Evaluation - Project Sites

Site No.	FMP	Location Description	Problem	Solutions
1	Cauley Lane Regional Detention	At Cauley Lane	Lake Creek overflow area	Construct swales and berms to divert flow to a detention facility
2	East Angelo Draw Channel Improvements	from N Concho Rv confluence to SH 67	Neighborhood flooding and overtopped crossings	Channel improvements to increase storage capacity on East Angelo Draw
3	Glenmore Regional Detention	23rd St and Armstrong St	Street and neighborhood flooding	Construct new storm drain system to divert flow to detention facility.
4	24th and Poe St	24th and Poe St	Street and neighborhood flooding	Rehabilitate swale system along 24th St and install culvert crossing on Poe St.
	FMP	**Location Description**	**Problem**	**Conceptual Solutions: City's Choice**
5	Calvary Crossing	Armstrong St and 24th St	Street and neighborhood flooding	Construct new storm drain system and drainage channel
6	14th St Drainage Channel	Between 14th St and 11th St	Street and neighborhood flooding	Construct drainage channel to divert flow to existing detention
	FME	**Location Description**	**Problem**	
7	Chadbourne Playa	N Chadbourne St and Grape Creek Rd	Street and neighborhood flooding; Playa flooding	

City of San Angelo Northwest 2D Flood Risk Evaluation – Existing Conditions 1% ACE



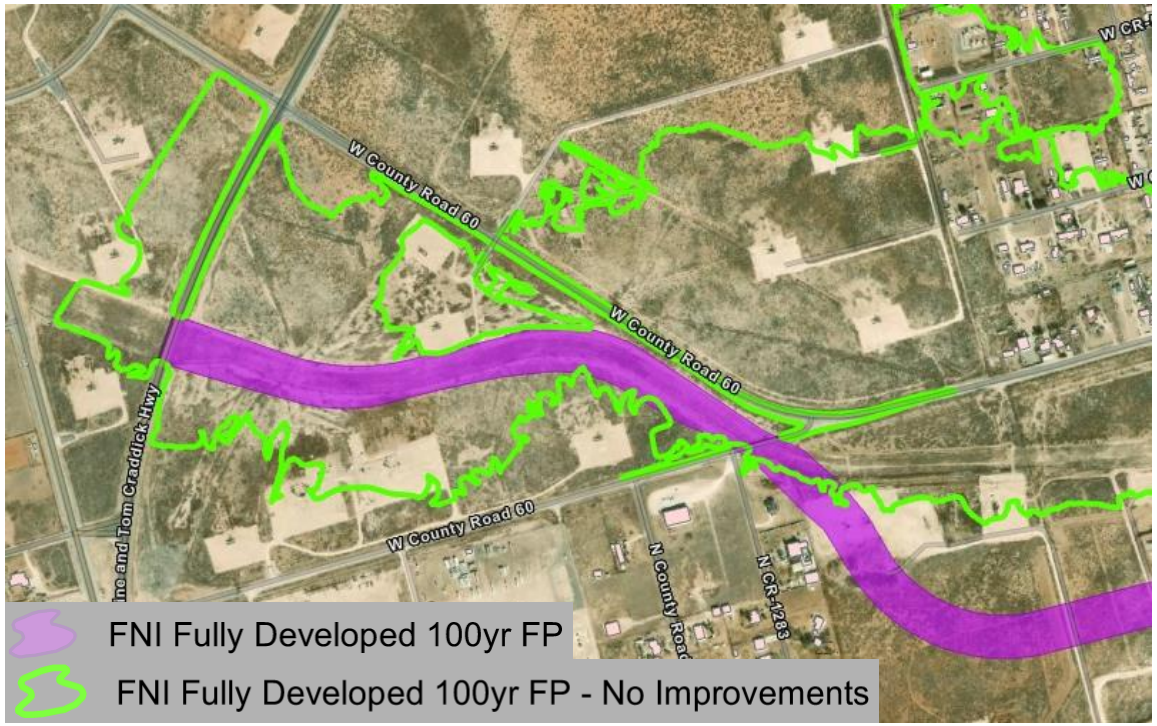
City of San Angelo Northwest 2D Flood Risk Evaluation – 1% ACE Depths

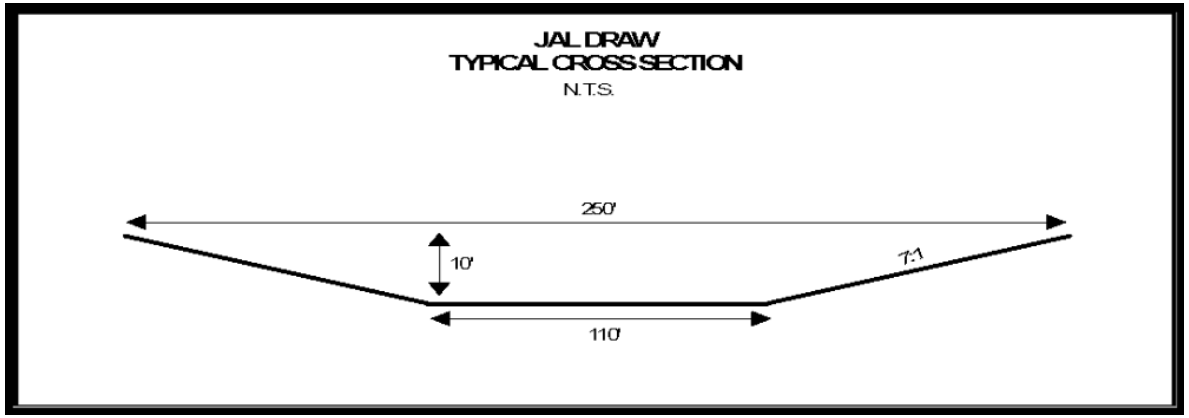


City of Midland
Jal Draw Overview

Jal Draw Project A

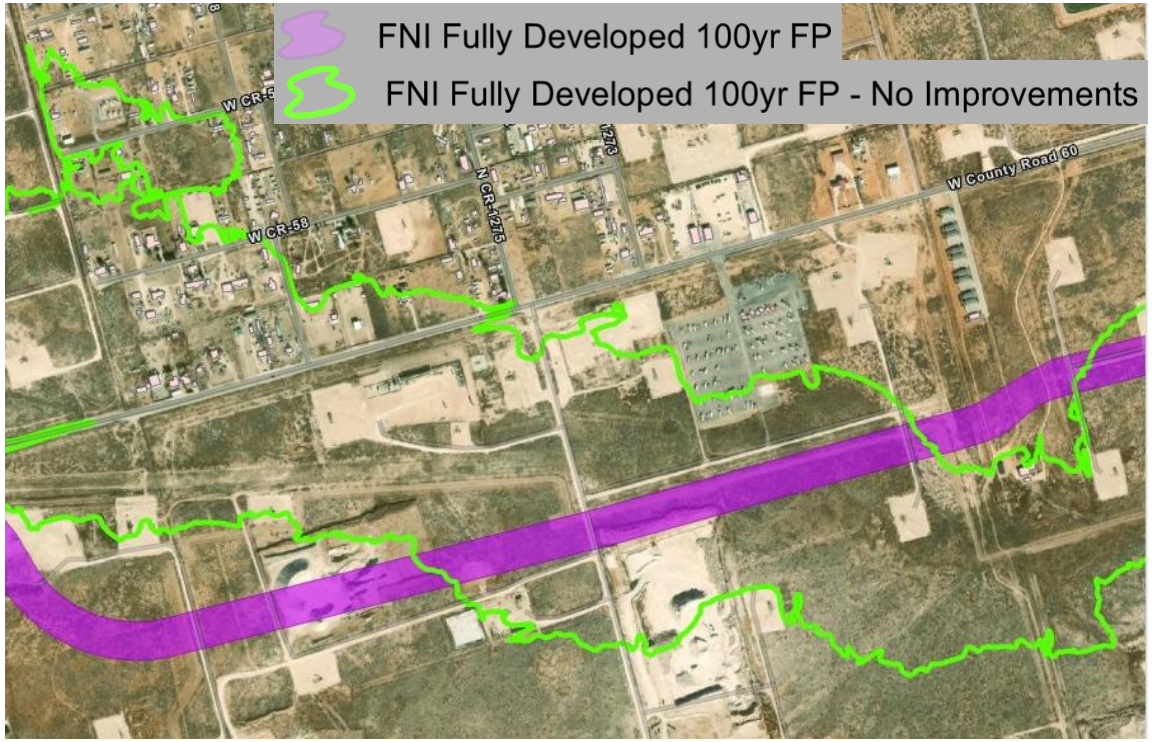
- Description: The existing floodplain has impacted development in the area and existing infrastructure is not designed for the fully-developed 100-year floodplain.
- Alternative: Excavate a 250-foot top width trapezoidal channel along the draw with provisions for two future proposed crossings.

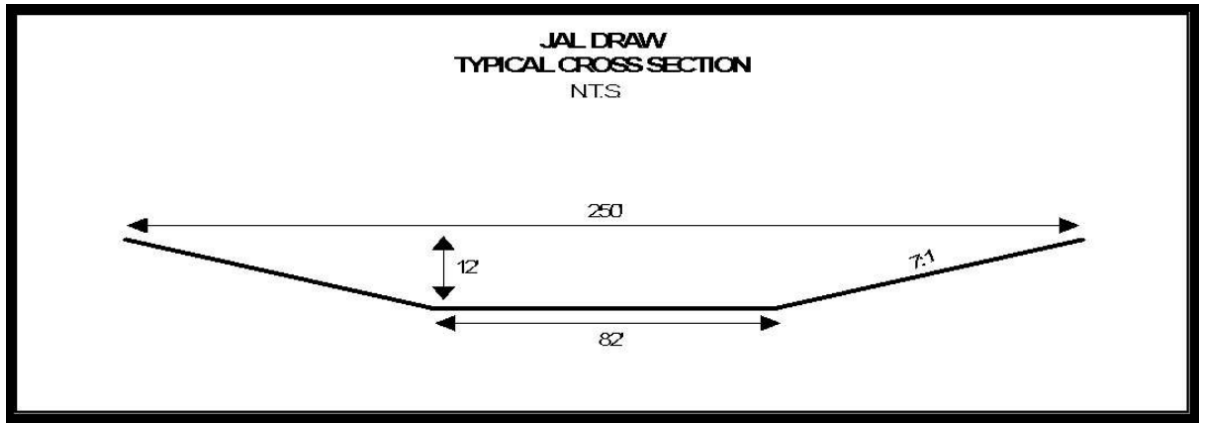




Jal Draw Project B

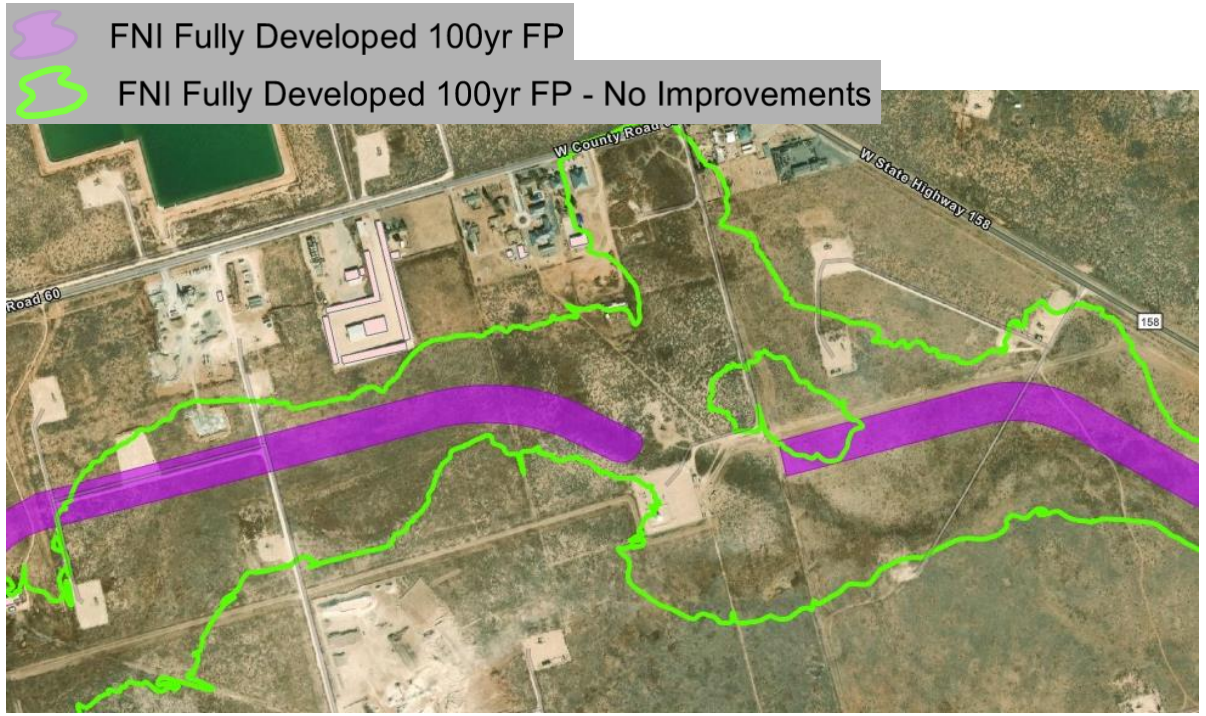
- Description: The existing floodplain has impacted development in the area and existing infrastructure is not designed for the fully-developed 100-year floodplain.
- Alternative: Excavate a 250-foot top width trapezoidal channel along the draw with provisions for a future proposed crossing.

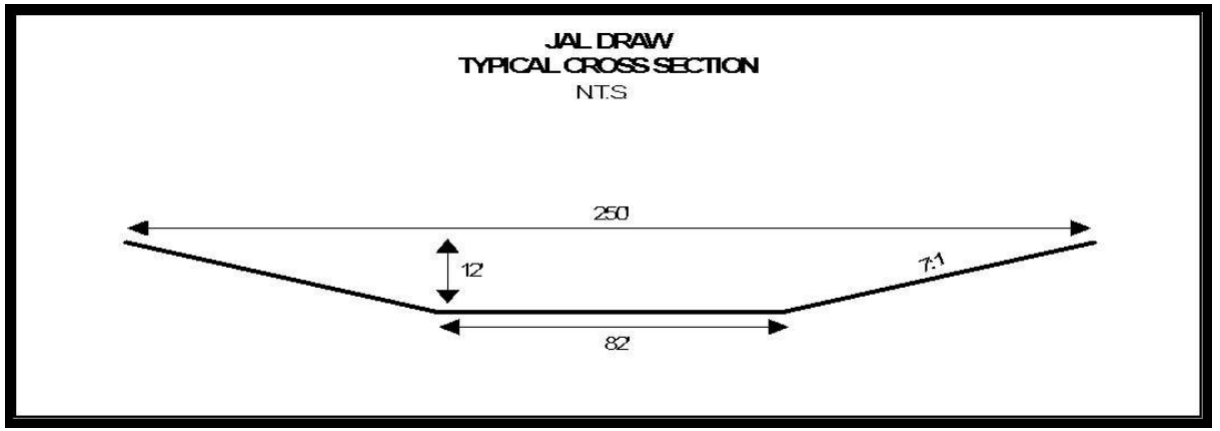




Jal Draw Project C

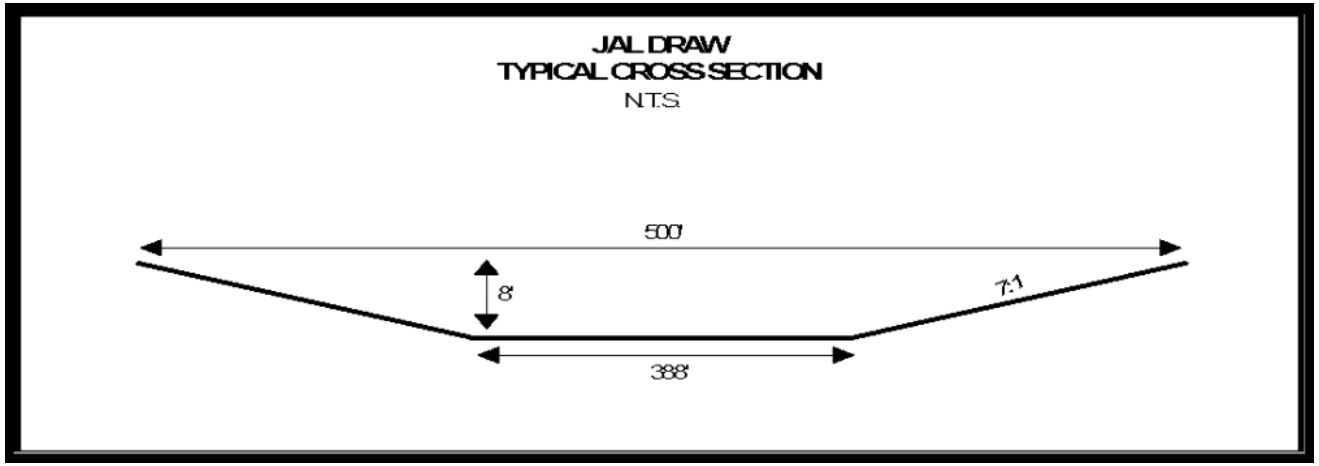
- Description: The existing floodplain has impacted development in the area and existing infrastructure is not designed for the fully-developed 100-year floodplain.
- Alternative: Excavate a 250-foot top width trapezoidal channel along the draw with provisions for two future proposed crossings.
- Challenges: Existing 10” natural gas pipeline

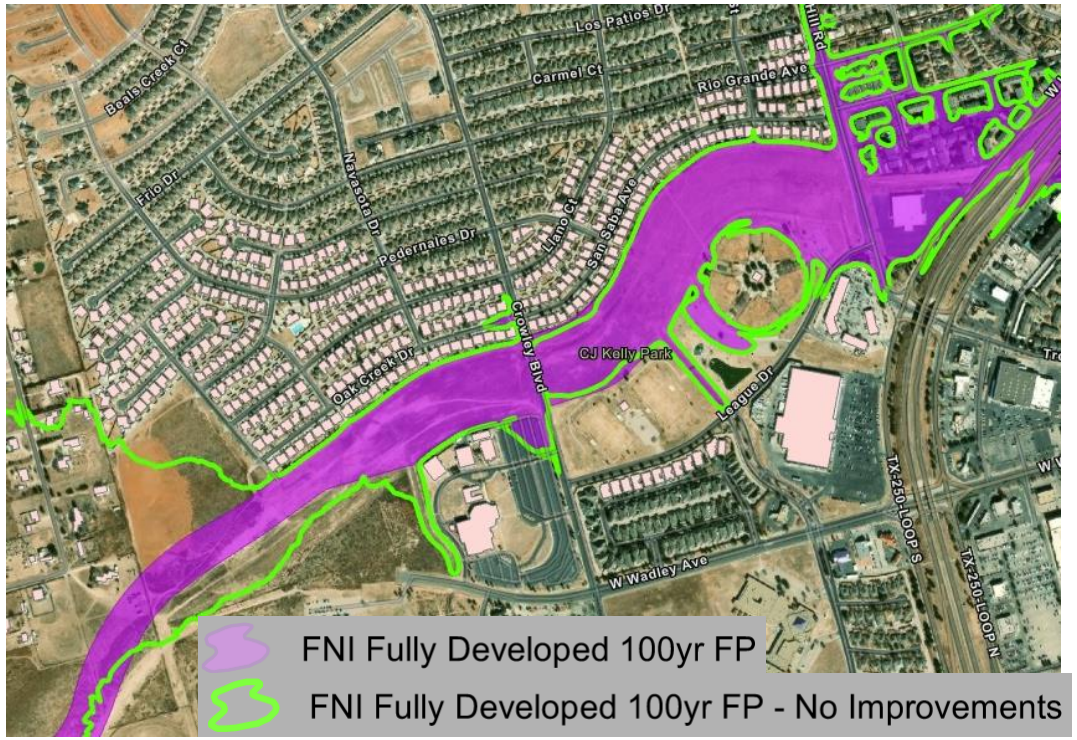




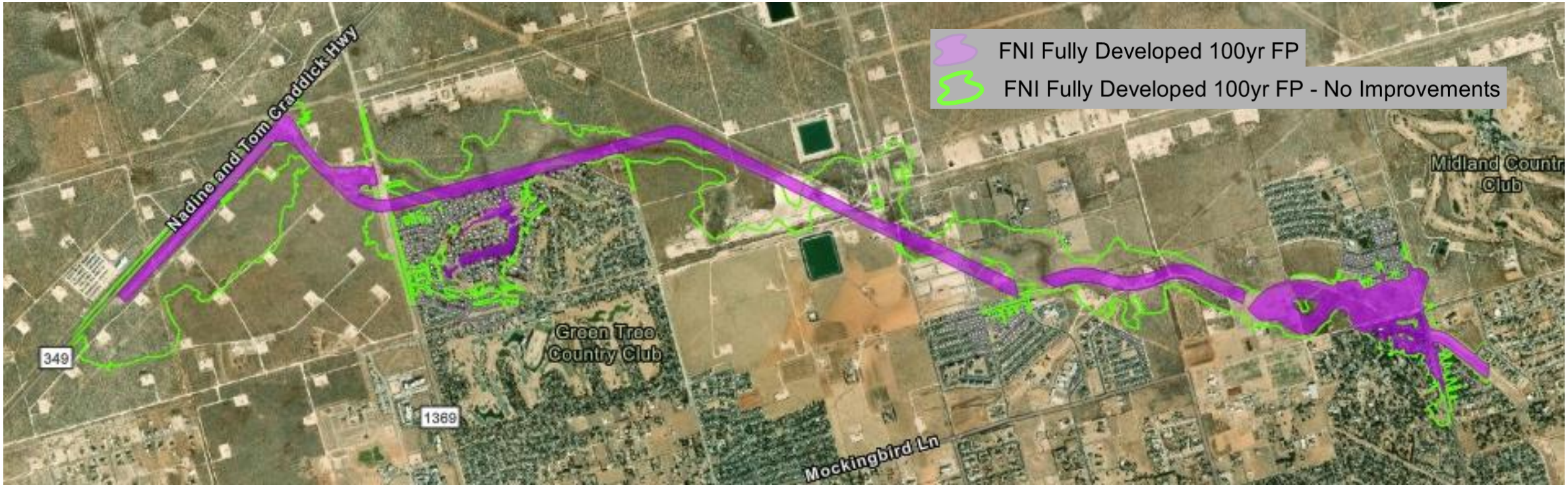
Jal Draw Project E

- Description: The existing floodplain has impacted development in the area and existing infrastructure is not designed for the fully-developed 100-year floodplain.
- Alternative: Excavate a 500-foot top width trapezoidal channel along the draw.



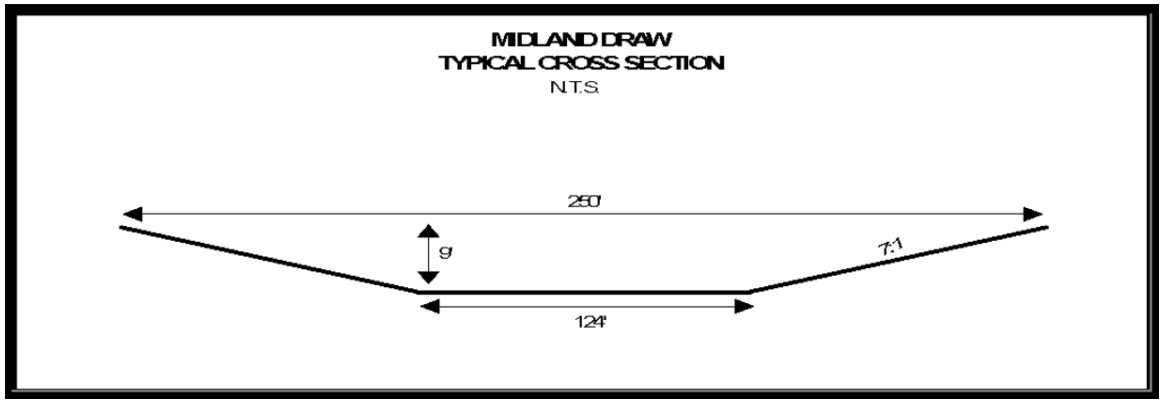


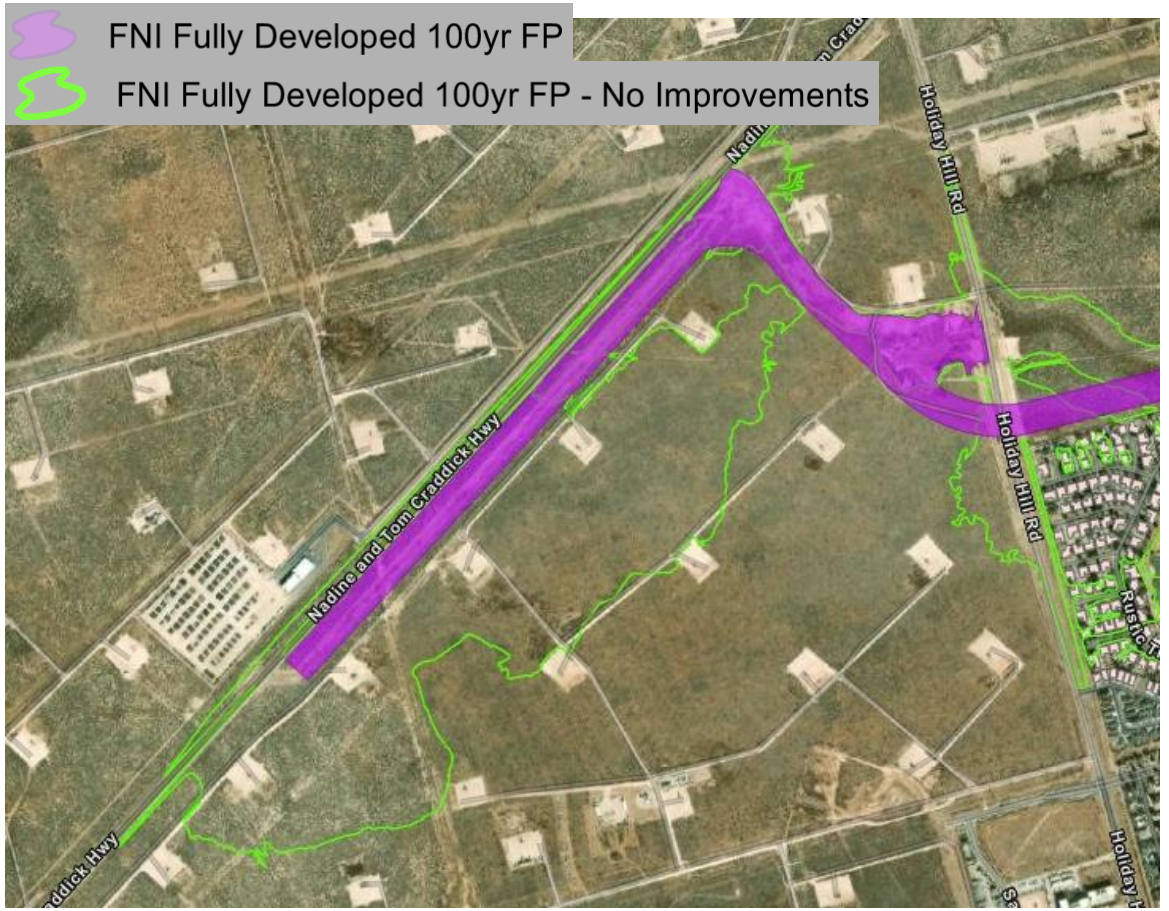
Midland Draw Overview



Midland Draw Project A

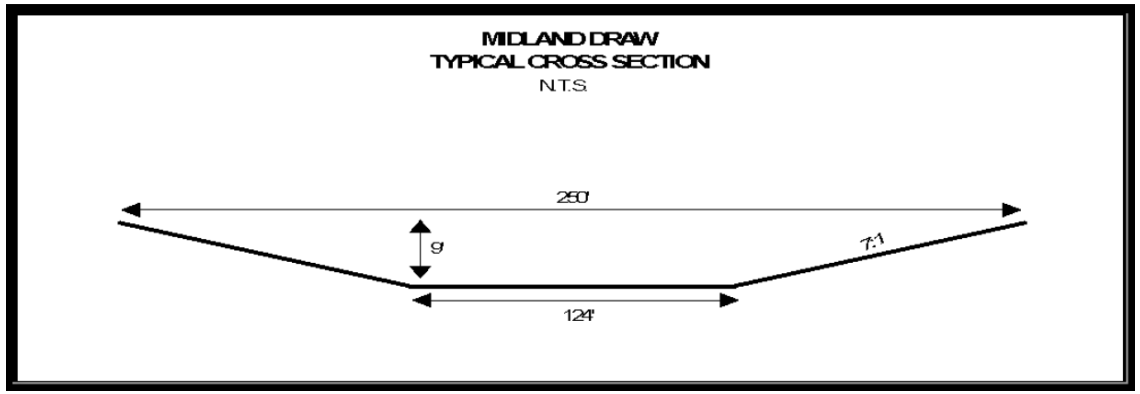
- Description: The existing floodplain has impacted development in the area and existing infrastructure is not designed for the fully-developed 100-year floodplain.
- Alternative: Excavate a 250-foot top width trapezoidal channel along the draw with provisions for two proposed crossings.





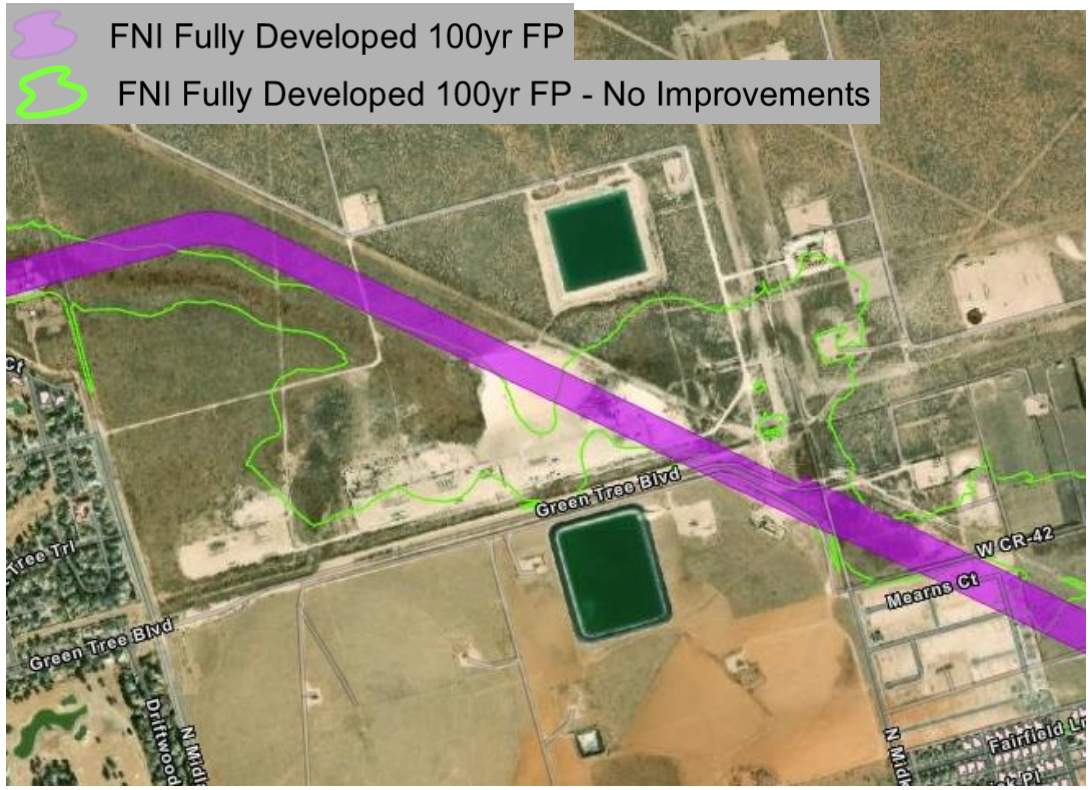
Midland Draw Project B

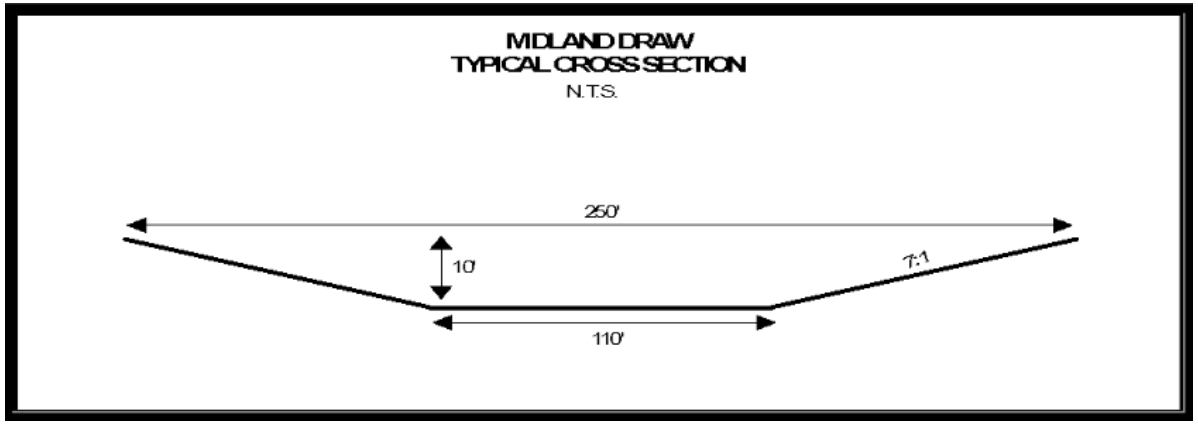
- Description: The existing floodplain has impacted development in the area and existing infrastructure is not designed for the fully-developed 100-year floodplain.
- Alternative: Excavate a 250-foot top width trapezoidal channel along the draw with provisions to replace the existing crossing at Holiday Hill Rd.
- Challenges: Channel runs very close to an existing sanitary sewer line.



Midland Draw Project C

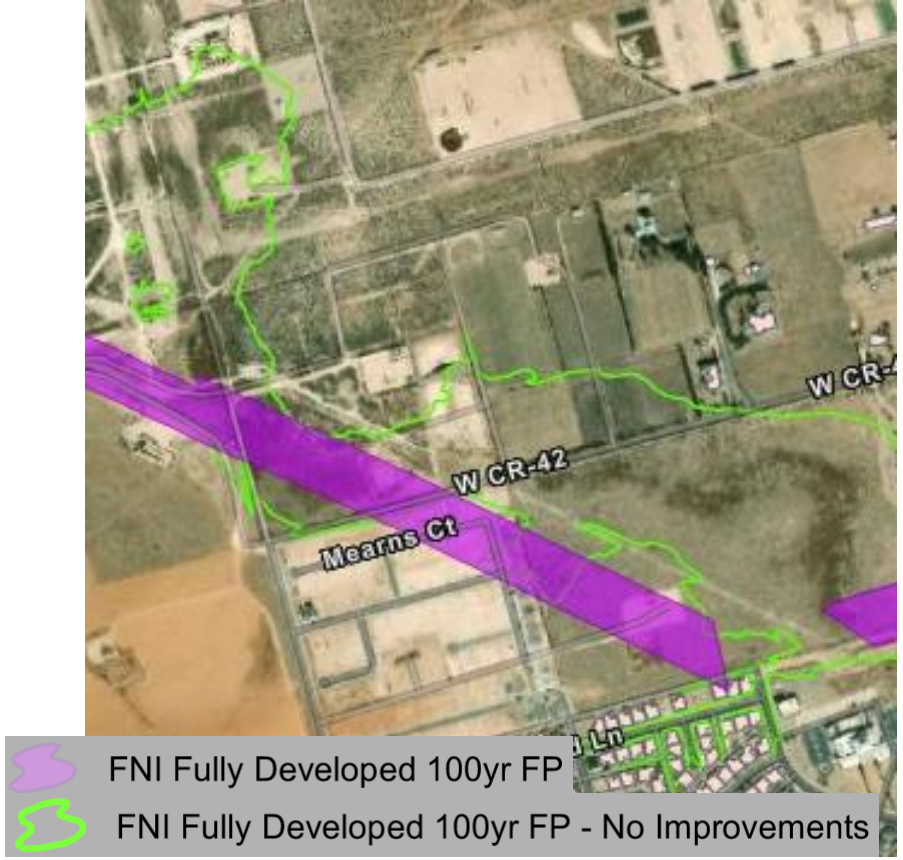
- Description: The existing floodplain has impacted development in the area and existing infrastructure is not designed for the fully-developed 100-year floodplain.
- Alternative: Excavate a 250-foot top width trapezoidal channel along the draw with provisions for the pipeline crossing and a future proposed crossing.
- Challenges: An existing 30” raw water line crossing

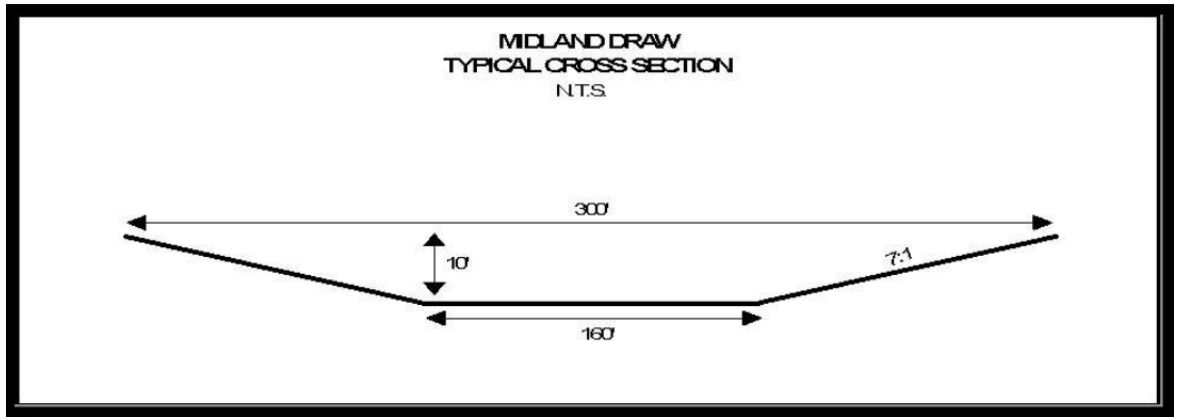




Midland Draw Project D

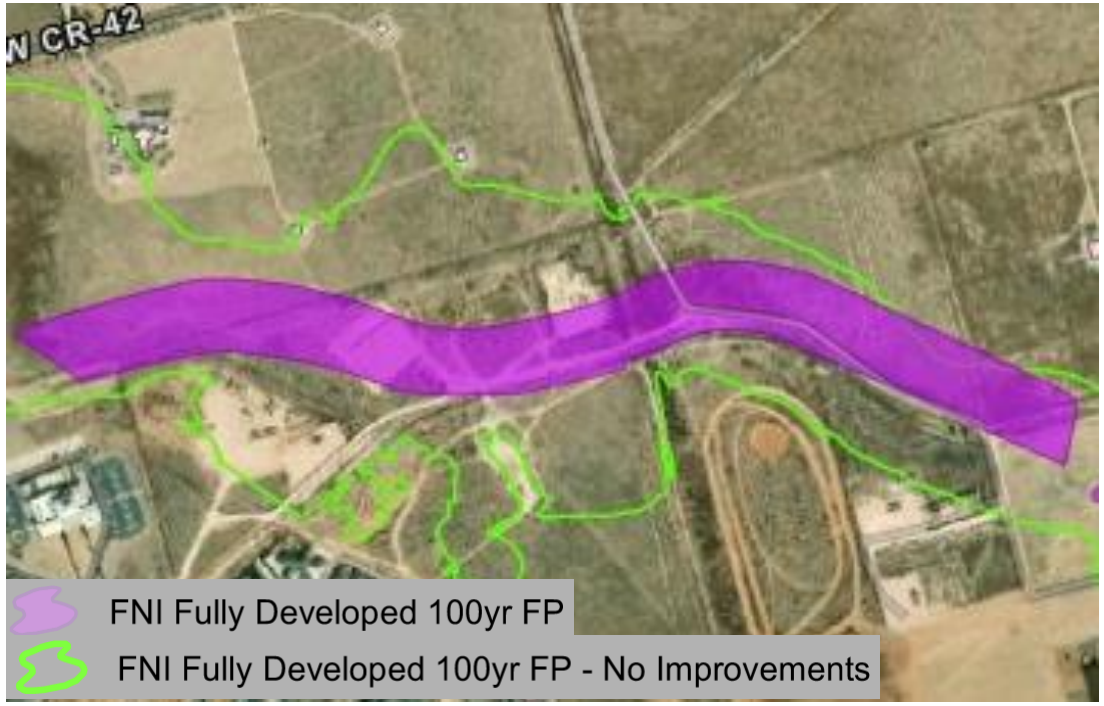
- Description: The existing floodplain has impacted development in the area and existing infrastructure is not designed for the fully-developed 100-year floodplain.
- Alternative: Excavate a 300-foot top width trapezoidal channel along the draw with provisions for a pipeline crossing and three future proposed crossings.
- Challenges: An existing series of pipelines running parallel to the proposed channel.

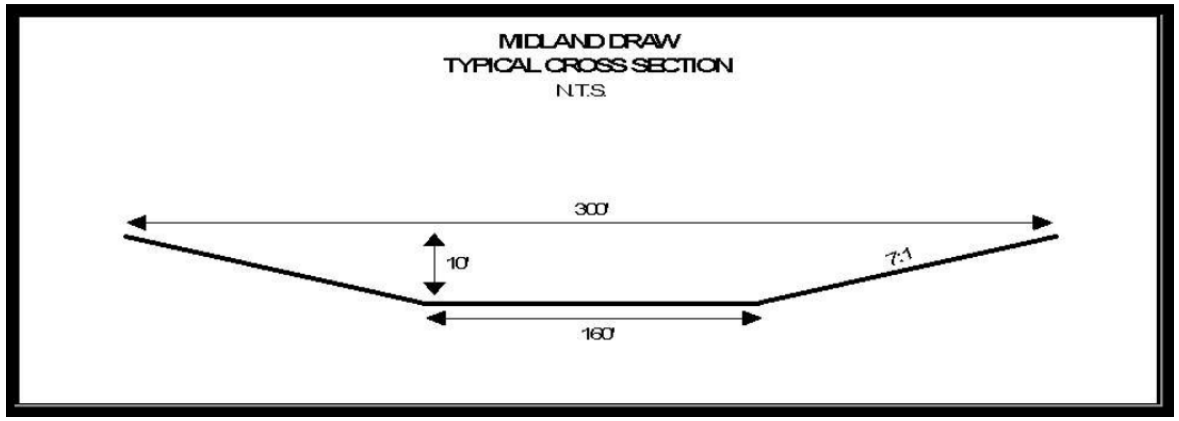




Midland Draw Project E

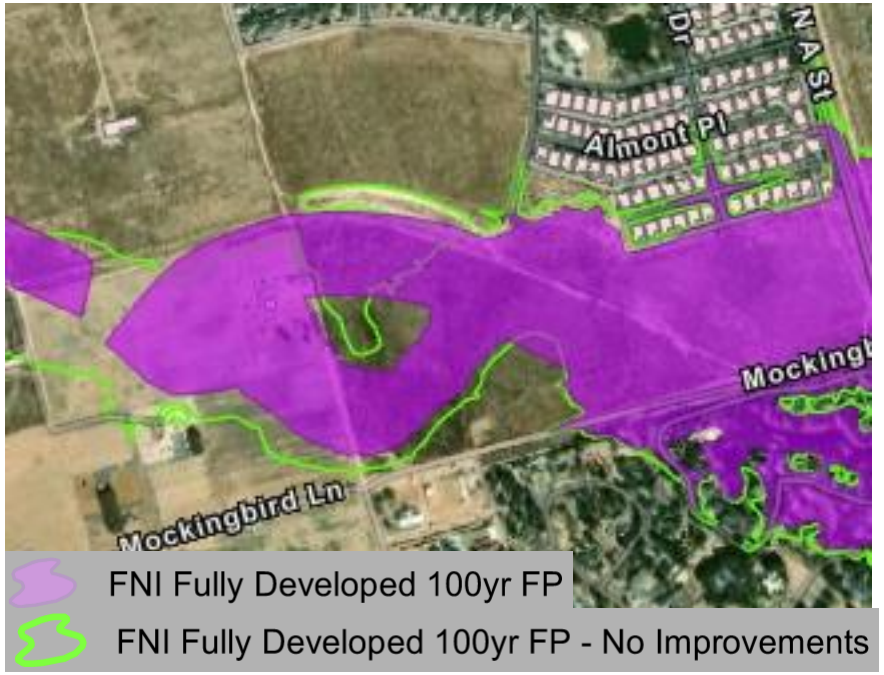
- Description: The existing floodplain has impacted development in the area and existing infrastructure is not designed for the fully-developed 100-year floodplain.
- Alternative: Excavate a 300-foot top width trapezoidal channel along the draw with provisions to replace the existing pipeline crossing and future proposed crossings.
- Challenges: An existing pipeline

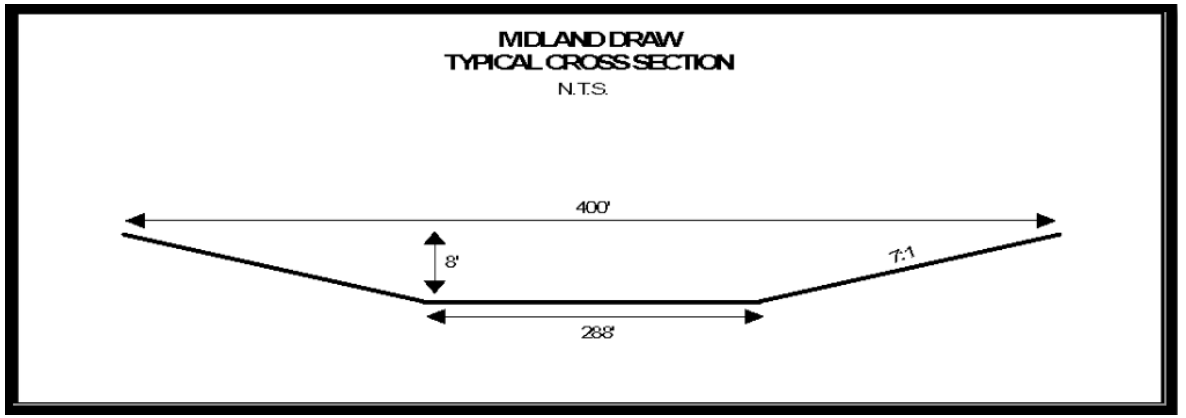




Midland Draw Project F

- Description: The existing floodplain has impacted development in the area and existing infrastructure is not designed for the fully-developed 100-year floodplain.
- Alternative: Excavate a 400-foot top width trapezoidal channel along the draw an average depth.





Playa MI4F

- Description: The existing playa has a low storage volume, no managed outfall, and a significant impact at downstream peak discharges.
- Alternative: Elevate the playa outlet 4’ by adding a 600’ long embankment and an outlet pipe/channel that discharges at the existing crossing at Loop 349.

Industrial Channel Drainage Improvements

- Description: The existing drainage infrastructure does not meet the 100-yr level of service.
- Alternative: Channel improvements, maintenance, channel shaping, and new culverts along the Draw from just south of U.S. Highway 80 to just downstream of Lamesa Road.

City of Andrews Northwest Playa Excavation

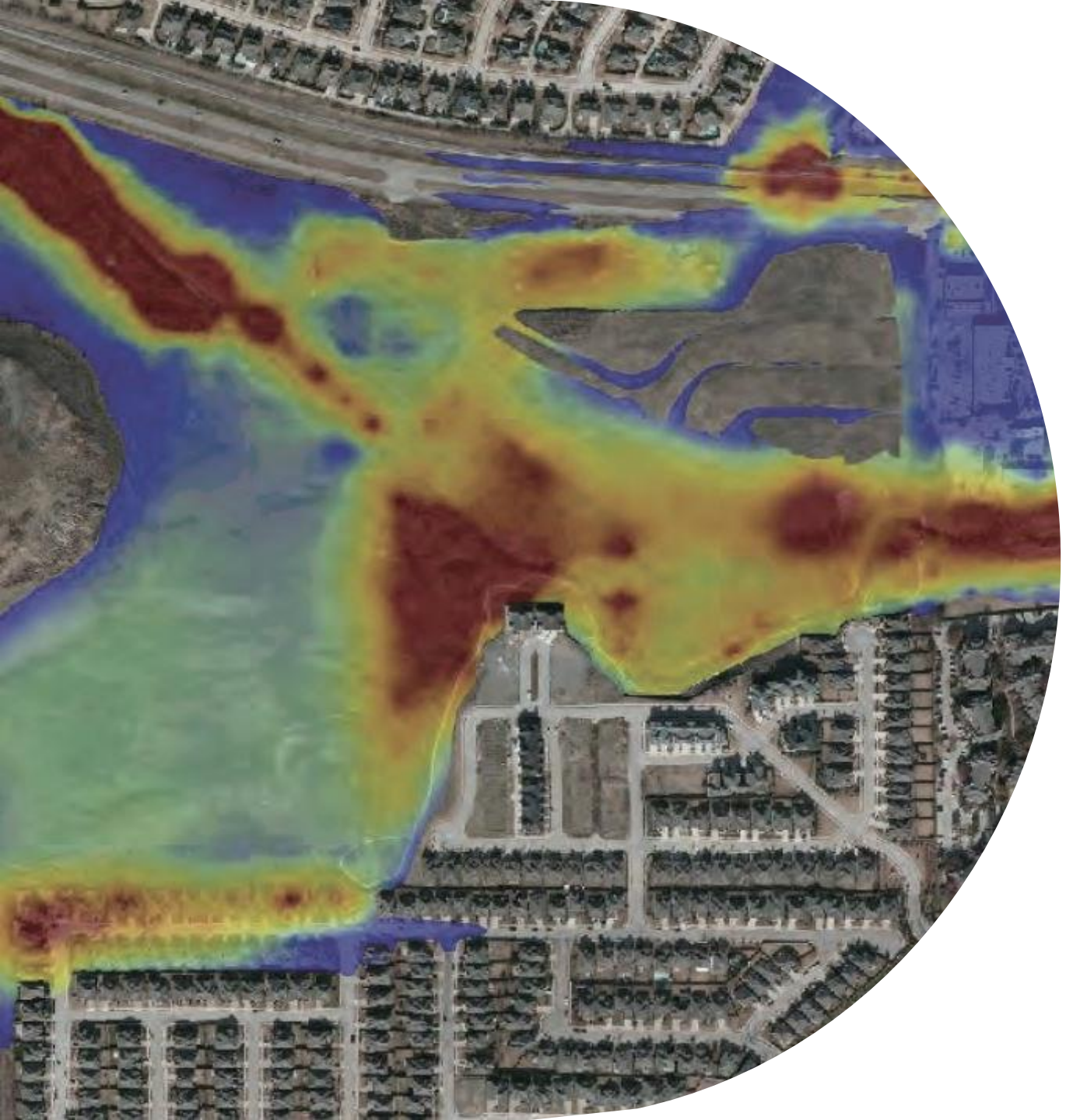
- Description: The existing playa has a low storage volume and a significant impact of the surrounding floodplain.
- Alternative: Proposed excavation of approximately 53,000 cu.yd. of removed earth material. Project aims to maintain existing floodplain to account for anticipated development.

City of Andrews Southwest Playa Excavation

- Description: The existing playa has a low storage volume and a significant impact of the surrounding floodplain.
- Alternative: Proposed excavation of approximately 183,000 cu-yd. of removed earth material. Project aims to maintain existing floodplain to account for anticipated development.

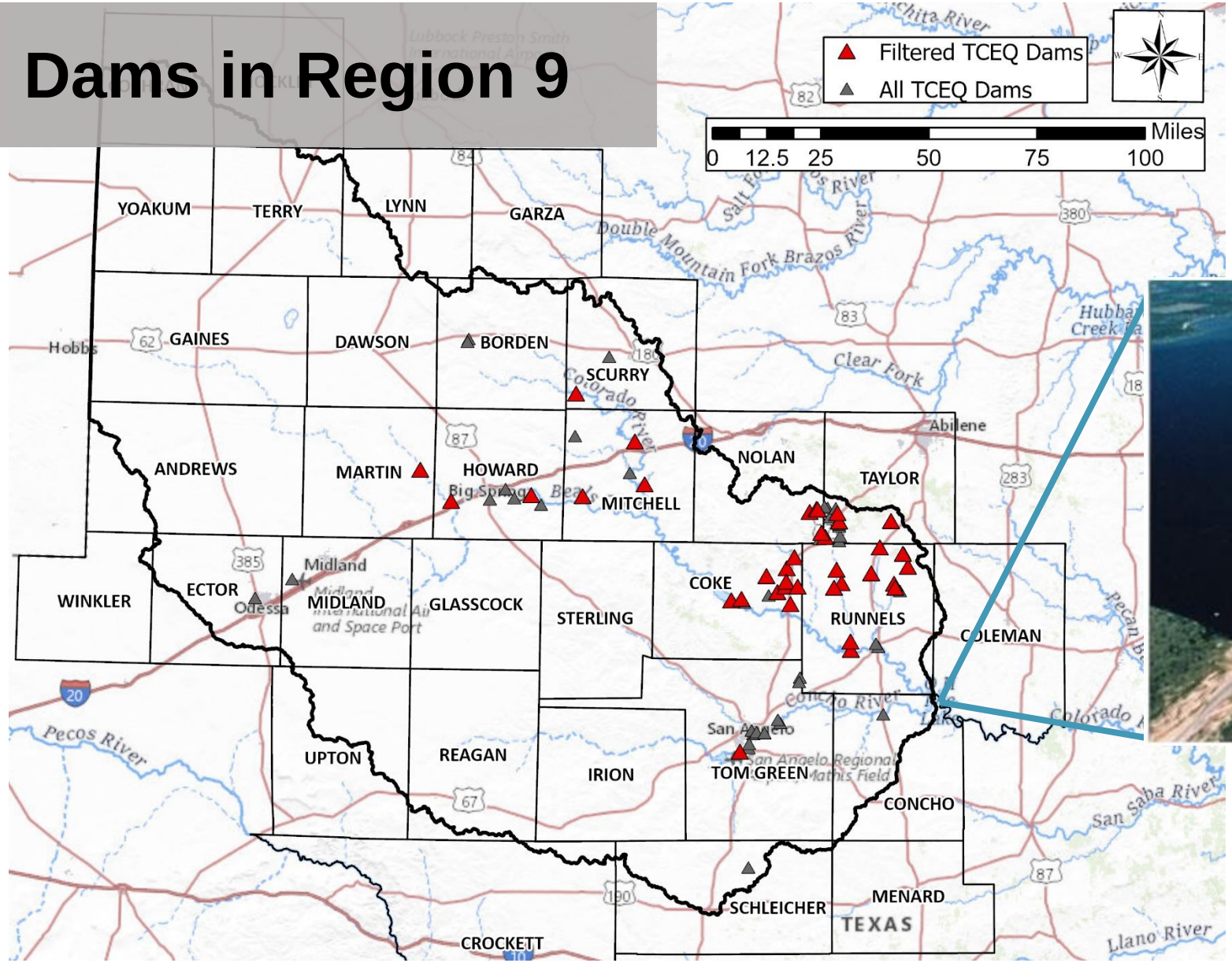
San Angelo Avenue P Detention Project

- Description: Avenue P has significant flooding during storm events.
- Alternative: Construct 2900 LF of 8' x 8' box culverts under Avenue P from Bryant Blvd to Chadbourne St-Red Arroyo.



DSS-WISE Breach Modeling and HCOM Module

Dams in Region 9



Objectives

- Establish a defensible, repeatable framework to identify dam-related FMXs for RFPGs
  - *RFPG Guidelines inconsistent between "flood risk" and "dam safety risk".*

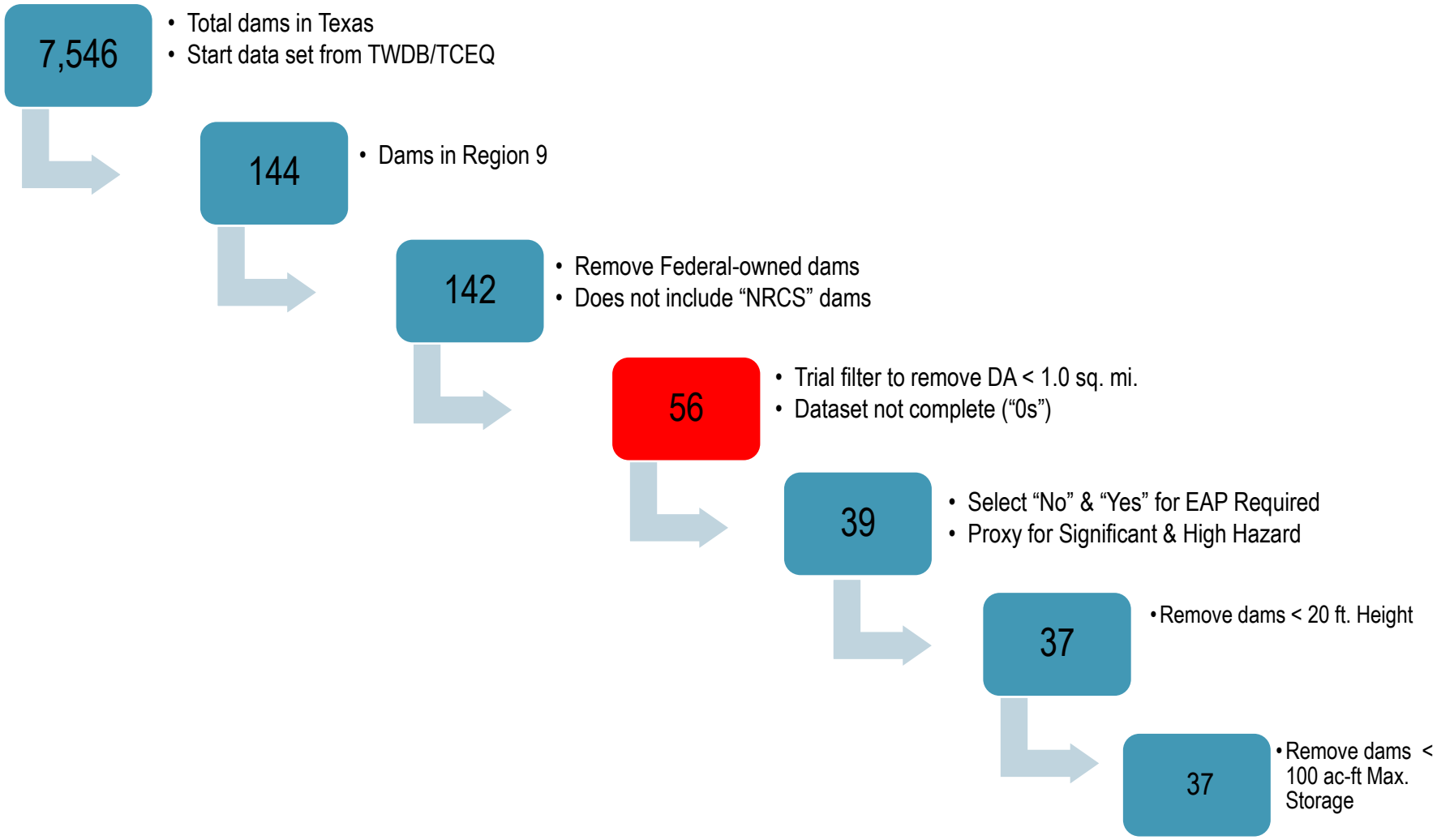
- Fundamentally identifies FMXs based on "dam safety risk", i.e. dam breach impacts
  - *This approach does not factor in: physical condition, hydraulic capacity, 100-yr and 500-yr hydraulic performance.*

- Utilize existing datasets, technical guidelines, etc. to maximum extent possible
  - *Avoid creating "new" data.*

- Prioritize risk identification
  - *High Hazard Dam is not equal to High Risk Dam.*

- Screening assessment
  - *Have to live with data not being perfect.*

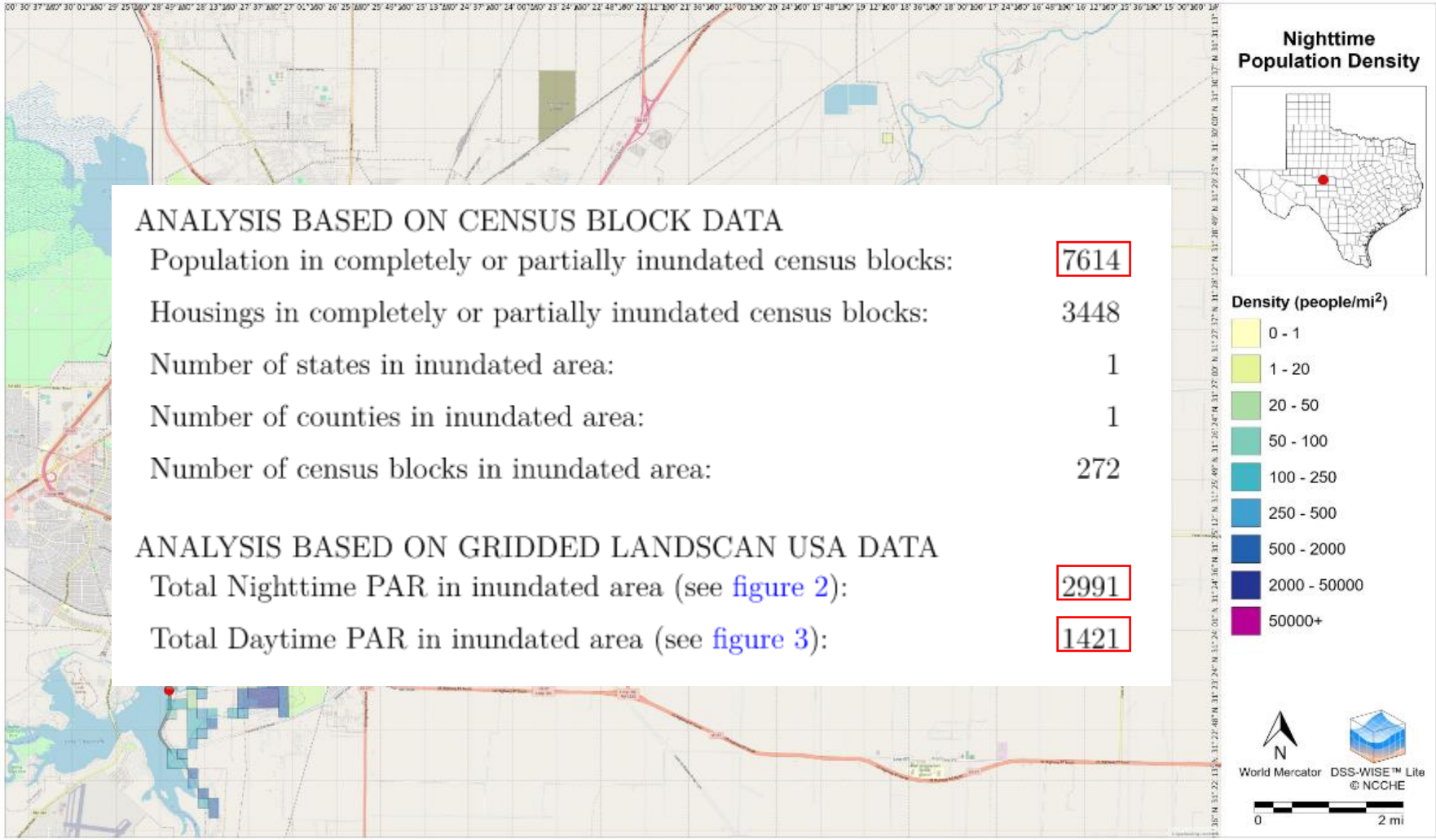
Culling Process



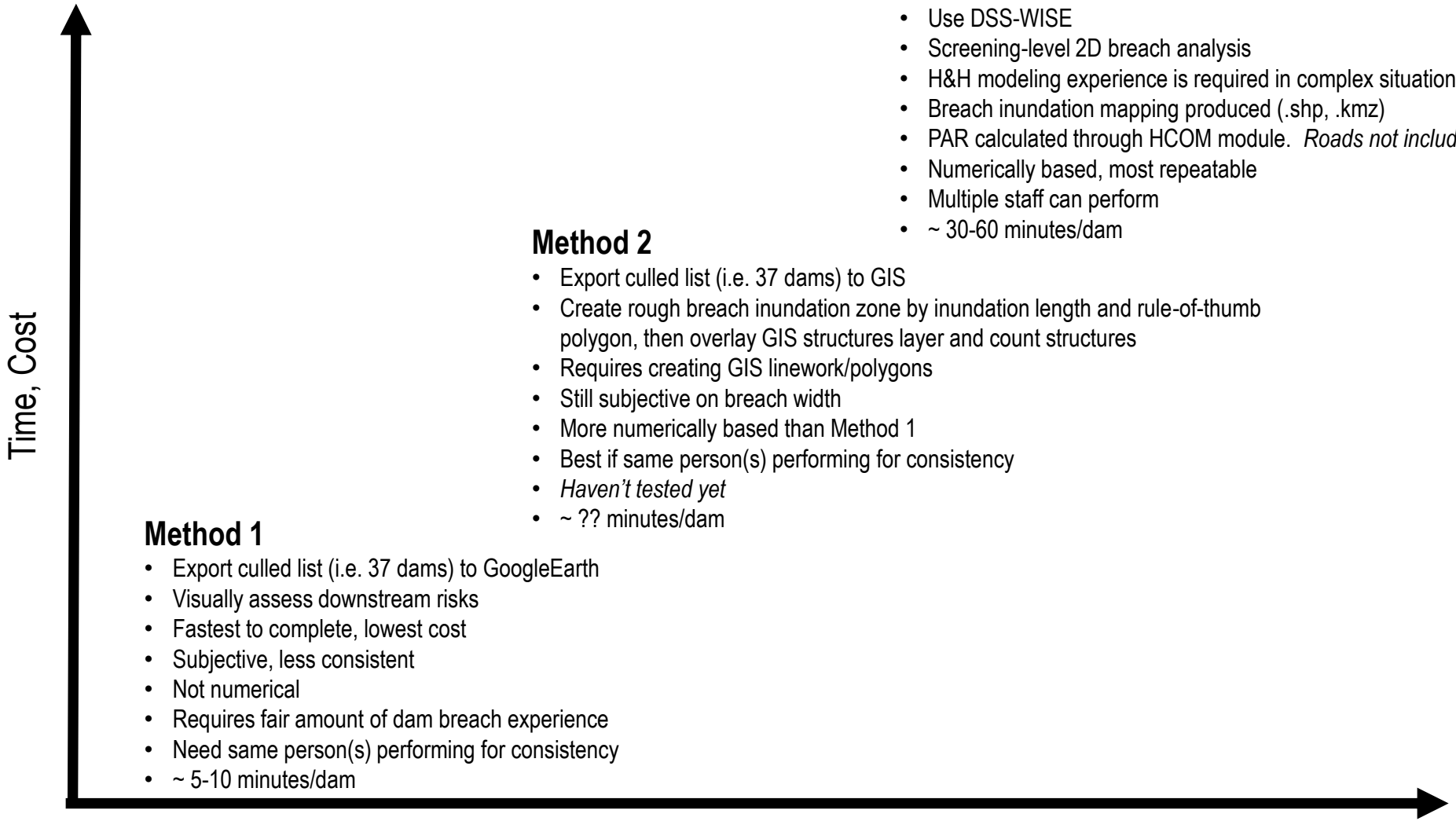
Human Consequences Module (HCOM)

- Mapping of Potential lethal flood zones (PLFZ)
- Population at Risk (PAR) numbers by interfacing results from DSS-WISE Lite with population.
  - Analysis based on 2010 census block data
    - *Tally the entire population inside the census blocks that are completely or partially.*
  - Analysis based on LandScan USA grided data
    - *Nighttime PAR*
    - *Daytime PAR*

Human Consequences Module (HCOM)



Risk Assignment Method Examples



Method 3

- Use DSS-WISE
- Screening-level 2D breach analysis
- H&H modeling experience is required in complex situations, and would be needed to QC runs
- Breach inundation mapping produced (.shp, .kmz)
- PAR calculated through HCOM module. *Roads not included.*
- Numerically based, most repeatable
- Multiple staff can perform
- ~ 30-60 minutes/dam

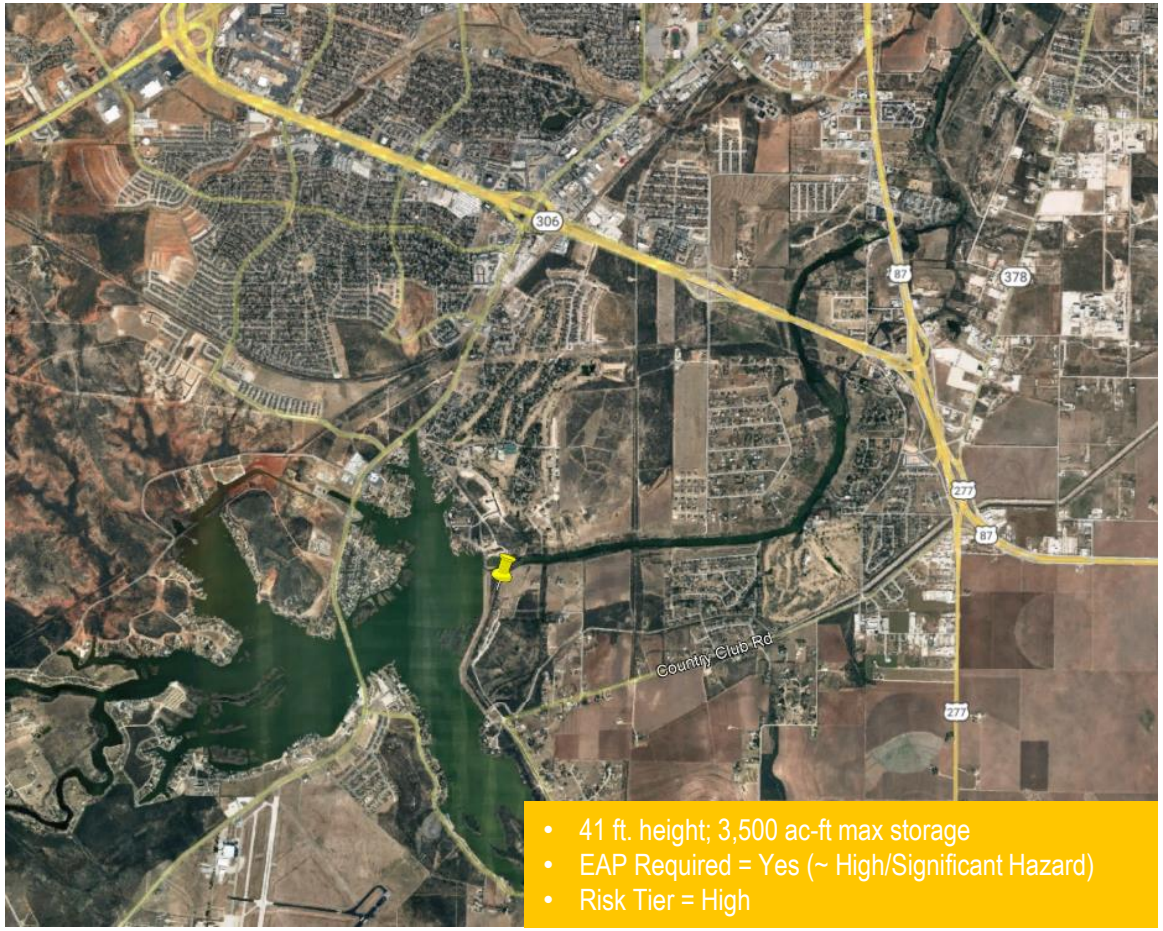
Method 2

- Export culled list (i.e. 37 dams) to GIS
- Create rough breach inundation zone by inundation length and rule-of-thumb polygon, then overlay GIS structures layer and count structures
- Requires creating GIS linework/polygons
- Still subjective on breach width
- More numerically based than Method 1
- Best if same person(s) performing for consistency
- *Haven't tested yet*
- ~ ?? minutes/dam

Method 1

- Export culled list (i.e. 37 dams) to GoogleEarth
- Visually assess downstream risks
- Fastest to complete, lowest cost
- Subjective, less consistent
- Not numerical
- Requires fair amount of dam breach experience
- Need same person(s) performing for consistency
- ~ 5-10 minutes/dam

Risk Tiers Examples



- 41 ft. height; 3,500 ac-ft max storage
- EAP Required = Yes (~ High/Significant Hazard)
- Risk Tier = High

- 37 ft. height; 3,700 ac-ft max storage
- EAP Required = Yes (~ High/Significant Hazard)
- Risk Tier = Low

Adapting Risk Language

TCEQ Dam Hazard Classification		Proposed RFPG Hazard Tiers	
Low	PAR = 0 • No structures • Rural setting • Minor roads • Minimal economic damage	A, 1, Small, Low, etc.	PAR < 100 • Rural setting • 20 structures or less • County/FM roads
Significant	PAR = 1 to 6 • 2 structures or less • County/FM roads • Appreciable economic damage • Service interruption of public utilities	B, 2, Mid, etc.	100 < PAR < 250 • Mixture of rural and developed setting • 20 to 50 structures • State highways, city streets
High	PAR >= 7 • 3 structures or more • Main highways • Excessive economic damage • Loss of important public utilities	C, 3, Large, High, etc.	PAR > 250 • Developed, urban setting • 50 structures or more • Interstate highways, state highways, dense city streets
	Population at Risk (PAR)	Recommend avoiding “Low”, “High”, etc. to avoid confusion w. hazard classification.	Need input from RFPG teams on PAR levels

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TCEQ Dam Hazard Classification	
Low	PAR = 0 • No structures • Rural setting • Minor roads • Minimal economic damage
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High	PAR >= 7 • 3 structures or more • Main highways • Excessive economic damage • Loss of important public utilities

Region 9

Tier	Number of Dams
Low (PAR < 100)	31
Mid (100 < PAR < 250)	1
High (PAR > 250)	5

Final Remarks

- Not all the high hazard dams have the same magnitude or type of impacts.
- Risk identification and mitigation is the main goal of the RFPG.
- Still need to identify FMXs (studies, repairs, upgrades, etc.) for the selected dams.
- Develop additional criteria for risk identification and mitigation
  - Condition rating
  - Hydraulic adequacy
  - Etc

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Task 12
Flood Warning System: Scope of Work Overview

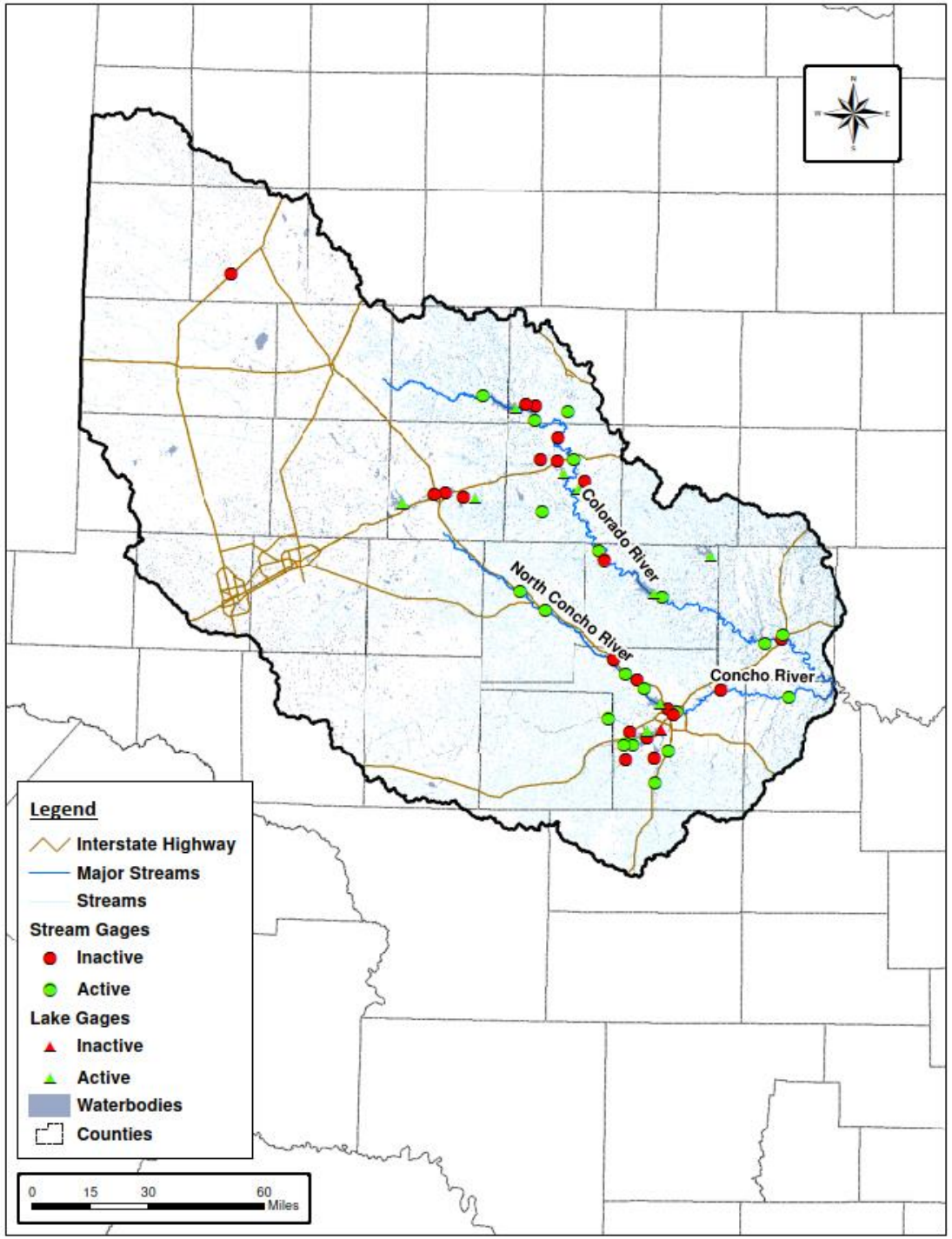
- Review local tools and systems currently available or in development in Region 9.
- Analyze and document USGS gages' period of record for gages in region.
- Identify what regional tools systems are available.
  - Coordinate with relevant agencies (NWS, InFRM, USGS, TDEM).
- Recommend gage placement and development of flood alert systems based on data collected from Tasks 1-11.
- Develop database of flood alert systems currently in Upper Colorado Region.
- Summarize findings and recommendations.

Defining Flood Early Warning Systems

- Systems Often Monitor:
  - Rainfall Amounts
  - Water Levels
  - Low Water Crossings
- Aids in prediction of flooding
- Increases communication and preparedness for a community
- Warn/Protect public from hazardous roadway crossings during flood events

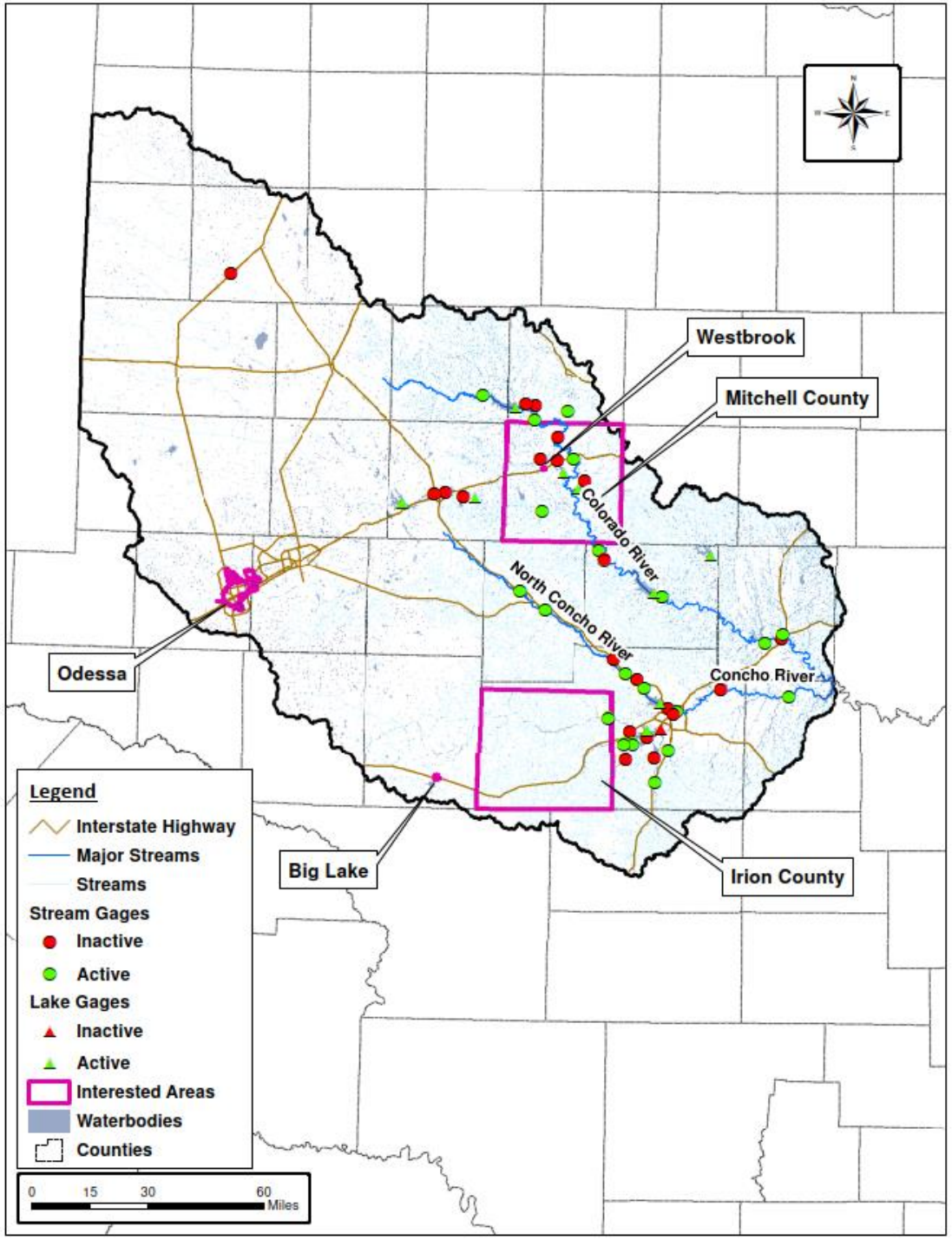
Flood Warning System Gage Analysis

- Period of Record (USGS)
  - Oldest Gage: 1907
  - Newest Gage: 2007
  - Average POR: 43 Years
- 51 – Total Gages in the Region
  - 20 – Active Stream Gages
  - 9 – Active Lake Gages
  - 22 – Inactive Gages
- Average of 21,550 record counts per gage



Flood Warning System Potential Project Locations

- Entity Interest
  - 5 entities indicated interest in early flood warning systems
  - Potential projects include the following:
    - Installation of a flood early warning system
    - Installation of additional rain gages
    - Increasing signage related to flooding



Flood Warning System Next Steps

- Coordinate follow-up meetings with NWS and USGS
    - Determine what deliverables could be leveraged within their systems
- Set up meetings with InFRM and TDEM
    - Determine what deliverables could be leveraged within their systems
- Follow up with communities within the region
    - Continue to document what systems are in place
    - Reach out to major entities
- Compare gage distribution with flooding data

8b. Discussion and potential action to recommend new FMXs in the Amended Regional Flood Plan

- City of San Angelo
- City of Midland
- City of Andrews
- Dam rehabilitation
- Flood early warning systems

8c. Task 13 Update on Amended Region 9 Upper Colorado Flood Plan

Timeframe	TWDB Flood Plan Scope of Work Tasks/Actions
✓ July	Draft Flood Plan Refinements
✓ August 1, 2022	Draft Flood Plan Submitted to TWDB
✓ September 14, 2022	Public Comment Meeting
✓ January 10, 2023	Final Flood Plan Submitted to TWDB
July 14, 2023	Amended Flood Plan Submitted to TWDB

Questions

Definitions

- **Flood Management Evaluation (FME)**: a proposed flood study of a specific, flood-prone area that is needed in order to assess flood risk and/or determine whether there are potentially feasible FMSs or FMPs.
- **Flood Mitigation Project (FMP)**: a proposed project, either structural or non-structural, that has non-zero capital costs or other non-recurring cost and, when implemented, will reduce flood risk or mitigate flood hazards to life or property.
- **Flood Management Strategy** (**FMS**): a proposed plan to reduce flood risk or mitigate flood hazards to life or property.