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AAPG	American Association of Petroleum Geologists
APE	Area of Potential Effects
BMP	best management practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
CO	carbon monoxide
CWA	Clean Water Act
dB	decibels
DEM	Division of Emergency Management
DNL	Day-Night Average Sound Level
EA	Environmental Assessment
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ETJ	extra-territorial jurisdiction
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FM	Farm to Market Road
FPPA	Farmland Protection Policy Act
GBRA	Guadalupe-Blanco River Authority
GCWWTP	Gohlke Creek Wastewater Treatment Plant
LCRA	Lower Colorado River Authority
LUST	leaking underground storage tank
MBTA	Migratory Bird Treaty Act
mgd	million gallons per day
NAAQS	National Ambient Air Quality Standards
NCA	Noise Control Act
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
O_3	ozone
OSHA	Occupational Safety and Health Administration
PCN	pre-construction notification
PL	Public Law

$PM_{2.5}$	particulate matter less than 2.5 micrometers in diameter
PM_{10}	particulate matter less than 10 micrometers in diameter
RCP	reinforced concrete pipe
RCRIS-SQG	Resource Conservation and Recovery Information System Small Quantity Generator
ROW	right-of-way
SHPO	State Historic Preservation Officer
SR	State Route
TCEQ	Texas Commission on Environmental Quality
THC	Texas Historical Commission
TNRCC	Texas Natural Resource Conservation Commission
TPWD	Texas Parks and Wildlife Department
TxDOT	Texas Department of Transportation
URS	URS Group, Inc.
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Service
VOC	volatile organic compound

1.1 PROJECT AUTHORITY

Pursuant to Public Law (PL) 106-31, the Emergency Supplemental Appropriations Act for Fiscal Year 1999, additional funding was provided to the Federal Emergency Management Agency (FEMA) to address disaster-related needs not met by Federal disaster relief programs for communities that experienced declared major disasters in fiscal years 1998 and 1999. The State of Texas was awarded $42,108,000 for this purpose, which was specifically designated for project needs resulting from heavy rains and flooding associated with the disaster FEMA-1257-DR-TX. As enabled by PL 106-31, the City of Cuero has applied for funding from FEMA through the Texas Division of Emergency Management (DEM) to implement specific measures to mitigate potential damages and losses to human health and property that could result from future flooding in the City of Cuero.

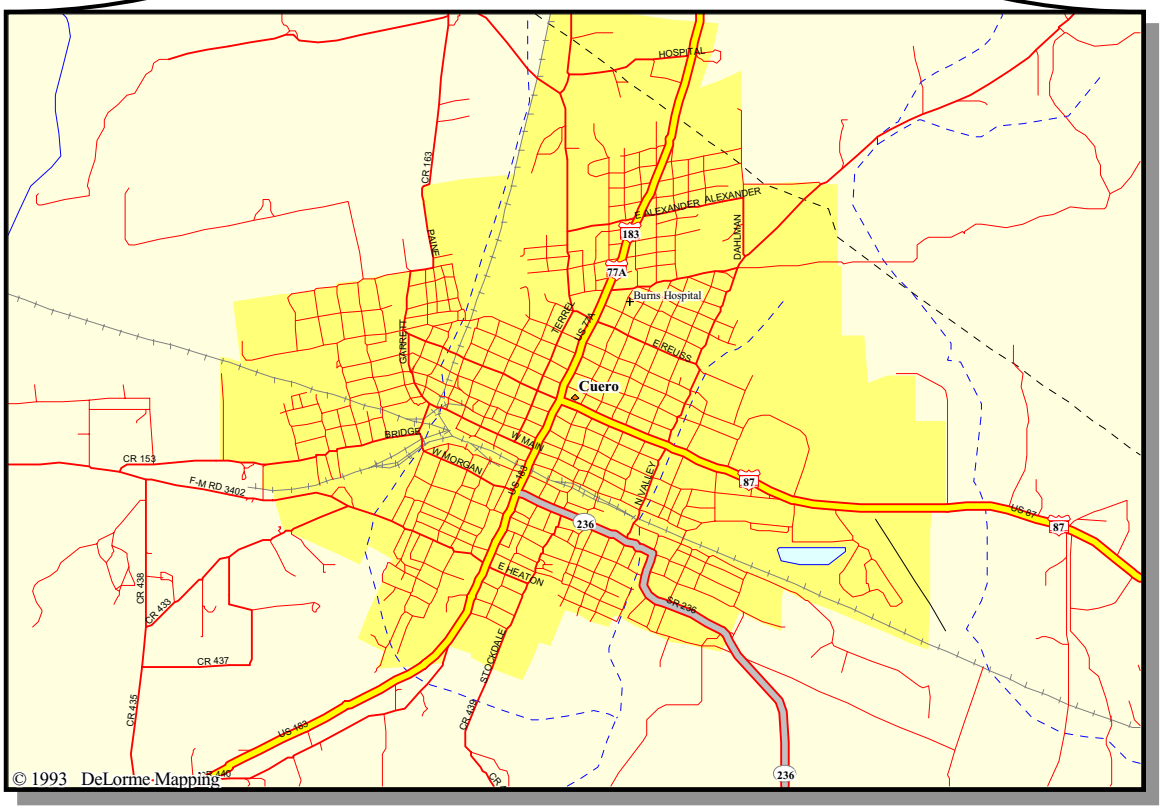
The National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500 through 1508), and FEMA regulations for NEPA compliance (44 CFR Part 10) direct FEMA and other Federal agencies to be informed of and take into account during decision-making, the environmental consequences of proposed Federal actions (projects). In compliance with NEPA and its implementing regulations, FEMA has prepared this Environmental Assessment (EA) to evaluate potential environmental impacts associated with several alternatives designed to meet the stated purpose and need.

1.2 PROJECT LOCATION

Components of the proposed project are located within the city limits and extra-territorial jurisdiction (ETJ) of the City of Cuero, in DeWitt County, Texas (Figure 1). Cuero is located approximately 70 miles southeast of San Antonio, in the southeastern part of the state, and approximately 1 mile north of the Guadalupe River. The proposed project sites are located throughout Cuero, although the majority are on the northwest side of town (Figure 2). The construction would occur adjacent to or underneath city streets in residential and commercial areas, as well as in manmade and natural channels within the Gohlke Creek watershed in Cuero.

1.3 PURPOSE AND NEED

The purpose of this project is to repair and improve the inadequate stormwater drainage infrastructure throughout Cuero to protect it from future flooding events. Cuero has suffered repeated damages due to flooding from the Guadalupe River. From 1993 to the end of 2000, 32 flood events were reported within Cuero and/or DeWitt County (NOAA, 2001). One significant event that occurred in April 1997 resulted in $500,000 in property damages. Dozens of flash floods incurring less than $50,000 in property and crop damages have been recorded since 1994 (NOAA, 2001).



CLIENT FEMA				TITLE **REGIONAL MAP**
PROJ City of Cuero, Drainage Improvements				
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FILE Reports\Draft\Cuero\REGIONAL MAP.PPT	CHK BY	TH	8-29-01	FIGURE 1

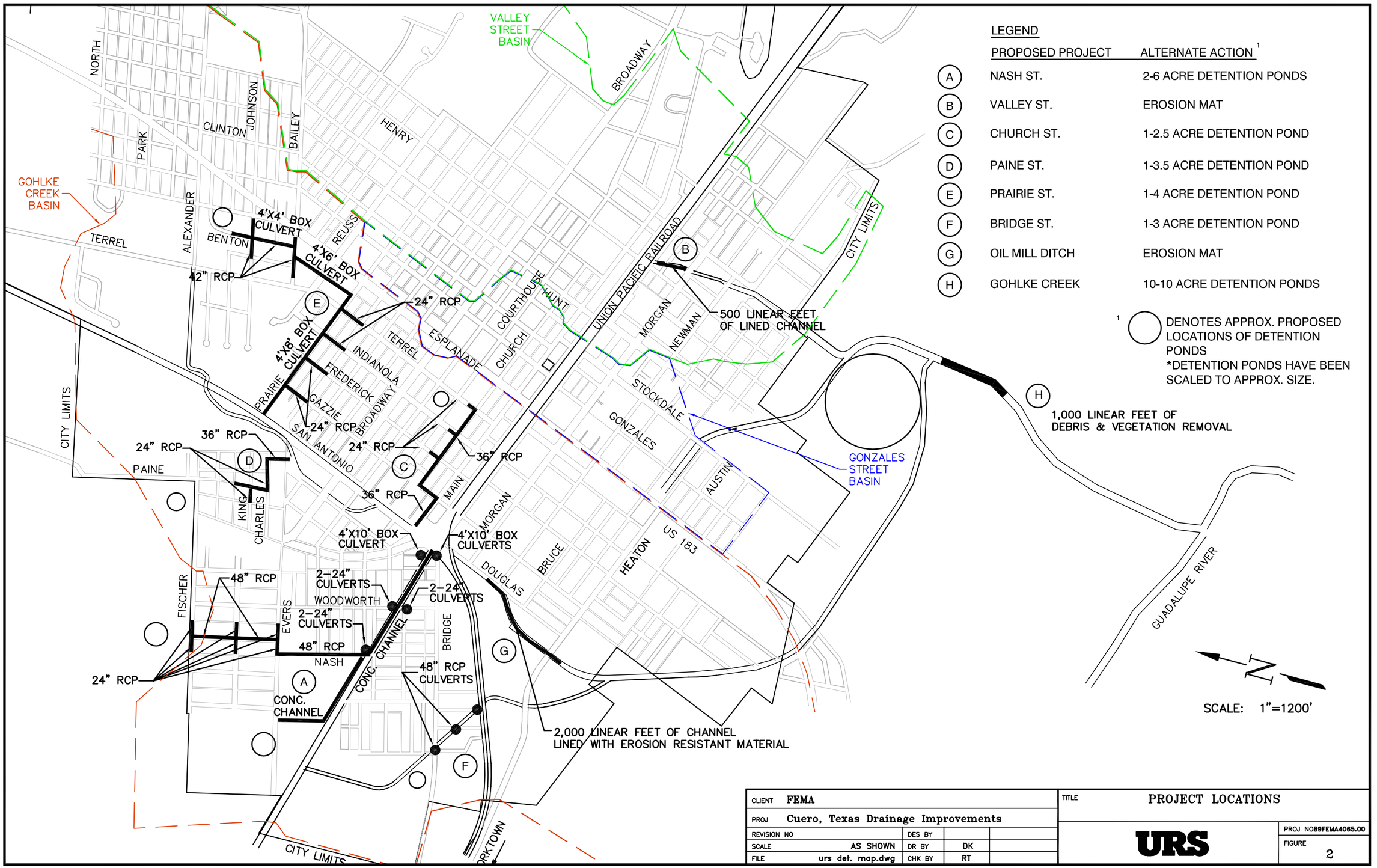

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		FIGURE	2

On October 19, 1998, the Guadalupe River flooded after heavy rainfall associated with Hurricanes Lester and Madeline. Flood waters eventually inundated approximately 50 percent of Cuero, affecting more than 1,000 homes and displacing many residents for up to a year. An estimated $5 million in property damage and $1 million in crop damage was incurred countywide as a result of this flood event (NOAA, 2001). By September 2000, some residents had still not returned to their homes because infrastructure had not been rebuilt.

2.1 ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, no drainage improvements would be undertaken. Risks to human health and property associated with repetitive flooding events would not be mitigated.

2.2 ALTERNATIVE 2 – EIGHT INTERNAL DRAINAGE IMPROVEMENTS (PROPOSED ACTION)

Under the Proposed Action, eight related drainages within the city limits and ETJ of Cuero would be improved. Six of the drainages are located on the northwest side of town, in the Gohlke Creek Basin (Projects A, C, D, E, F, and G). One drainage is located on the southeast side of town, in the Valley Street Basin (Project B). The last project would involve improvements to Gohlke Creek (Project H). This project is downstream of and receives flood waters from the other seven improvement projects. It is the furthest drainage improvement from the town and discharges flood waters into the Guadalupe River. Combined, the eight improvements are designed to accommodate a citywide 25-year flood event.

Project A: Project A, located in the Gohlke Creek Basin, would occur in the Nash Street area of Cuero (Figure 2-1). The proposed project would start at the north end of Staerker Street with the installation of a 48-inch reinforced concrete pipe (RCP) storm sewer from Fisher Street to Evers Street. The 48-inch storm sewer would be installed west along Evers Street for approximately 250 feet and then turn south onto Nash Street. The 48-inch storm sewer would end at the abandoned railroad bed. An additional 500 feet of 24-inch RCP storm sewer and 15 stormwater inlets would be installed along the side streets leading to Staerker, Nash, and Evers Streets. This project would also include the excavation and lining of existing channels. The channel lining would start at an existing channel located approximately 600 feet west of Nash Street, and would run south toward the abandoned railroad bed. At the abandoned railroad bed, the excavation and lining of the channel would continue east to Nash Street. At Nash Street both sides of the railroad bed would be excavated and lined with concrete to the outfall at Oil Mill Ditch near Bridge Street. Project A would also involve installing one set of two 24-inch RCP culverts at Nash Street and two sets at Woodworth Street, and two 4-feet by 10-feet box culverts at San Antonio Road.

Project B: Project B, located in the Valley Street Basin, would start at the railroad bed where there is an existing concrete lined channel approximately 7 feet wide (Figure 2-2). The concrete channel lining extends two feet up the channel wall on each side; the remainder of the channel wall is earthen. The earthen channel wall has been susceptible to erosion in the past. Project B involves lining 500 linear feet of the earthen channel wall with concrete to reduce the potential for future erosion.

Project C: Project C, located in the Gohlke Creek Basin, would occur in the Church Street area of Cuero (Figure 2-3). A 36-inch RCP storm sewer would be installed from the intersection of Church Street and Terrel Street to the intersection of West Church Street and Gazzie Street. At Gazzie Street, a 36-inch RCP storm sewer would be installed south to Main Street and then west on Main Street to Gohlke Creek. Connecting to the 36-inch RCP would be 1,000 feet of 24-inch storm sewer with 16 stormwater inlets installed on Fredrick Street, Indianola Street, and Terrel Street.

Project D: Project D, located within the Gohlke Creek Basin, would occur in the Paine Street area of Cuero (Figure 2-4). As Paine Street enters Cuero from the north, 900 linear feet of 24-inch RCP would be installed adjacent to the road until it meets Charles Street. An additional 100 feet of 24-inch RCP would be installed on King Street. At Panner Street, 36-inch RCP would be installed for approximately 250 linear feet, running east until it meets Gohlke Creek. Along the 24-inch RCP length, 10 stormwater inlets would be installed.

Project E: Project E, located in the Gohlke Creek Basin, would occur in the West Prairie Street area of Cuero (Figure 2-5). From just north of West Johnson Street to West Bailey Street, approximately 400 feet of concrete box culvert would be installed adjacent to Benton Street. At West Bailey Street, the culvert would turn west and run adjacent and parallel to West Bailey Street for approximately 100 feet until the intersection of Bohman Street. From there, a culvert would be installed south for 400 feet until it reaches Reuss Boulevard. South of Reuss Boulevard, an additional culvert would be installed for approximately 700 feet until it reaches West Prairie Street. From there, approximately 2,100 feet of culvert would be installed along West Prairie Street to Gohlke Creek. At the downstream end of the project area, the box culverts would be required to carry flow under an active portion of the Union Pacific Railroad line. The applicant proposes to bore under the tracks to install the box culverts. Approximately 300 feet of 42-inch RCP storm sewer would be installed perpendicular to Benton Street and Reuss Boulevard, and an additional 500 feet of 24-inch RCP would be installed on Terrel Street, Indianola Street, Fredrick Street, and Gazzie Street. Approximately 16 stormwater inlets would be evenly distributed along the RCP storm sewer lines.

Project F: Project F, located in the Gohlke Creek Basin, would occur in the Bridge Street area of Cuero (Figure 2-6). Existing culverts that allow an improved channel to pass under Bridge Street, Charles Street, and Aggie Street would be replaced with two 48-inch RCP culverts. Widening the channel at each culvert to accommodate the improvements would modify the improved channel slightly. The improved channel would discharge to Gohlke Creek approximately 1,500 feet downstream from the railroad tracks.

Project G: Project G, located in the Gohlke Creek Basin, would occur in the Oil Mill Ditch area of Cuero (Figure 2-7). There is an existing earthen berm channel parallel to Douglas Street. The proposed project would involve lining the flowline of the channel with erosion-resistant lining material similar to Gabion mats. The applicant proposes to line approximately 2,000 linear feet of earthen berm channel.

Project H: Project H, the Gohlke Creek improvement project, is located completely outside of Cuero city limits, but within the ETJ of Cuero (Figure 2-8). South of Cuero, Gohlke Creek receives runoff from Gohlke Creek Basin, Valley Street Basin, and Gonzales Street Basin. From the confluence of the three basins, approximately 1,000 feet south of Cuero, removal of debris and limited removal of vegetation would occur to preclude obstruction of flows and achieve desired flow characteristics. Debris and vegetation removal activities would occur without disturbing the creek channel below the normal high water mark. Chainsaws and other types of low-impact equipment would be used to minimize the disturbance to the riparian corridor.

All of the improvement projects would require approximately 16 months to complete. Construction of Projects A through G would require front-end loaders and backhoes. The Gohlke Creek improvement project (Project H) would require backhoes with boom extensions, small tractors, and chainsaws. All projects, except for Project A, would be located within or adjacent to

current City of Cuero rights-of-way (ROW). Prior to construction, the applicant would obtain easements from private landowners for work on private property. Project A would be located within the railroad ROW. Prior to construction, the applicant would obtain a lease from the railroad company for use of its ROW.

2.3 ALTERNATIVE 3 – CONSTRUCTION OF 16 DETENTION PONDS AND INTERNAL DRAINAGE IMPROVEMENTS

Alternative 3 was designed to approximate the level of protection that would be afforded by the Proposed Action. Its construction would allow the same portions of Cuero to accommodate flooding from the 25-year storm without upgrading the under-capacity and aging drainage systems that already exist. As such, the project areas for Alternative 3 parallel the areas for the Proposed Action, and the same naming conventions are used (Figure 2). Pond sizes were determined from the same stormwater runoff calculations used to design the upgraded storm sewers for the Proposed Action.

Project A: Two 6-acre detention ponds would be excavated and installed in the Gohlke Creek Basin (Figure 2-1). The ponds would retain flood waters that have exceeded the existing drainage system capacity. The first would be located just north of Evers Street in a vacant field containing some overstory vegetation. The second would be located just north of Fischer Street in a vacant field with some overstory vegetation. No buildings or structures currently occupy these properties. The land for the ponds would be acquired or leased from private landowners.

Project B: Five hundred linear feet of earthen berm channel within the previously improved channel of the unnamed tributary to Gohlke Creek would be lined with a geo-textile erosion mat (Figure 2-2). To install the mat, the uppermost soil horizon would be excavated to a depth of several inches. The mat would be placed on top of the newly exposed soil, and the excavated soil would be replaced on top of the mat and revegetated with native grasses. The mat would prevent erosion from occurring during future flood events and is rated to accommodate water velocities up to 12 feet per second. This rating is consistent with velocities anticipated within the channel.

Project C: One 2.5-acre detention pond would be created in the vicinity of the 400 block of Terrel Street (Figure 2-3). The pond would retain flood waters that have exceeded the existing drainage system capacity. Currently, this land is sparsely vegetated and contains approximately four single-family residences. The land for the pond would be acquired or leased from private landowners.

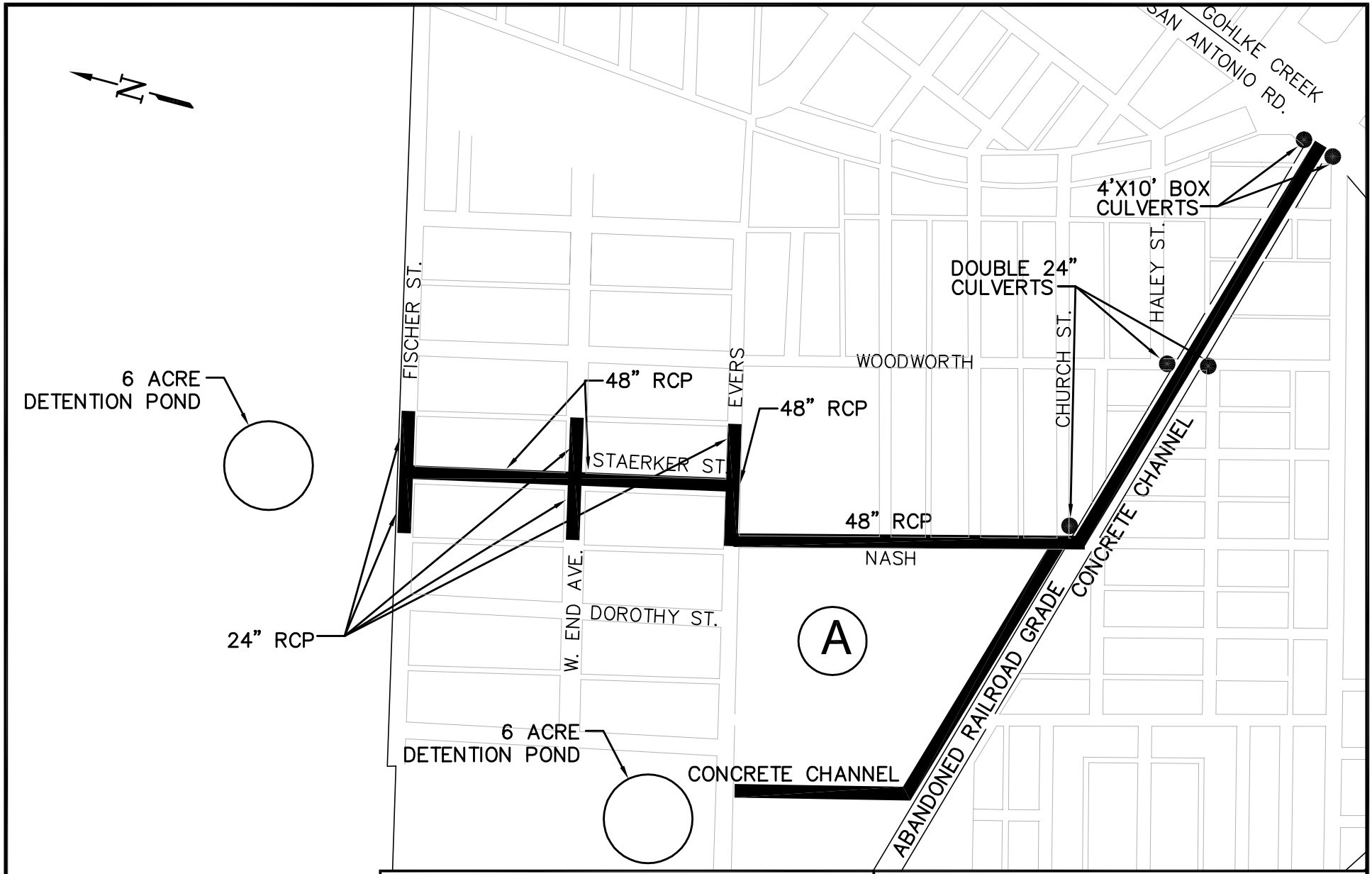
Project D: One 3.5-acre detention pond would be excavated and installed near the corner of Paine Street and Fischer Street (Figure 2-4). The pond would retain flood waters that have exceeded the existing drainage system capacity. Currently, this land is sparsely vegetated. One single-family residence is located to the west, adjacent to the potential detention pond. The land for the pond would be acquired or leased from a private landowner.

Project E: One 4-acre detention pond would be created near the intersection of Benton Street and Dunn Street (Figure 2-5). The pond would retain flood waters that have exceeded the existing drainage system capacity. Currently, this land is vegetated with ornamental plants and cultivar grasses. Three single-family residences are currently sited on this land. The buildings on these properties would be acquired and removed. The land for the pond would be acquired or leased from private landowners.

Project F: One 3-acre detention pond would be created near the intersection of Bridge Street and Aggie Street (Figure 2-6). The pond would retain flood waters that have exceeded the existing drainage system capacity. Currently, one single-family residence and a barn occupy this land. Ornamental plants and cultivar grasses dominate the property. Although some of this land is already owned by Cuero, the residence, barn, and some land would have to be acquired and/or leased from a private landowner.

Project G: Two thousand linear feet of earthen berm channel within the previously improved channel of Gohlke Creek, as it runs parallel to Douglas Street, would be lined with a geo-textile erosion mat (Figure 2-7). To install the mat, the uppermost soil horizon would be excavated to a depth of several inches. The mat would be placed on top of the newly exposed soil, and the excavated soil would be replaced on top of the mat and revegetated with native grasses. The mat would prevent erosion from occurring during future flood events and is rated to accommodate water velocities up to 12 feet per second. This rating is consistent with velocities anticipated within the channel.

Project H: At the confluence of the Gohlke Creek, Valley Street, and Gonzales Street basins, approximately 1,000 feet south of the city limits of Cuero, ten 10-acre detention ponds would be created (Figure 2-8). The ponds would retain flood waters that have exceeded the existing drainage system capacity. Currently, this land is primarily managed for agriculture. No buildings are present on the property. The property contains small stands of trees and other vegetation. Some of this land is already owned by the City of Cuero under the Gohlke Creek drainage ROW, and the remaining land would be acquired or leased from private landowners.



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TITLE A: NASH STREET IMPROVEMENTS

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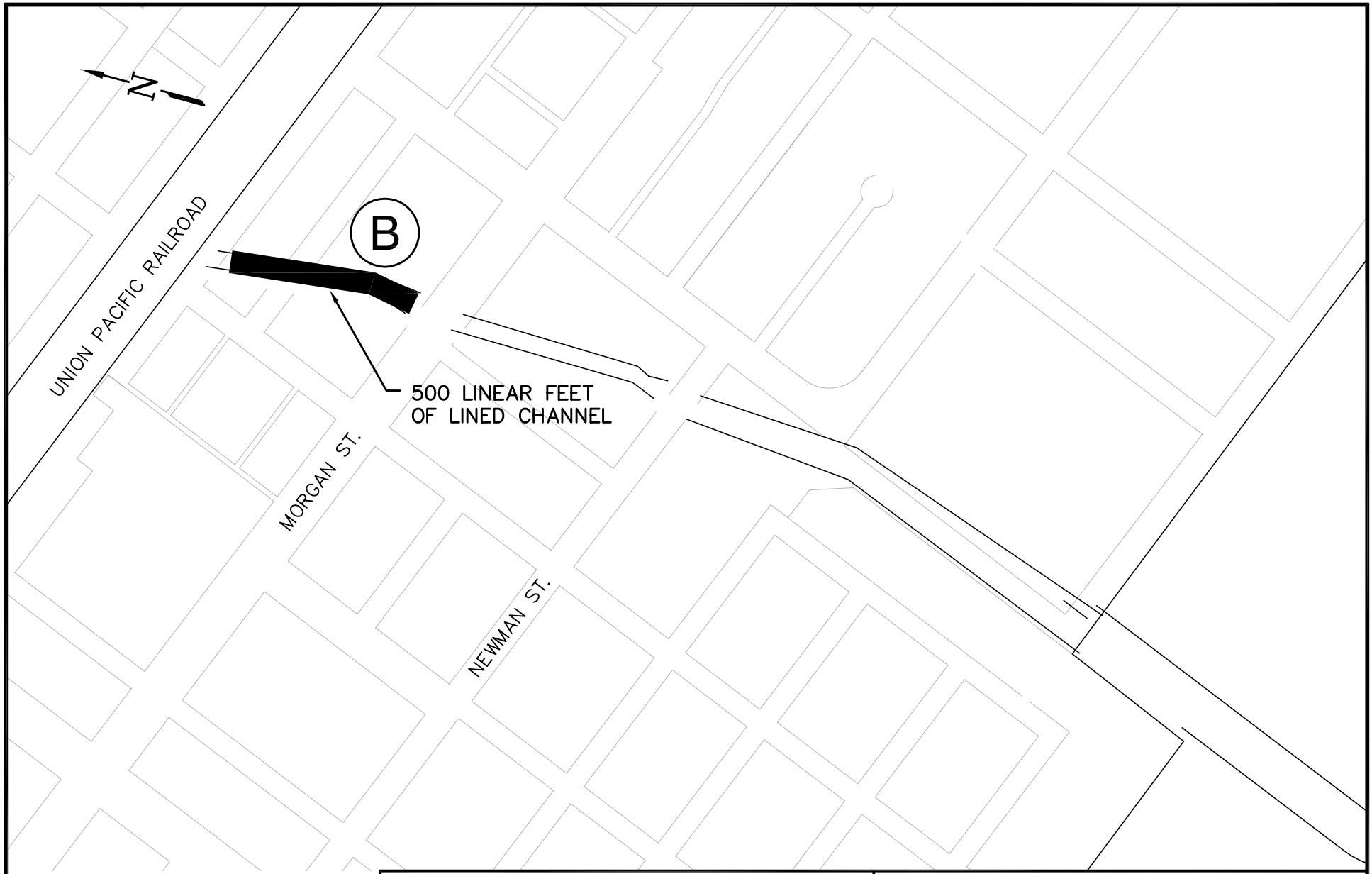
FIGURE 2-1



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TITLE B: VALLEY STREET IMPROVEMENTS

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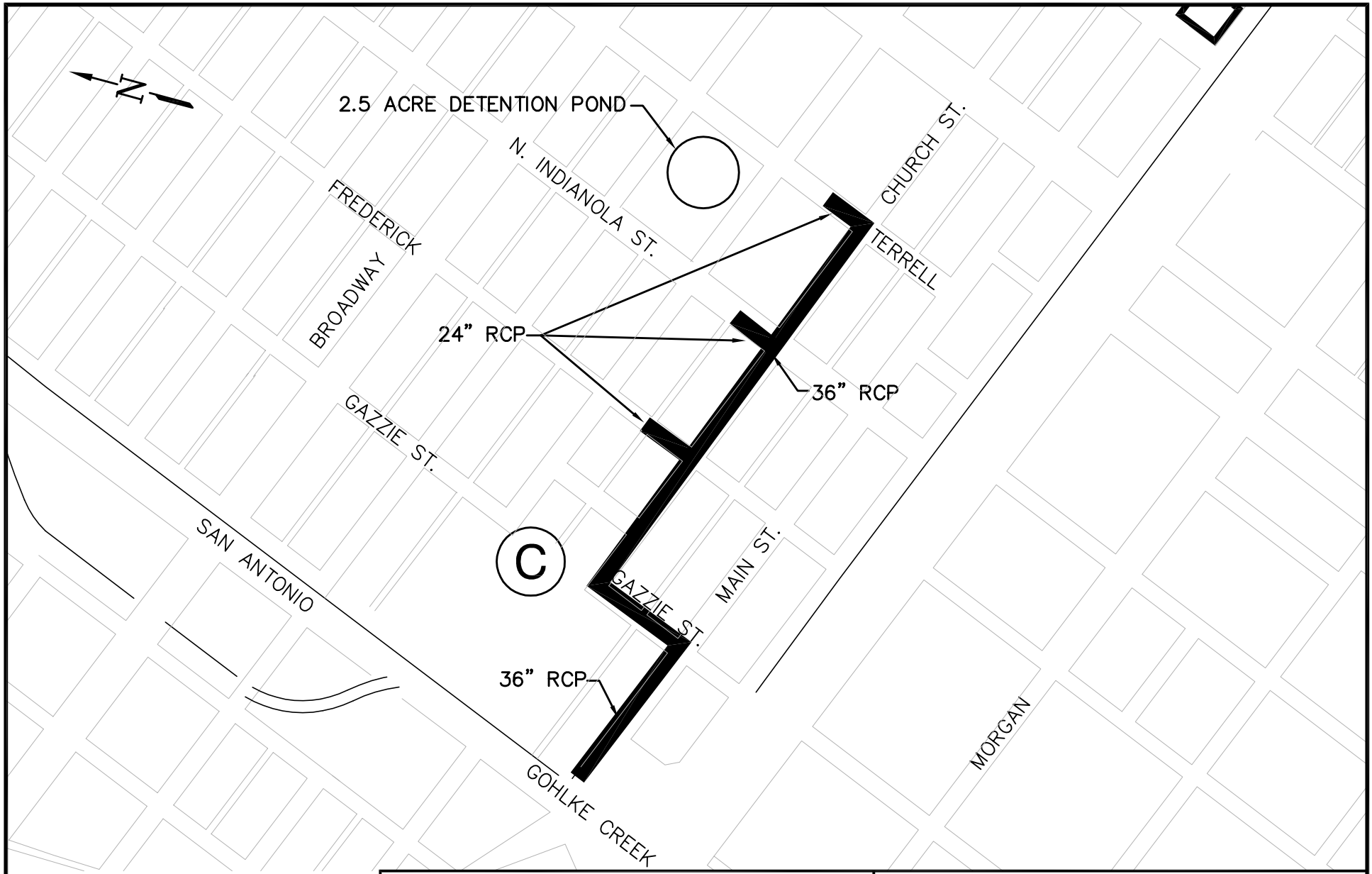
FIGURE 2-2



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TITLE C: CHURCH STREET IMPROVEMENTS

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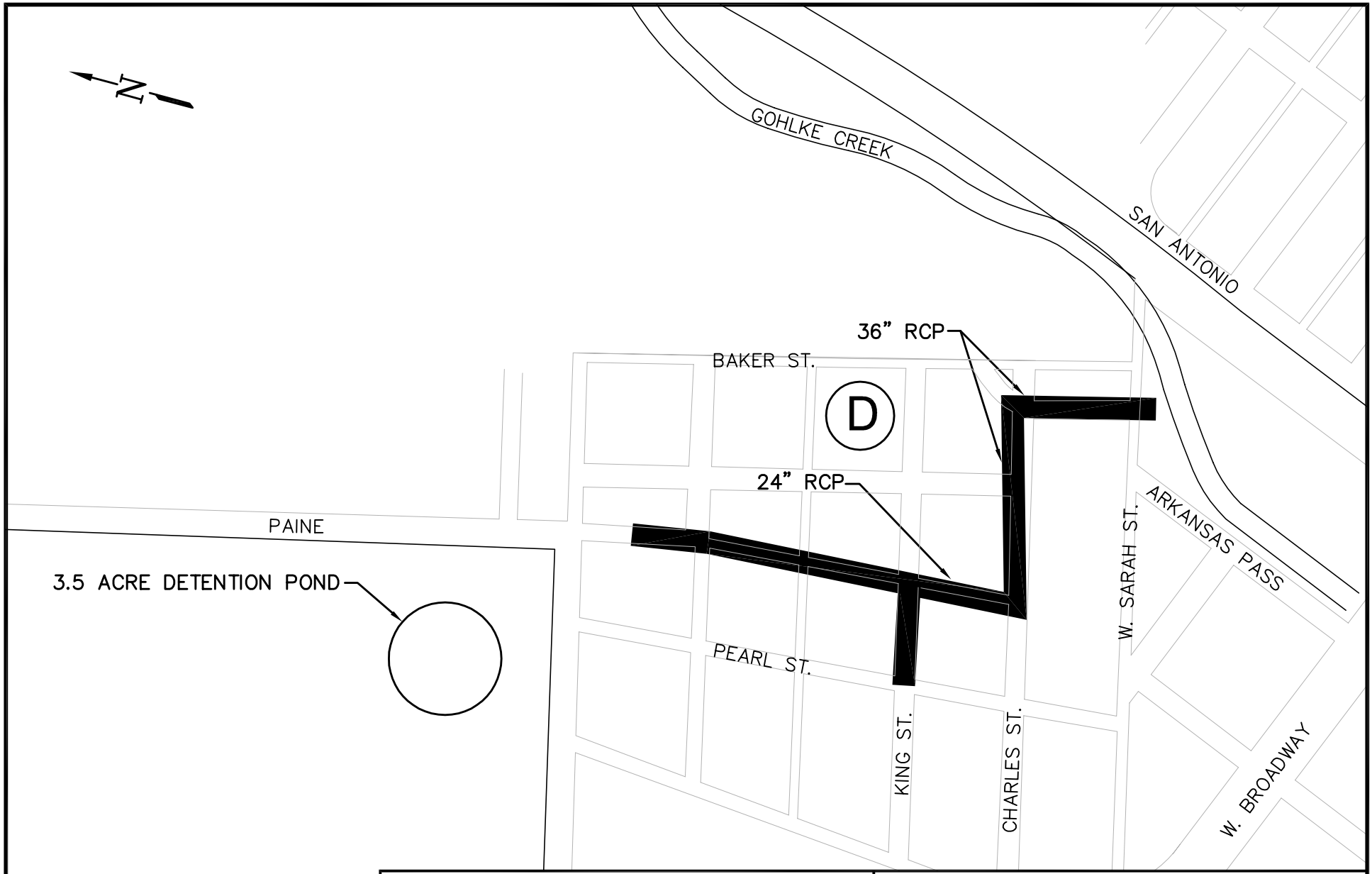
FIGURE 2-3



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TITLE D: PAINE STREET IMPROVEMENTS

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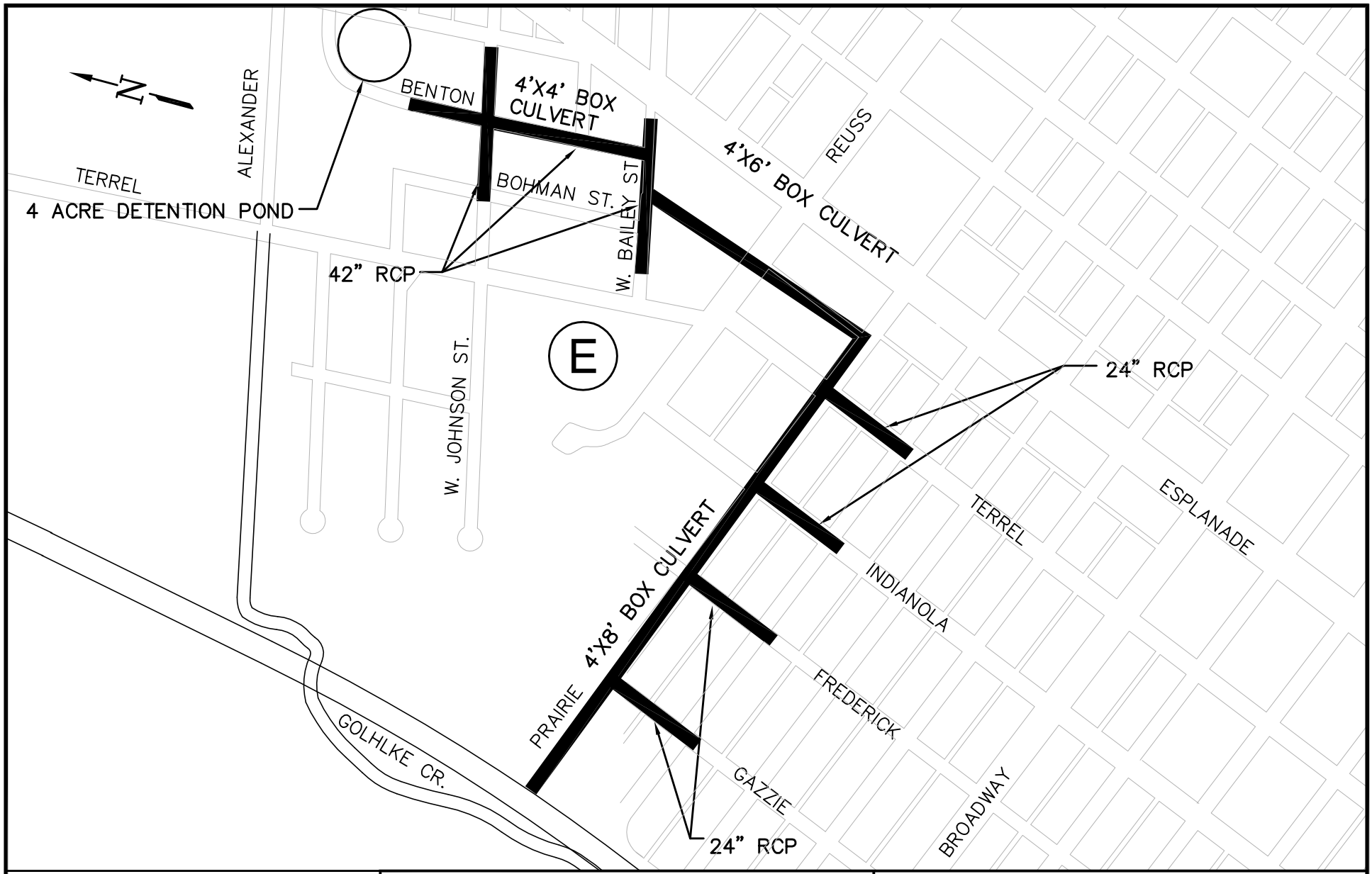
FIGURE 2-4



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TITLE E: PRAIRIE STREET IMPROVEMENTS

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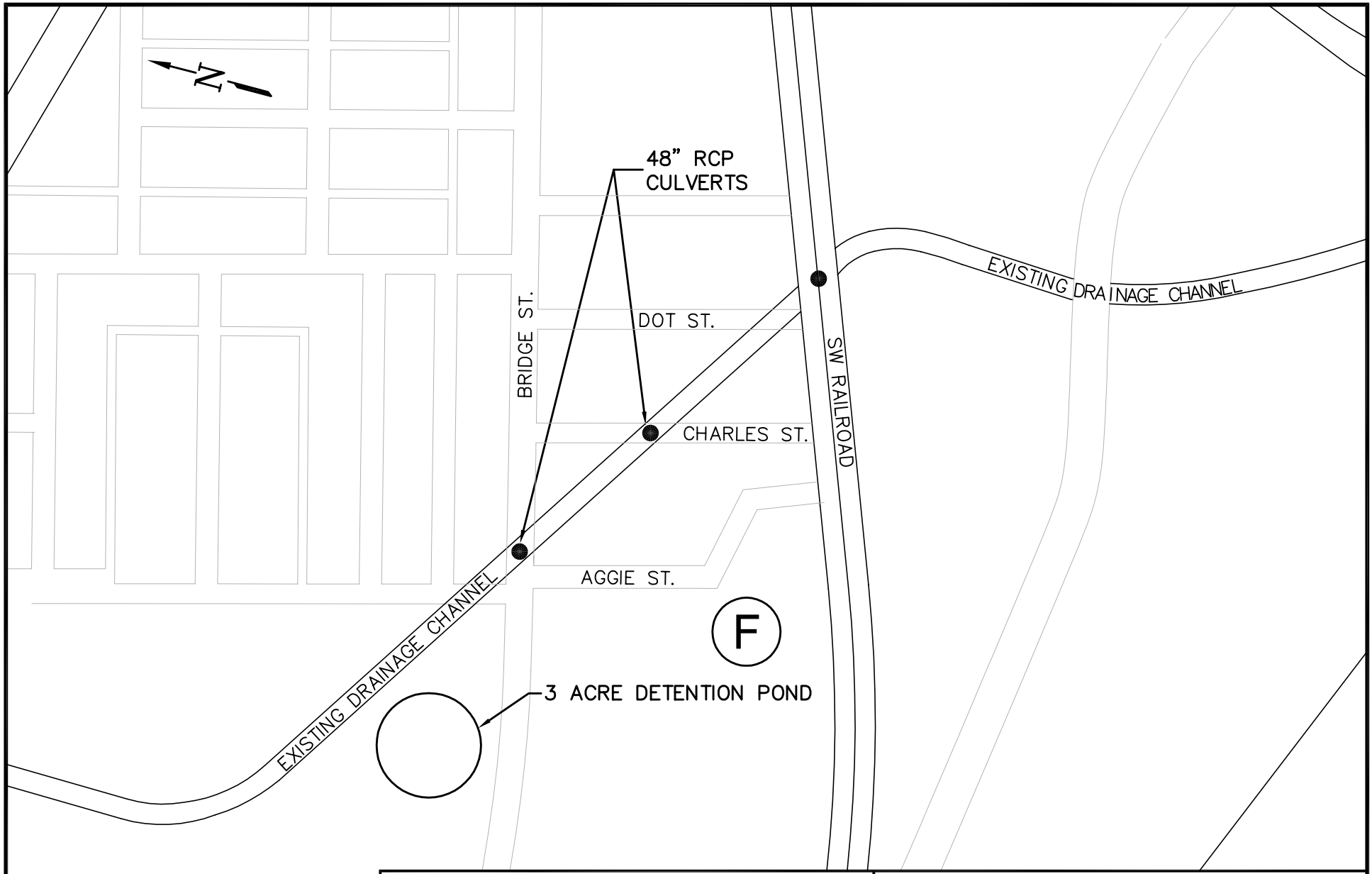
FIGURE 2-5



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TITLE F: BRIDGE STREET IMPROVEMENTS

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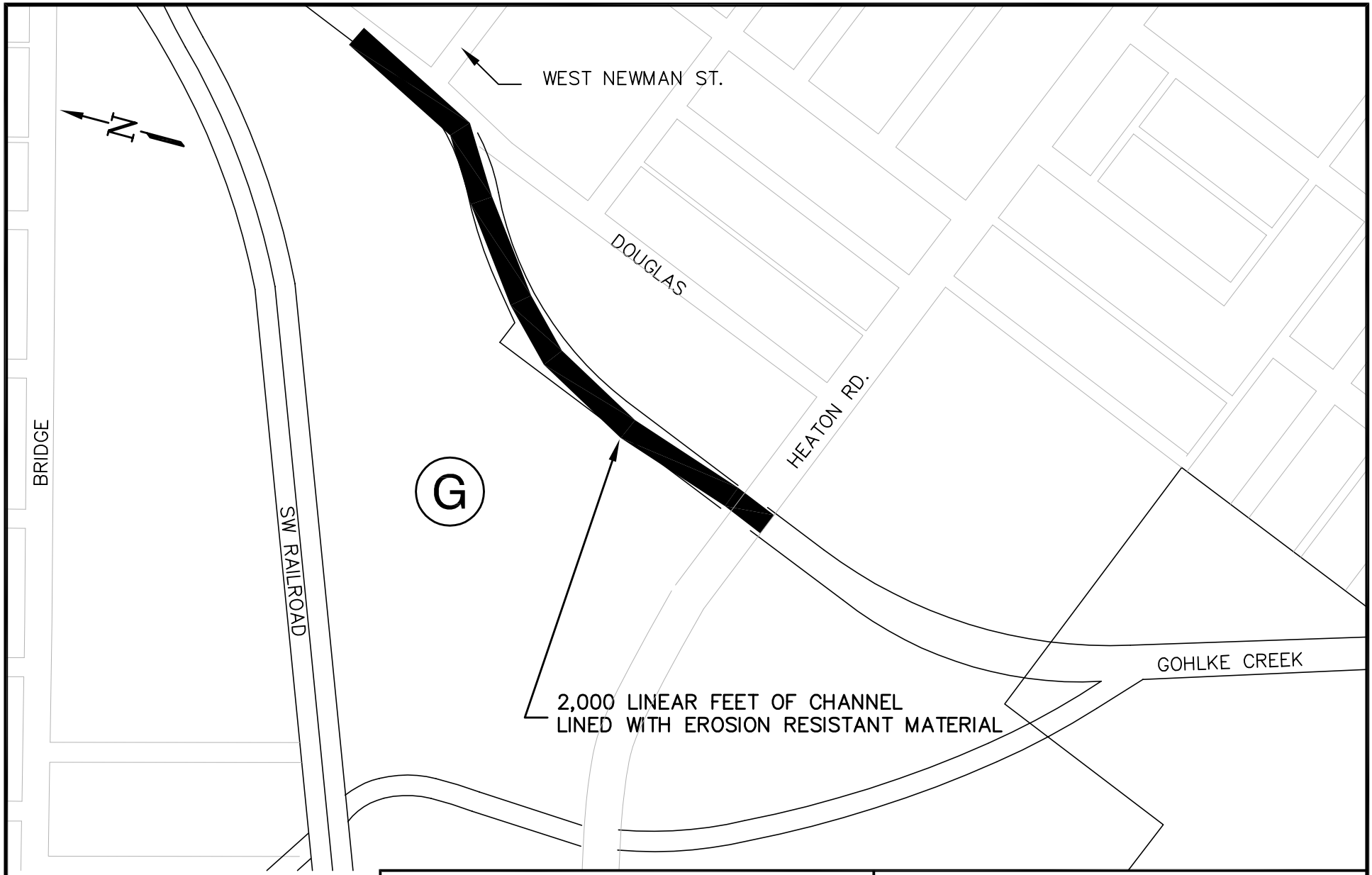
FIGURE 2-6



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TITLE G: OIL MILL DITCH IMROVEMENTS

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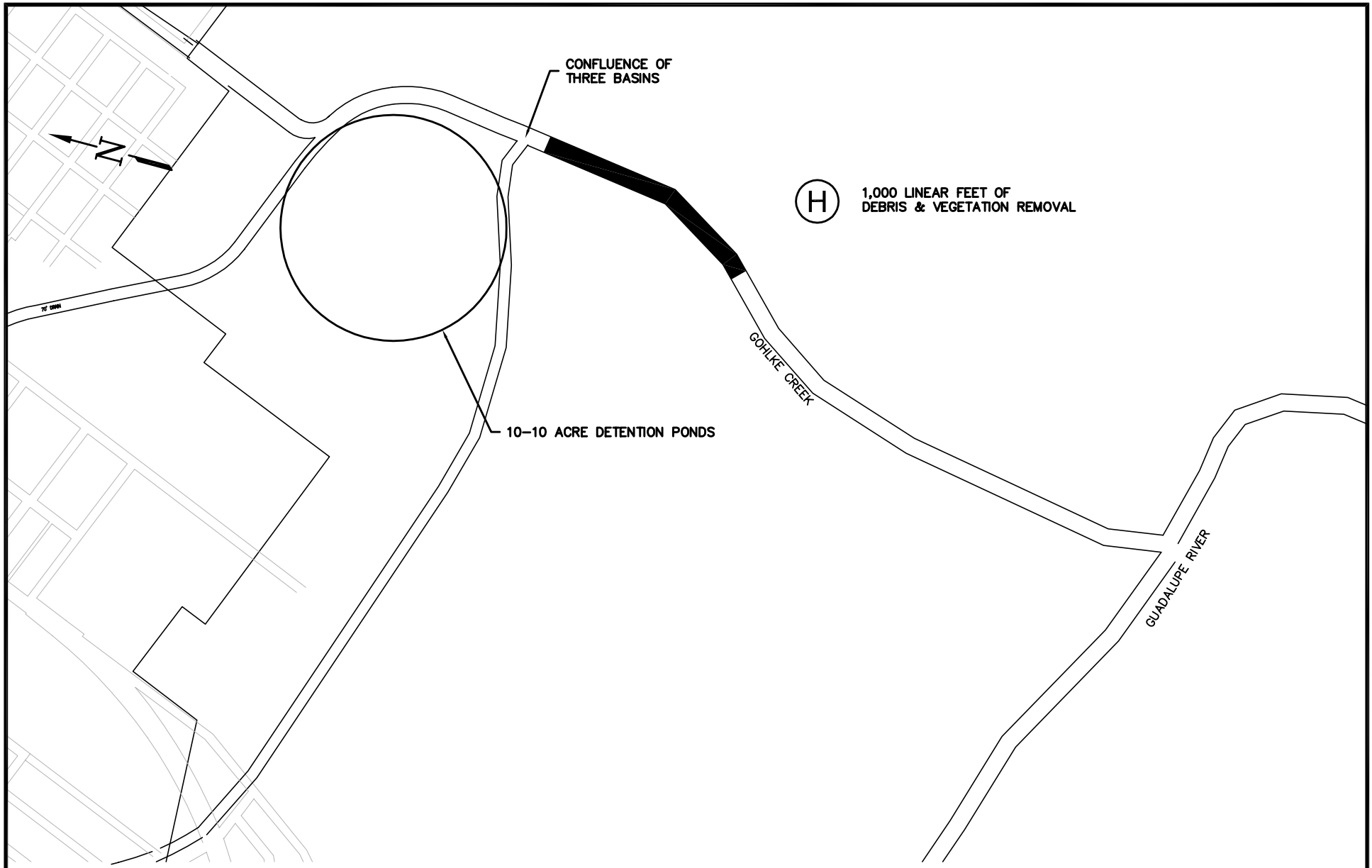
PROJ NO 89FEMA4065.00

FIGURE 2-7



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TITLE H: GOHLKE CREEK IMPROVEMENTS

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PROJ NO 89FEMA4065.00

FIGURE 2–8

3.1 PHYSICAL ENVIRONMENT

3.1.1 Geology, Seismicity, and Soils

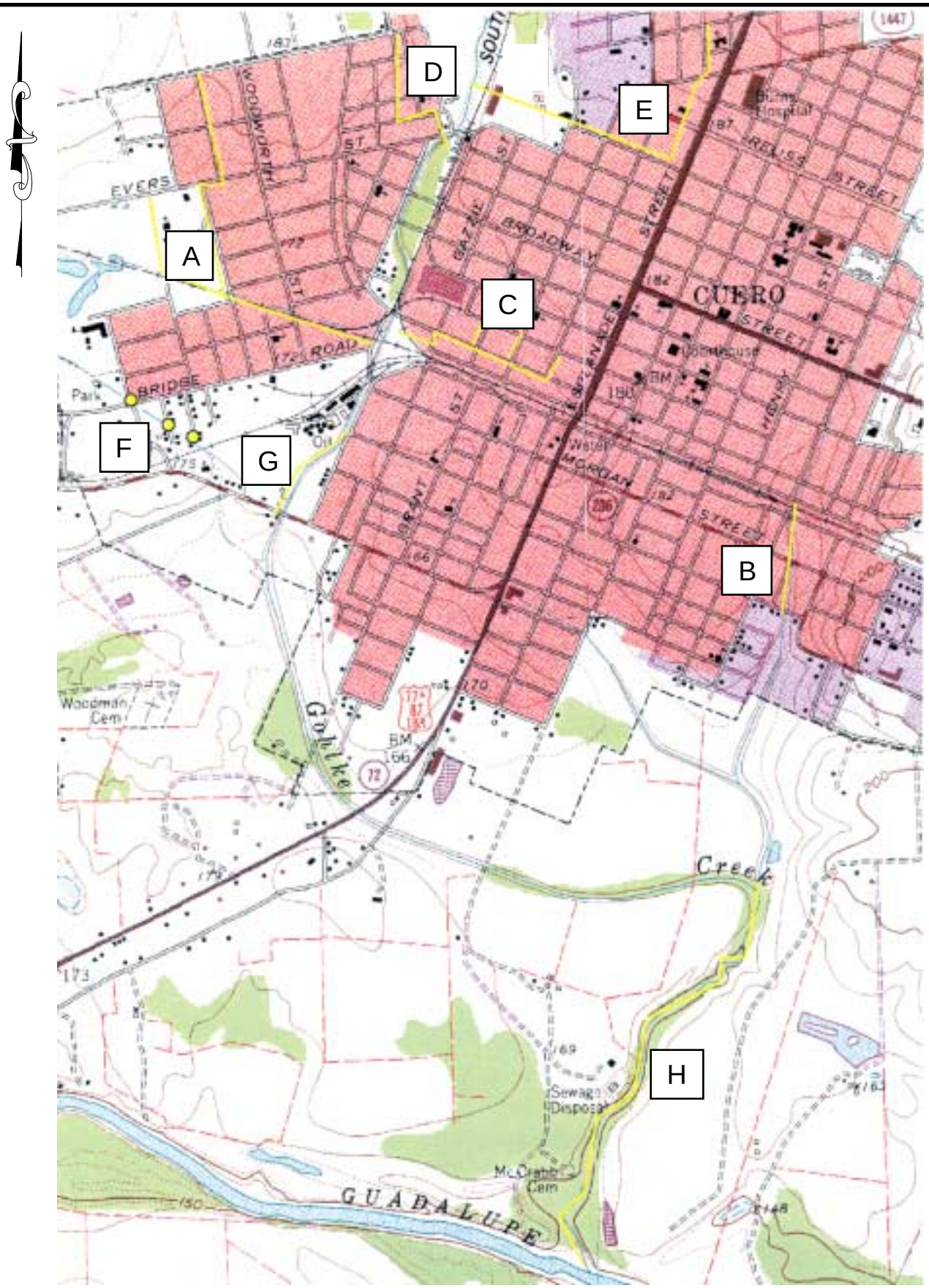
Cuero is located within the Blackland Prairie physiographic region southeast of the Reynosa Escarpment. Mapping by the American Association of Petroleum Geologists (AAPG) indicates that several hundred feet of surficial deposits belonging to the Beaumont-Montgomery-Bently Formation underlie the region. The formation consists of sandstone and shale that was deposited during the Pleistocene age. More than 10,000 feet of Tertiary-aged sandstone and shale of various formations underlie these deposits as they form the northern limb of the Gulf Coast Geosyncline (AAPG, 1973).

Cuero is relatively flat, ranging between approximately 180 feet above National Geodetic Vertical Datum (NGVD) north and northeast of Cuero, to approximately 160 feet NGVD in the low-lying drainages south of the city (Figure 3). In general, Cuero slopes from north to south. On the north side of Cuero, near the peak elevations within the city limits, maximum slopes are between 2 percent and 4 percent. Most of the central part of Cuero is flatter, exhibiting slopes of approximately 0.6 percent. Citywide, the average slope from the highest to lowest points is approximately 1 percent. The Guadalupe River, as it runs closest to Cuero, is approximately 140 feet NGVD.

The primary seismic feature in the region is the Balcones Fault Zone, which is approximately 60 miles northwest of Cuero at its closest point (AAPG, 1973). Cuero is in an area classified as Zone 1 for seismic risk hazard (USGS, 2001). This designation means there has been some history of seismic activity, but there is a low risk of damage occurring from a seismic event. The last seismic event in the area occurred in 1991 and measured 3.6 on the Richter scale. The epicenter was 50 miles west of Cuero in Falls City, Texas (University of Texas, 2001). The proposed project does not involve the construction of a human-occupied building; therefore, Executive Order (EO) 12699, Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction, does not apply.

The proposed project locations are within the Guadalupe River Basin. Soils in this basin are comprised of clay loams, Bosque and Seguin soils, Houston Black soils, Cuero soils, and Mountainburg-Urban land complex within the city limits. These soils are very deep and moderately well-drained, but exhibit very slow permeability. Consequently, runoff is common in places with steep-sloped topography and the erosion potential of the soils is high (USDA, 1977).

The Farmland Protection Policy Act (FPPA) (PL 97-98, Sec. 1539-1549; 7 USC 4201, et seq.), which states that Federal agencies must “minimize the extent to which Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses,” was considered in this EA. On March 22, 2002 and July 13, 2004, letters were sent to the Natural Resources Conservation Service (NRCS) to request a determination on how the proposed project would impact farmland covered under the FPPA (Appendix B). The City of Cuero and URS Group, Inc., (URS) staff completed an AD-1006 form, which helps NRCS determine impacts (Appendix B). In a reply letter dated July 27, 2004, NRCS stated that both Alternatives 2 and 3 would be in compliance with the FPPA. Project locations A through G are located in an area considered “already converted” under the FPPA regulation. Project location H does contain prime and



CLIENT FEMA				TITLE **USGS Topographic Map**
PROJ City of Cuero, Drainage Improvements				
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SCALE NOT TO SCALE	DR BY	DK	8-29-01	PROJ NO 89-FEMA4065
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unique farmland, but since both Alternatives 2 and 3 were rated below the threshold score of 160 on the AD-1006 form, they comply with the FPPA (Appendix B). No further consideration is required under the FPPA.

Alternative 1 – No Action Alternative

Under the No Action Alternative, the geology, topography, and soils at the project locations would not be affected due to construction. However, soils in the lower reaches of Gohlke Creek and along Project Locations B and G would continue to erode with subsequent flooding.

Continued erosion would alter the topography along Gohlke Creek and contribute to sedimentation of the Guadalupe River.

Alternative 2 – Eight Internal Drainage Improvements (Proposed Action)

The Proposed Action is not anticipated to result in any permanent adverse impacts to geology, topography, or soils. Beneficial effects of the Proposed Action include decreased erosion and the retention of soils along Gohlke Creek and its tributaries. No prime farmland would be disturbed or lost under this alternative.

In their July 27, 2004 letter, NRCS stated that the Proposed Action was their preferred alternative because it would require fewer acres and would likely be less costly (Appendix B).

Under the Proposed Action, Projects A and C through F would disturb and compact urban soils as trenches are excavated to install RCPs and box culvert storm sewers. Many of these soils have been previously disturbed during the construction of past drainage and transportation improvements. No long-term effects to geology, seismicity, or soils are anticipated.

Projects A and B combined would cover approximately 2 acres of previously disturbed soils with concrete. Lining the existing channels with concrete would prevent the erosion of soils, which occurs during periods of heavy rains. No excavation would occur and minor grading would return the topography to near-original condition. Although these effects would be permanent, the loss of soil resources is considered negligible. The erosion potential of the channel would be decreased, creating a long-term beneficial effect.

For each portion of the Proposed Action, the use of construction equipment and ground disturbing phases of the project have the potential to cause temporary soil erosion. If project activities include the stockpiling of soil or fill on site, the project applicant would cover these soils to help prevent fugitive dust and soil erosion. The project applicant would use silt fencing and hay bales during construction activities to reduce soil erosion and would stage construction equipment in existing developed areas, such as paved parking lots. Bare soils would be revegetated with native grasses after construction to prevent future soil erosion. The applicant proposes to use all excavated soils in the proposed city-funded amphitheater at the City Park.

Alternative 3 – Construction of 16 Detention Ponds and Internal Drainage Improvements

Alternative 3 would involve the installation of approximately 2 acres of erosion matting and the construction of 16 detention ponds within Cuero city limits and its ETJ.

Project A, construction of two 6-acre detention ponds, would require the excavation of approximately 48,000 cubic yards of relatively undisturbed soils. The detention ponds would be excavated to an average depth of less then 2.5 feet, altering the topography of the site slightly.

Projects B and G would require the excavation of topsoil along the improved channel walls to a depth of 3 to 4 inches. An erosion mat would be placed on top of the newly exposed soils, covered with the excavated topsoil, and seeded with native grasses. Short-term impacts could include loss of soils to erosion during construction activities. Beneficial long-term impacts include the retention of soils due to decreased erosion. The topography would remain unchanged.

Project C, construction of a 2.5-acre detention pond, would require the excavation of approximately 20,000 cubic yards of previously disturbed soils. The detention pond would be excavated to an average depth of approximately 4.5 feet, slightly altering the topography of the site.

Project D, construction of a 3.5-acre detention pond, would require the excavation of approximately 28,000 cubic yards of relatively undisturbed soils. The detention pond would be excavated to an average depth of approximately 4.5 feet, slightly altering the topography of the site.

Project E, construction of a 4-acre detention pond, would require the excavation of approximately 24,000 cubic yards of previously disturbed soils. The detention pond would be excavated to an average depth of approximately 4.5 feet and would alter the topography of the site.

Project F, construction of a 3-acre detention pond, would require the excavation of approximately 24,000 cubic yards of previously disturbed soils. The detention pond would be excavated to an average depth of approximately 4.5 feet and would alter the topography of the site.

For Projects A and C through F, previously disturbed or relatively undisturbed urban soils would be removed from the site. Although the newly exposed soils would be less developed then the overlying soils, no long-term adverse impacts to soils are anticipated. Short-term erosion of soils during pond construction would be minimal due to the shape and contour of the ponds. Eroded soils would be retained within the ponds. Slightly altering the topography at these sites is not anticipated to have any long-term or short-term impacts.

Project H, construction of ten 10-acre detention ponds, would require the excavation of approximately 800,000 cubic yards of soils currently managed for cattle grazing. The detention ponds would be excavated to an average depth of approximately 4.5 feet. No long-term adverse impacts to the soils are anticipated. Erosion of the soils in the short-term would be minimal. Slightly altering the topography at this site is not anticipated to have any long-term or short-term impacts.

For each part of the project, the use of construction equipment and ground-disturbing phases of the project have the potential to cause temporary soil erosion. If project activities include the stockpiling of soil or fill on site, the project applicant would cover these soils to help prevent fugitive dust and soil erosion. The project applicant would use silt fencing and hay bales during construction activities to reduce soil erosion and would stage construction equipment in existing developed areas, such as paved parking lots. Bare soils would be revegetated with native

vegetation after construction to prevent future soil erosion. The applicant proposes to use all excavated soils in the proposed city-funded amphitheater at the City Park.

3.1.2 Water Resources and Water Quality

The City of Cuero supplies its residents with drinking water from municipal wells located throughout Cuero that can be supplemented from the semi-consolidated sand aquifers of the Coastal Lowland System. Average consumption is 1.2 million gallons per day (mgd), with a supply capacity rating of 3.9 mgd.

The City of Cuero discharges its sanitary wastewater to the Guadalupe River via the Gohlke Creek Wastewater Treatment Plant (GCWWTP), as permitted by the Guadalupe-Blanco River Authority (GBRA). It is an active treatment system capable of processing 1.5 mgd, although it currently averages 0.5 mgd (LCRA, 2001). The GCWWTP is located south of Cuero, approximately halfway between the Valley Street Basin confluence with Gohlke Creek and the Gohlke Creek confluence with the Guadalupe River. The City of Cuero discharges its stormwater directly, without treatment, to Gohlke Creek and its tributaries.

Cuero's drainage system is divided into three basins. Encompassing the entire western half of Cuero is the Gohlke Creek Basin. The Gohlke Creek Basin comprises 1,284 acres east and west of Gohlke Creek as it bisects the western half of Cuero. Encompassing the eastern part of Cuero is the Valley Street Basin. This basin comprises approximately 750 acres and drains to an unnamed tributary of Gohlke Creek. The tributary confluence with Gohlke Creek is approximately 1,000 feet south of Cuero city limits. Dividing the Gohlke Creek and Valley Street Basins is the Gonzales Street Basin. This Basin runs in a narrow ribbon northeast to southwest and combines with the Valley Street Basin approximately 1,500 feet upstream of the confluence with Gohlke Creek. The Gonzales Street Basin comprises approximately 240 acres (Figure 2).

Gohlke Creek is an intermittent stream originating approximately 8,000 feet north of Cuero (USGS, 1987). It is not recognized as a stream by the United States Environmental Protection Agency (EPA) watershed mapping program (EPA, 2001). Gohlke Creek runs through town mostly as a concrete-lined or improved channel drainage. The only part of Gohlke Creek that regularly contains water is downstream of the GCWWTP discharge. Based on the average amount of wastewater treated by Cuero, and discounting stormwater runoff, Gohlke Creek is estimated to contribute approximately 0.75 cubic feet per second (cfs) to the Guadalupe River.

The Guadalupe River receives the effluence of Gohlke Creek approximately 1 mile south of Cuero and is part of the Lower Guadalupe watershed. The watershed comprises approximately 1,044 square miles and is characterized as more than 50 percent urban/agriculture and less than 25 percent forested. The Lower Guadalupe is recognized by the EPA as having "less serious problems with a low vulnerability to future decline due to potential pollutants and stressors that could occur within the watershed" (EPA, 2001).

The Guadalupe River at Cuero drains approximately 4,937 square miles, including drainage from the Middle and Upper Guadalupe watersheds and the Lower and Upper San Antonio watersheds. At a gauge height of 5.18 feet, the river discharge is 897 cfs (USGS, 2001). Daily mean stream flow throughout most of the year 2000 was below 1,000 cfs. The peak for that year was in June at just less than 7,000 cfs (USGS, 2001). On October 20, 1998, stream flow was 473,000 cfs at a

gauge height of 50.35 feet, an estimated three to four times greater than the 100-year peak discharge (USGS, 2000).

Alternative 1 – No Action Alternative

Under this alternative, no action would be taken to modify stormwater flow in the City of Cuero or Gohlke Creek. Sediment from the unlined channels and the lower reaches of Gohlke Creek would continue to be transported into the Guadalupe River after periods of heavy rain.

Alternative 2 – Eight Internal Drainage Improvements (Proposed Action)

Improving internal drainage to Gohlke Creek and its tributaries would increase conveyance of stormwater to the creek for all events between the current capacity of the drainage and the 25-year storm for which the Proposed Action is designed. For events greater than the 25-year event, the capacity of the improved drainage system would be exceeded. For events less than the current capacity of the internal drainage, there would be no change to the drainage patterns that already exist. Increasing conveyance of stormwater to the Guadalupe River would not affect the water supply of Cuero, which is drawn from deep aquifers.

For Projects A and B, lining earthen channels with concrete would increase velocity and volume of stormwater conveyance. In a letter from the Texas Parks and Wildlife Department (TPWD) dated September 12, 2001, the agency recommended the installation of energy dissipaters to minimize potential damage to receiving channels (Appendix B). These projects would result in long-term beneficial impacts as sedimentation in downstream waters would be reduced after replacing erodible earthen banks in Cuero with concrete lining.

Project H would result in a beneficial impact to Gohlke Creek and the Guadalupe River. The removal of debris and limited removal of vegetation would preclude obstruction of flows and restore more natural stream characteristics to the creek. The removal of vegetation could cause some minor soil erosion, but this would be minimized by not disturbing the creek channel below the normal high water mark and by selectively removing only limited amounts of vegetation.

Overall, the Proposed Action would have a beneficial impact on water resources and water quality by decreasing sediment loads to Gohlke Creek and the Guadalupe River after periods of heavy rain. Although sedimentation and associated pollutants may enter stormwater discharge pathways as soils are disturbed during the construction process, implementation of soil erosion mitigation measures identified in Section 3.1.1 (Geology, Seismicity, and Soils) would minimize that potential.

In compliance with the Clean Water Act (CWA) (33 USC 1251 et seq.), the U.S. Army Corps of Engineers (USACE) was formally consulted regarding the Proposed Action. In a letter dated June 1, 2004, the USACE stated that proposed Projects A, C, D, and E would not occur in jurisdictional waters subject to Section 404 of the CWA and would, therefore, not require a USACE Section 404 permit. Proposed Projects B and F would be authorized under the USACE Nationwide Permit 3, which provides for the repair, rehabilitation, and replacement of serviceable structures. Proposed Project G would likely be authorized under USACE Nationwide Permit 13, which covers bank stabilization activities, or Nationwide Permit 31, which covers maintenance of existing flood control structures. Projects over 500 linear feet that are authorized under Nationwide Permit 13 are subject to pre-construction notification (PCN) procedures and

mitigation requirements. Projects authorized under Nationwide Permit 31 are also subject to PCN procedures, as well as the requirement to establish a "maintenance baseline." Project H would not require a USACE permit if no dredged or fill material would be discharged to Gohlke Creek or adjacent wetlands. For all projects authorized under a Nationwide Permit, the applicant would comply with the USACE Nationwide Permit General Conditions (Appendix E) and the Texas Commission on Environmental Quality's (TCEQ, formerly known as the Texas Natural Resource Conservation Commission [TNRCC]) best management practice (BMP) guidelines for Nationwide Permits. As stated in a July 21, 2004, letter from TCEQ, all construction activity must also be in compliance with TCEQ General Permit Number TXR150000 relating to discharges from construction (Appendix B).

The Edwards Aquifer would not experience any adverse effects as a result of the Proposed Action, and no permits related to the aquifer would be required (Mauser, pers. comm.).

Alternative 3 – Construction of 16 Detention Ponds and Internal Drainage Improvements

Alternative 3 would have similar short-term impacts to water resources in the project area. Additional land would be disturbed under this alternative, however, increasing the risk of erosion and sedimentation of Gohlke Creek, its tributaries, and the Guadalupe River. Installing silt fencing and hay bales around the stockpiles and detention ponds during and following construction would help minimize these impacts. Following construction, project areas would be reseeded using native vegetation. In accordance with the CWA and the Texas Clean Water Code, a National Pollutant Discharge Elimination System (NPDES) permit is required for construction activities disturbing more than 5 acres. A NPDES permit would be required because Project H would disturb 126 acres of land.

None of the Alternative 3 projects would impact jurisdictional waters of the United States; therefore, no Section 404 permits would be required from USACE.

As stated in a July 21, 2004, letter from TCEQ, all construction activity must be in compliance with TCEQ General Permit Number TXR150000 relating to discharges from construction (Appendix B).

The Edwards Aquifer would not experience any adverse effects as the result of Alternative 3, and no permits related to the aquifer would be required (Mauser, pers. comm.).

3.1.3 Floodplain Management (Executive Order 11988)

Floodplains generally refer to 100-year floodplains as designated by FEMA. They are shown on Flood Insurance Rate Maps (FIRMs) or Flood Hazard Boundary Maps for all communities that participate in the National Flood Insurance Program (NFIP).

The 100-year floodplain designates the area inundated during a storm having a 1-percent chance of occurring in any given year. FEMA also identifies the 500-year floodplain, which designates the area inundated during a storm having a 0.2-percent chance of occurring in any given year.

EO 11988, Floodplain Management, requires Federal agencies to minimize occupancy and modification to the floodplain. Specifically, EO 11988 prohibits Federal agencies from funding construction in the 100-year floodplain unless there are no practicable alternatives. FEMA regulations for complying with EO 11988 are promulgated in 44 CFR Part 9. FEMA applies the

Eight-Step Planning Process as required by regulation to meet the requirements of EO 11988. A step-by-step analysis of the Eight-Step Planning Process, as applied to this EA, is included in Appendix A.

The City of Cuero participates in the NFIP. According to FIRM Community Panel Number 480196 0002 B, effective date August 3, 1981, most of the proposed project area is located within the regulated 100-year floodplain (FEMA, 1981) (Figure 4). The location of the Proposed Action and Alternative 3 in the 100-year floodplain is essential to meet the purpose and need stated in Section 2.0. Project improvements located in the 100-year floodplain are designed to accommodate the 25-year storm. Any storm of greater magnitude would exceed the capacity of the improvements and inundate the existing floodplain. Activities associated with the No Action Alternative, Proposed Action, and Alternative 3 are not expected to increase downstream flooding or otherwise affect the regulated floodplain; therefore, the alternatives comply with EO 11988.

3.1.4 Air Quality

The Clean Air Act (CAA), as amended, requires the EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The CAA established two types of national air quality standards. Primary standards set limits to protect public health, including the health of “sensitive” populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

The EPA Office of Air Quality Planning and Standards has set NAAQS for six principal pollutants, which are called “criteria” pollutants. They include: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), lead, particulate matter less than 10 micrometers in diameter (PM_{10}) and less than 2.5 micrometers in diameter ($PM_{2.5}$), and sulfur dioxide. DeWitt County and the City of Cuero are in attainment for all six criteria pollutants monitored by the EPA (EPA, 2004).

Alternative 1 – No Action Alternative

Under the No Action Alternative, there would be no effect to the current air quality in Cuero.

Alternative 2 – Eight Internal Drainage Improvements (Proposed Action)

The construction activities that would occur under the Proposed Action would be a source of fugitive dust emissions that may have temporary impacts on local air quality. Emissions during construction would be associated with ground-excavation and earth-moving activities. In order to reduce temporary impacts to air quality from dust, the applicant would be required to water down construction areas when necessary.

CLIENT	FEMA			
PROJ	City of Cuero, TX Drainage Improvements			
REVISION NO		DES BY		
SCALE	NOT TO SCALE	DR BY	BR	8/03/04
FILE	P:\GTB\89-FEMA4065\Rpts\Draft\Cuero\Draft\EA\Figs\Fig4.PPT	CHK BY	KC	8/03/04

TITLE **FLOOD INSURANCE RATE MAP**

URS

PROJ NO 89-FEMA4065

FIGURE **4**

Emissions from fuel-burning internal combustion engines (e.g., heavy equipment and earth-moving machinery) could temporarily increase the levels of some of the criteria pollutants, including CO, NO_2, PM_{10}, and $PM_{2.5}$. Volatile organic compounds (VOCs), a product of combustion, would also be emitted, potentially elevating local O_3 levels. These increases would be temporary. In order to reduce the emission of pollutants, fuel-burning equipment running times would be kept to a minimum and engines would be properly maintained. No long-term impacts to air quality are anticipated as a result of the Proposed Action.

Alternative 3 – Construction of 16 Detention Ponds and Internal Drainage Improvements

The construction activities that would occur under Alternative 3 are a potential source of fugitive dust emissions that may have temporary impacts on local air quality. To reduce temporary impacts on air quality from dust, the applicant would be required to water down construction areas when necessary. Alternative 3 is larger in scope than the Proposed Action; therefore, it is anticipated that construction equipment would be in use for a longer period of time and may result in more significant, though still temporary, impacts.. Increased pollutants may include CO, NO_2, PM_{10}, and $PM_{2.5}$. VOCs would also be emitted, potentially elevating local O_3 levels. To reduce the emission of pollutants, fuel-burning equipment running times would be kept to a minimum and engines would be properly maintained. No long-term impacts to air quality are anticipated as a result of Alternative 3.

3.2 BIOLOGICAL ENVIRONMENT

3.2.1 Terrestrial and Aquatic Environment

Cuero is located within the Gulf Coast Prairies and Marshes physiognomic region of Texas at its inland extreme near the habitat transition to the Blackland Prairie physiognomic region (TPWD, 2001). A physiognomic region is a classification for vegetation and animal habitat types. Vegetation and wildlife common to both regions may be found near Cuero.

A field reconnaissance survey of the proposed project area was conducted on August 10, 2001. Within Cuero itself, the vegetated terrestrial environment has been disturbed and replaced with a relatively mature urban habitat. Noted varieties of overstory vegetation include mesquite (*Prosopis pubescens*), hackberry (*Celtis occidentalis*), post oak (*Quercus stellata*), and blackjack oak (*Quercus marilandica*). Noted varieties of understory vegetation include horse nettle (*Solanum carolinense*), giant ragweed (*Ambrosia trifida)*, poison ivy (*Toxiodendron radicans*), and a variety of cultivar and native grasses. Urban habitats in this part of Texas support mammals such as raccoon (*Procyon lofor*), opossum (*Didelphis virginiana*), and a variety of squirrel species. Common birds include cardinal (*Cardinalis cardinalis*), chickadee (*Parus* spp.), wren (*Thryothorus ludovicianus*), grackle (*Quiscalus* spp.), and a variety of dove and sparrow species.

The lower reaches of Gohlke Creek are located outside the city limits of Cuero. The creek is surrounded on the east and west by large tracts of land managed for agriculture and cattle. A riparian corridor buffers the creek bed from the farmland. The corridor is approximately 50 to 100 feet wide on each side of the creek near the confluence with the Valley Street Basin and several hundred feet wide near the confluence with the Guadalupe River. This is important

habitat for species such as deer, turkey, and quail, which will seek cover in the corridor and feed from adjacent farmlands.

The Project H site contains a greater diversity of vegetation. Bushy stands of the dwarf shrub sea-ox-eye (*Borrichia frutescens*), along with grasses and sedges such as Johnson grass (*Sorghum halepense*), giant ragweed, and Bermuda grass (*Cynodon dactylon*), were found throughout the site. Dominant hardwoods in the area include hackberry and mesquite, with stands of live oak (*Quercus virginiana*), post oak, pecan (*Carya illinoenss*), cottonwood (*Populus deltoides*), American elm (*Ulmus americana*), cypress (*Cupressus sempervirens*), willow (*Salix* spp.), and sycamore (*Platanus occidentalis)*. The surrounding agriculture fields and native stands of vegetation provide forage and shelter for deer (*Odocoileus virginiana*), armadillo (*Dasypus novemcinctus*), turkey (*Meleagris gallopavo*), and various species of dove and quail.

The Migratory Bird Treaty Act (MBTA) prohibits the take, possession, import, export, transport, sale, purchase, barter, or offering for sale, purchase or barter, of any migratory bird, their eggs, parts, or nests, except as authorized under a valid permit (50 CFR 21.11). A migratory bird is defined as any species or family of birds that live, reproduce, or migrate within or across international borders at some point during their annual life cycle. A number of migratory birds, such as hummingbird species, duck species, painted bunting (*Passerina cris*), great blue heron (*Ardea herodias*), great white egret (*Casmerodius albus*), and crane (*Grus* spp.), can be found in and around the project area (Klein, pers. comm.). The U.S. Fish and Wildlife Service (USFWS) was consulted on the MBTA in a letter dated August 21, 2001. In response letters dated November 11, 2001, and April 2, 2002, the USFWS did not express concern over impacts to migratory birds or their habitat (Appendix B).

As stated in Section 3.1.2 (Water Resources and Water Quality), Gohlke Creek is an intermittent stream originating approximately 8,000 feet north of Cuero (USGS, 1987). Gohlke Creek runs through town mostly as a concrete-lined or improved channel drainage. The only part of Gohlke Creek that regularly contains water is downstream of the GCWWTP discharge. Several species of non-game fish may utilize this portion of Gohlke Creek during stages in their life cycle. Currently, there is not a sufficient amount of water within this portion of Gohlke Creek to sustain large or adult species of game fish. Adult species of these fish can be found in the Guadalupe River. Other aquatic species, such as macroinvertebrates, would exist permanently within the lower portion of Gohlke Creek and may temporarily populate small pools throughout Gohlke Creek during and after storm events. The city has plans to stop discharging treated wastewater into Gohlke Creek in the near future. This would return the lower portion of Gohlke Creek to an intermittent stream.

Alternative 1 - No Action Alternative

Under the No Action Alternative, no disturbance to the existing terrestrial or aquatic environment would occur due to construction. Inundation from flooding could continue to stress terrestrial habitat, potentially resulting in the loss of mature urban trees, sources of browse, and physical terrestrial habitat (i.e., soils). Adverse effects would only occur periodically. There would be no long-term effect to the terrestrial or aquatic environment.

Alternative 2 – Eight Internal Drainage Improvements (Proposed Action)

The proposed project area includes a variety of habitats. Projects A through G would occur within the developed city limits of Cuero. Overall, there would be a temporary impact to the larger urban terrestrial environment, as discussed in detail below.

Projects A and B would permanently line earthen channels with concrete. The loss of the mowed grass on the existing earthen banks would be a permanent, but minor impact given the highly disturbed habitat that currently exists within the improved channels and the availability of other suitable terrestrial habitat elsewhere in Cuero.

Project H would remove vegetation along approximately 1,000 linear feet of Gohlke Creek. Only limited amounts of vegetation would be removed to ensure that the benefits of the existing riparian corridor remain intact. Chainsaws and other types of low-impact equipment would be used to minimize the disturbance to the riparian corridor.

For the Proposed Action, some mature trees may be at risk during excavation activities if root mass is lost or damaged. The project applicant would install temporary fences around mature tree driplines to prevent the encroachment of personnel and construction equipment on root systems. The project applicant would revegetate bare soils with native grasses.

The Proposed Action would have a minor impact on wildlife in the project areas. Wildlife may be temporarily disturbed and displaced during construction activities.

The Proposed Action would not have a permanent negative impact on aquatic resources. Temporary impacts would be associated with rain events and would consist of a limited amount of sedimentation and deposition during construction activities. Mitigation measures outlined in Section 3.1.1 (Geology, Seismicity, and Soils) would reduce potential downstream effects to the aquatic environment. After rain events, Gohlke Creek and the Guadalupe River would return to normal.

Alternative 3 – Construction of 16 Detention Ponds and Internal Drainage Improvements

Alternative 3 would permanently disturb approximately 125 acres of terrestrial habitat. Currently, the habitat supported by this land is heavily influenced by human activities and limited to agricultural field, urban open space, and residential structures.

Projects A and C through F would convert 25 acres of primarily urban open space and residential structures into detention ponds managed as open space. Some overstory vegetation and cultivar grasses would be removed during construction of the detention ponds. The applicant would revegetate the ponds with native grasses. Adverse short-term effects to the terrestrial environment may occur until the planted grasses are able to fully populate the sites, but no long-term adverse impacts to the terrestrial habitat are anticipated.

Projects B and G would temporarily disturb approximately 2 acres of cultivar and native grasses during the erosion mat installation. The applicant would revegetate these areas with native grasses, which would restore this habitat over time. Adverse short-term impacts would be minimal given available similar habitat in Cuero. No long-term impacts are anticipated.

Project H would convert 100 acres of land currently managed for agriculture into detention ponds managed as open space. The ponds would be revegetated with native grasses. No long-

term impacts to wildlife are anticipated given the continued abundance and alternative availability of local forage.

Alternative 3 would not result in long-term impacts to the aquatic environment. Temporary impacts would be associated with rain events and would consist of a limited amount of sedimentation and deposition. Soil erosion measures outlined in Section 3.1.1 (Geology, Seismicity, and Soils) would minimize these impacts during construction. The detention ponds are not expected to retain water for extended periods of time.

In a letter dated April 2, 2002, USFWS stated that, since the construction of 10 detention ponds along Gohlke Creek would result in the loss of a naturally occurring stream, Alternative 3 would likely result in more significant environmental impacts than would the Proposed Action (Appendix B).

3.2.2 Wetlands (Executive Order 11990)

EO 11990, Protection of Wetlands, requires Federal agencies to minimize the loss of wetlands. The NEPA-compliance process requires Federal agencies to consider direct and indirect impacts to wetlands that may result from federally funded actions. The wetland mapping program sponsored by the USFWS does not have data available on wetlands within Cuero. A reconnaissance site visit was conducted on August 10, 2001, and no wetlands were observed in any of the project areas; therefore, it is not anticipated that the No Action Alternative, Proposed Action, or Alternative 3 would negatively impact wetlands.

3.2.3 Threatened and Endangered Species

The Endangered Species Act (ESA) of 1973 requires Federal agencies to determine the effects of their actions on threatened and endangered species of fish, wildlife, and plants and their habitats, and take steps to conserve and protect these species. On March 14, 2002, the Corpus Christi Texas Ecological Services Field Office of USFWS was contacted to obtain an updated list of species that are threatened or endangered, proposed for listing as threatened or endangered, or considered to be candidates for listing by the ESA (Appendix B). After consultation with USFWS, it was determined that two species could potentially occur near the project area: the bald eagle (*Haliaeetus leucocephalus*), listed as threatened, and the Cagle's map turtle (*Graptemys caglei*), listed as a candidate species.

In a letter dated April 2, 2002, the USFWS determined that there are no bald eagle nests along the Guadalupe River in the project area, and, therefore, there would be no impact to the bald eagle under any of the alternatives (Appendix B).

The Cagle's map turtle is known to exist in the Guadalupe River in the vicinity of Cuero. According to the USFWS, the middle Guadalupe River supports the main population of the species (60 to 70 percent) and the river from Cuero to Victoria marks the southern extent of the distribution. The number of Cagle's map turtles decreases going downstream from Cuero and disappears in the vicinity of Victoria.

Optimal habitat for the Cagle's map turtle consists of short stretches of shallow water with swift to moderate flow and a gravel or cobble bottom (riffles), connected by deeper pools with a slower flow rate and a silt or mud bottom. Gravel bar riffles and transition areas between riffles

and pools are especially important for the species because these areas provide food (insects). Cagle's map turtles never venture far from the river. They nest on gently sloping sand banks within about 30 feet of the water's edge. These sand banks usually occur on the inside of sharp bends in the river.

Threats to Cagle's map turtle include habitat loss due to reservoir construction, water diversions, water quality degradation, and human depredation (collecting for pet trade and intentional shootings). USFWS recommends that proposed projects not alter the hydrology or instream flow in the river or result in the loss of basking habitat or discharge of potential environmental contaminants, such as pesticides and herbicides. Other potential pollutants should also be avoided near the river.

In accordance with the ESA and the Fish and Wildlife Coordination Act, USFWS and TPWD were consulted in letters dated from 2000 to 2004, which are included in Appendix B.

Alternative 1 - No Action Alternative

Under the No Action Alternative, there would be no change to the hydrology in Gohlke Creek; therefore, the Cagle's map turtle and its habitat would not be impacted. No other threatened or endangered species or critical habitat would be impacted.

Alternative 2 – Eight Internal Drainage Improvements (Proposed Action)

The proposed project would alter the hydrology of Gohlke Creek during all rainfall events between the 10- to 15-year storm (current capacity of city drainage) and the 25-year storm for which it is designed. The hydrology would be affected due to increased capacity of the drainage system and conveyance of stormwater during these events. For all events less than the current capacity, drainage from the city would remain relatively unchanged. For all events greater than the 25-year storm, the capacity of the proposed project would be exceeded.

During events when the hydrology of Gohlke Creek would be changed, conveyance of stormwater to the Guadalupe River would increase, thereby increasing the head and volume of water already contained in the Guadalupe River. Due to the infrequency of such events and given the minimal potential of Gohlke Creek to significantly alter the hydrology of the Guadalupe River, no impact to the Cagle's map turtle or its habitat is anticipated.

In letters dated September 5, 2000; November 14, 2001; and April 2, 2002, the USFWS stated that the Proposed Action is not likely to affect federally threatened or endangered species or other important fish and wildlife resources. As stated by USFWS in their April 2, 2002, letter, if changes occur in the project that may result in loss of basking or nesting habitat of the Cagle's map turtle, further coordination with USFWS should be initiated to avoid or minimize impacts to this species. A concurrence letter was received from the TPWD on September 12, 2001; however, they made no comment on threatened or endangered species (Appendix B).

Alternative 3 – Construction of 16 Detention Ponds and Internal Drainage Improvements

Alternative 3, the proposed construction of 16 detention ponds, would also alter the hydrology of Gohlke Creek. During all events, the detention ponds would regulate the volume of stormwater reaching Gohlke Creek and the Guadalupe River. For events greater then the 25-year storm, the

capacity of the system would be exceeded and Golhke Creek would drain as if there were no improvements. For events up to the 25-year storm, the detention ponds would store stormwater and release it to Gohlke Creek at a volume no greater than the current capacity of the internal drainage in Cuero. Stormwater flow reaching the Guadalupe River would be moderated in volume, but Gohlke Creek effluence would be prolonged. No significant change to the hydrology of the Guadalupe River is anticipated under Alternative 3, and no impacts to the Cagle's map turtle or its habitat are anticipated.

In a letter dated April 2, 2002, USFWS stated that Alternative 3 is not likely to affect federally threatened or endangered species or other important fish and wildlife resources (Appendix B). However, USFWS also stated that since the construction of 10 detention ponds along Gohlke Creek would result in the loss of a naturally occurring stream, Alternative 3 would likely result in more significant environmental impacts than the Proposed Action. A concurrence letter was received from the TPWD on September 12, 2001; however, they made no comment on threatened or endangered species (Appendix C).

3.3 HAZARDOUS MATERIALS

According to the TCEQ, there are no state or Federal Superfund sites in DeWitt County or within the Lower Guadalupe watershed (TNRCC, 2001). A reconnaissance-level survey for hazardous materials and wastes was conducted in the project vicinity by URS on August 10, 2001. No recognizable hazardous materials were observed at any of the project locations. No subsurface hazardous materials testing was conducted as a part of this EA.

A database search was also conducted to identify any known hazardous material locations. The search, which encompassed all proposed project locations, indicated the presence of six listed Resource Conservation and Recovery Information System Small Quantity Generators (RCRIS-SQG) within a 2-mile radius of the intersection of Maurine Street and East Main Street in the City of Cuero.

The database search also revealed 14 sites with recorded leaking underground storage tanks (LUSTs) within 2 miles of the project areas. Twelve of these LUST cases have been closed, and two are currently in the pre-assessment/release determination phase—the Gonzales Exxon located at 207 South Esplanade, which was reported for leaking gasoline, and the Wal-Mart located near US Highway 87, which was reported for leaking oil.

Alternative 1 - No Action Alternative

Under the No Action Alternative, no improvements to the drainage system would occur; therefore, no impacts associated with hazardous materials or wastes are expected.

Alternative 2 – Eight Internal Drainage Improvements (Proposed Action)

Under the Proposed Action, no impacts from hazardous materials or wastes are anticipated. Due to their distance from the proposed improvements, the two open-case LUST sites within Cuero would not impact construction of the Proposed Action. The six RCRIS-SQG sites are also not expected to impact the Proposed Action.

Although subsurface hazardous materials are not anticipated to be present, excavation activities could expose or otherwise affect subsurface hazardous wastes or materials. Any hazardous materials discovered, generated, or used during implementation of the proposed project would be disposed of and handled by the applicant in accordance with applicable local, state, and Federal regulations.

Alternative 3 – Construction of 16 Detention Ponds and Internal Drainage Improvements

Under Alternative 3, no impacts from hazardous materials or wastes are anticipated. Due to their distance from the proposed improvements, the two open-case LUST sites within Cuero would not impact construction of Alternative 3. The six RCRIS-SQG sites are also not expected to impact this alternative.

Although subsurface hazardous materials are not anticipated to be present, excavation activities could expose or otherwise affect subsurface hazardous wastes or materials. Any hazardous materials discovered, generated, or used during implementation of the proposed project would be disposed of and handled by the applicant in accordance with applicable local, state, and Federal regulations.

3.4 SOCIOECONOMICS

3.4.1 Zoning and Land Use

The City of Cuero occupies approximately 2,500 acres. There are currently no zoning ordinances in place in Cuero (Riedesel, pers. comm.). Land use within city limits is predominantly residential, with some commercial and municipal lands. Industry is primarily located on lands annexed from the ETJ north of the center of Cuero. The eastern outskirts of town are predominantly open, housing the municipal airport, a 180-acre City Park, the high school, and two cemeteries. The west side of Cuero contains some industry near the Oil Mill Ditch area. Agriculture is the predominant land use to the south.

The ETJ of Cuero extends 1 mile beyond city limits and comprises approximately 2,700 acres. Predominant land uses within the ETJ are cropland and grazing land for livestock. Forested land and developed residential lots are small components of ETJ land use. Also within the ETJ are the GCWWTP, multiple cemeteries, radio towers, and water and sewer pumping stations (USGS, 1987).

Alternative 1 – No Action Alternative

Under the No Action Alternative, land use within Cuero would remain unchanged. There would be no long-term or short-term impacts to land use.

Alternative 2 – Eight Internal Drainage Improvements (Proposed Action)

The Proposed Action would be located within the city limits and ETJ of Cuero on municipal and private lands within or adjacent to current city ROWs. The only exception is a railroad ROW on the western side of Cuero. Prior to construction at Project Location A, Cuero would obtain a lease from the railroad for the use of its ROW. Prior to construction, Cuero would also obtain

easements from private landowners for work on private property (Riedesel, pers. comm.). Because the majority of the projects would be located under ground or within existing drainage channels, no impacts to land use are expected.

Alternative 3 – Construction of 16 Detention Ponds and Internal Drainage Improvements

Alternative 3 would require the acquisition and/or lease of approximately 125 acres of land. Approximately 100 acres of the required land are currently used for agriculture, 18.5 acres are vacant urban land, and 6.5 acres are used in residential capacities. These lands would be converted into detention ponds managed as open space. Under this alternative, approximately 9 residences would be displaced and 100 acres of agricultural land would be lost. The conversion of agricultural land would be considered a minor impact to land use since this area represents only a small portion of agricultural lands in the vicinity. The residences displaced would be approximately 0.1 percent of the total population of Cuero. The impact of this displacement would be minor given the small percentage displaced and the current availability of housing in Cuero.

3.4.2 Visual Resources

Visual resources refer to the landscape character (i.e., what is seen), visual sensitivity (i.e., human preferences and values regarding what is seen), scenic integrity (i.e., degree of intactness and wholeness in landscape character), and landscape visibility or viewscape (i.e. relative distances of seen areas) of a geographically defined viewshed (places from which an element may be viewed).

The City of Cuero mostly contains small one- and two-story buildings in a setting with the urban and rural landscape character typical of small cities in south central Texas. Elements within the city include natural features, such as vegetation and topography common to the Texas plains, and manmade features such as buildings, roads, bridges, and power lines.

Alternative 1 – No Action Alternative

The No Action Alternative would not introduce new elements into the viewshed, and there would be no change to the viewscape. Continued damage (i.e., damaged and abandoned buildings, infrastructure) resulting from frequent flooding in the City of Cuero could compromise the scenic integrity of the city and would be objectionable to residents and visitors.

Alternative 2 – Eight Internal Drainage Improvements (Proposed Action)

For portions of Project A and Projects C through F, visual resources would be temporarily affected by the presence of construction equipment and excavated earth associated with the installation of underground storm sewers. This impact would be considered minor, and there would be no long-term impacts to visual resources as a result of these projects.

Project Location A would also involve the excavation and installation of a concrete-lined channel adjacent and parallel to the abandoned railroad embankment. The channel's proximity to the abandoned railroad embankment reduces its scenic integrity; therefore, adverse impacts to visual resources are not expected.

Project B would involve the installation of concrete lining on the banks of previously improved channels. The previously disturbed nature of this site reduces its scenic integrity; therefore, adverse impacts to visual resources are not expected.

Project G would involve the installation of erosion-resistant lining material along 2,000 linear feet of earthen berm channel. The previously disturbed nature of this site reduces its scenic integrity; therefore, adverse impacts to visual resources are not expected.

Project H would slightly alter the current landscape. Debris would be removed from Gohlke Creek, which would benefit visual resources in the area. Limited vegetation would be removed, but because the channel is not located near any roads, centers of population, or recreational areas, this would only be considered a minor adverse impact.

Alternative 3 – Construction of 16 Detention Ponds and Internal Drainage Improvements

Under Alternative 3, visual resources would be impacted by the conversion of existing land uses to detention ponds. These impacts would be minimized by taking into account landscape character, visual sensitivity, scenic integrity, and landscape visibility or viewscape of the geographically defined viewshed in the final designs.

3.4.3 Noise

Sound is most commonly measured in decibels (dB) on the A-weighted scale, which is the scale most similar to the range of sounds that the human ear can hear. The Day-Night Average Sound Level (DNL) is an average measure of sound. The DNL descriptor is accepted by Federal agencies as a standard for estimating sound impacts and establishing guidelines for compatible land uses.

Noise, defined herein as undesirable sound, is federally regulated by the Noise Control Act of 1972 (NCA). Although the NCA gives the EPA authority to prepare guidelines for acceptable ambient noise levels, it only charges those Federal agencies that operate noise-producing facilities or equipment to implement noise standards. The EPA's guidelines, and those of many Federal agencies, state that outdoor sound levels in excess of 55 dB DNL are "normally unacceptable" for noise-sensitive receptors such as residences, hospitals, and schools. There are numerous residences located near the project locations. The State of Texas regulates noise under Section 42.01(a)(5) and (c)(2) of its Penal Code.

Noise associated with the proposed project would be emitted from mechanical equipment used in the excavation and construction of the drainage improvements.

Alternative 1 – No Action Alternative

Under the No Action Alternative, there would be no short-term or long-term contributions to ambient noise levels.

Alternative 2 – Eight Internal Drainage Improvements (Proposed Action)

Under the Proposed Action, levels of noise would temporarily increase during construction and excavation activities. Noise levels would be consistent with common construction practices.

Construction would take place during normal business hours to minimize disturbance to nearby residences. Long-term noise impacts are not anticipated as a result of the proposed drainage projects.

Alternative 3 – Construction of 16 Detention Ponds and Internal Drainage Improvements

Under Alternative 3, levels of noise would temporarily increase during construction and excavation activities. Noise levels would be consistent with common construction practices. Construction would take place during normal business hours to minimize disturbance to nearby residences. Long-term noise impacts are not anticipated as a result of the proposed drainage projects.

3.4.4 Public Services and Utilities

Safety, fire, and emergency medical services within the City of Cuero consist of six full-time firefighters who are supported by 60 volunteers, a 12-person police force, and a local hospital.

Public utilities, such as electricity and gas, are purchased from suppliers. Cuero distributes 75 percent of the electricity it buys from the Lower Colorado River Authority (LCRA) via overhead poles; however, some underground electrical lines do run adjacent to existing storm sewer lines (Bothe, pers. comm.). Southern Union Gas Company supplies Cuero with natural gas, which is distributed to approximately 1,800 residences via underground lines.

Drinking water is supplied to residents from municipal wells located throughout Cuero and is supplemented by tapping the semi-consolidated sand aquifers from the Coastal Lowland System. Average consumption is 1.2 mgd, with a supply capacity rating of 3.9 mgd. The City of Cuero discharges its wastewater to the Guadalupe River via the GCWWTP as permitted by the GBRA.

Southwestern Bell provides telephone service predominantly via overhead lines.

Alternative 1 – No Action Alternative

The No Action Alternative would not directly affect public services or utilities; however, continued flooding would stress infrastructure integrity, periodically disrupting roads, power lines, telephone lines, and sewer, water, and gas lines. Flooding may also lead to temporary road closures, affecting the ability of emergency personnel to access certain areas. These effects would be temporary, but could recur with each future flood event.

Alternative 2 – Eight Internal Drainage Improvements (Proposed Action)

Under the Proposed Action, excavation along or beneath roads would occur for Projects A through G. The installation of stormwater drainage systems could occur adjacent to existing utility ROWs. Temporary disruption of utilities may occur, and the relocation of some utilities may be necessary. Road work could change typical access routes for emergency personnel; however, they would be notified of the road work schedule and provided with alternate routes prior to construction. Some construction would occur adjacent to and under the railroad, resulting in a temporary delay in rail traffic. The applicant would coordinate with the railroad company to determine if and when a closure would occur. Project H is located near the city's sanitary sewer line. The sanitary sewer line would not be disturbed by the construction.

Long-term disruptions to public services and utilities are not anticipated as a result of the Proposed Action.

Alternative 3 – Construction of 16 Detention Ponds and Internal Drainage Improvements

Short-term impacts to public services and utilities are expected to be minimal as a result of Alternative 3. Placement of the detention ponds in the city would take into account underground sewer, water, gas, and electric lines; therefore, no rerouting of utilities would be required. Any houses that Cuero may acquire would have active services cutoff and lines capped outside the project area.

Long-term disruptions to public services and utilities are not anticipated as a result of this alternative.

3.4.5 Traffic and Circulation

The majority of streets in Cuero are maintained by the city; however, there are also roads within city limits that are maintained by the county, state, and Federal government.

Near the center of Cuero, US 183, which later becomes US 77A, serves as the main access route through Cuero (Figure 1). This road carries some local traffic and almost all non-local traffic through town. Other roads that traverse Cuero include: US 87, State Route (SR) 3402, SR 236, SR 1447, and SR 766. All these roads have two lanes and carry medium traffic flows.

Within the city are dozens of two-lane roads carrying local traffic. These roads, for the most part, are networked in a traditional city-block pattern, allowing cross-flow of traffic and providing alternate routes to almost every destination.

There is no local public transportation provided in Cuero. Valley Transit provides intra-state bus travel.

Alternative 1 – No Action Alternative

Under the No Action Alternative, there would be no change to current traffic and transportation patterns.

Alternative 2 – Eight Internal Drainage Improvements (Proposed Action)

The Proposed Action could affect traffic circulation during site preparation and construction. Open-cut trenching that would occur on residential streets for Projects A and C through F would temporarily disrupt traffic flow. It is anticipated that these portions of the projects would temporarily close one side of the road or intersection. Steel plates would be used to allow travel over open trenches after construction operation hours. Traffic signs would comply with the Texas Uniform Manual Traffic Control measures. For Projects B, G, and H, traffic impacts would be limited to increased volume and construction vehicles turning into and out of project locations during construction activities.

In letters from the Texas Department of Transportation (TxDOT) dated August 29, 2001, and July 21, 2004, design considerations were requested for three parts of the proposed improvements (Appendix B). Specifically, TxDOT's main concern is that the proposed storm

sewer and channel improvements may yield the existing structures downstream inadequate due to the improved hydraulic capacity of the internal systems. These roads include the project junction at Farm to Market Road (FM) 236 (Project B), at State Highway 72 and U.S 87 (Project G), and at FM 766 (Project E). It is important that these structures can convey the 25-year storm for which the Proposed Action is designed. As a condition of the EA, the applicant would be required to incorporate these design considerations in consultation with TxDOT before finalizing project engineering designs.

There are no anticipated long-term impacts to traffic and circulation in Cuero as a result of the Proposed Action.

Alternative 3 – Construction of 16 Detention Ponds and Internal Drainage Improvements

Alternative 3 may temporarily affect traffic during site preparation and construction. The effects to traffic would be limited to increased volume and construction vehicles turning into and out of the project locations. No long-term impacts are anticipated.

3.4.6 Environmental Justice (Executive Order 12989)

On February 11, 1994, President Clinton signed EO 12989 entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The EO directs Federal agencies "to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations in the United States…." In compliance with FEMA's policy implementing EO 12898, Environmental Justice, the socioeconomic conditions and potential effects related to the No Action Alternative, Proposed Action, and Alternative 3 have been reviewed.

According to U.S. Census 2000 data, the City of Cuero has a population of 6,571. Demographics of Cuero were characterized as: 67.3 percent white; 16.7 percent African American; 0.6 percent American Indian; 0.5 percent Asian; 12.8 percent of other races; and 34.7 percent of the total population is of Hispanic or Latino origin (U.S. Census Bureau, 2000). In comparison, DeWitt County's population of 20,013 is 76.4 percent white; 11 percent African American; 0.5 percent American Indian; 0.2 percent Asian; 10 percent of other races; and 27.2 percent of the total population is of Hispanic or Latino origin (U.S. Census Bureau, 2000).

The median household income reported for the City of Cuero in 1999 was $26,840 per year, with 25.5 percent of the population below the poverty level. During the same reporting period, DeWitt County residents had a median income of $28,714 per year, with 19.6 percent of the population below the poverty threshold (U.S. Census Bureau, 2000).

Alternative 1 – No Action Alternative

The No Action Alternative would not have a disproportionately high and adverse impact on minority or low-income populations. The potential for floods to occur would remain a risk for all residents of Cuero.

Alternative 2 – Eight Internal Drainage Improvements (Proposed Action)

Based on the U.S. Census Bureau data, the City of Cuero contains slightly higher minority and low-income populations than the county and state as a whole. The Proposed Action would benefit the entire city by decreasing flooding, increasing emergency response services, and keeping electric, water, sewer, and gas lines operational. Therefore, the Proposed Action would not have a disproportionately high and adverse impact on minority or low-income populations.

Alternative 3 – Construction of 16 Detention Ponds and Internal Drainage Improvements

Based on the U.S. Census Bureau data, the City of Cuero contains slightly higher minority and low-income populations than the county and state as a whole. In addition, Alternative 3 would benefit the entire city by decreasing flooding, increasing emergency response services, and keeping electric, water, sewer, and gas lines operational. Therefore, Alternative 3 would not have a disproportionately high and adverse impact on minority or low-income populations.

3.4.7 Safety and Security

Safety and security issues that have been considered in this EA include the health and safety of the area residents and the public at-large, and the personnel involved in activities related to the implementation of the proposed drainage improvements in the City of Cuero.

EO 13045, Protection of Children, requires Federal agencies to make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children. Because none of the projects are located in areas with high concentrations of child activity, it is not anticipated that any of the action alternatives pose safety risks that may disproportionately affect children.

Alternative 1 – No Action Alternative

The No Action Alternative would not adversely affect the population of the study area. Construction of the drainage improvements would not occur, and there would be no potential risks to the safety of personnel performing construction activities. However, continued flooding has the potential to compromise the safety of people living in flood-prone areas.

Alternative 2 – Eight Internal Drainage Improvements (Proposed Action)

Under the Proposed Action, construction activities could present safety risks to those performing the activities. To minimize risks to human health and safety, all construction activities would be performed using qualified personnel trained in the proper use of the appropriate equipment, including all appropriate safety precautions. Additionally, all activities would be conducted in a safe manner in accordance with the standards specified in Occupational Safety and Health Administration (OSHA) regulations.

The applicant would post appropriate signage and fencing to minimize safety impacts. The appropriate signage and barriers should be in place prior to construction activities in order to alert pedestrians and motorists of project activities and changes in traffic patterns.

Beneficial long-term impacts to city residents include the safety and security afforded by a decreased risk of flooding.

Alternative 3 – Construction of 16 Detention Ponds and Internal Drainage Improvements

Under Alternative 3, construction activities could present safety risks to those performing the activities. To minimize risks to human health and safety, all construction activities would be performed using qualified personnel trained in the proper use of the appropriate equipment, including all appropriate safety precautions. Additionally, all activities would be conducted in a safe manner in accordance with the standards specified in OSHA regulations.

The applicant would post appropriate signage and fencing to minimize safety impacts. The appropriate signage and barriers should be in place prior to construction activities in order to alert pedestrians and motorists of project activities and changes in traffic patterns.

Beneficial long-term impacts to city residents include the safety and security afforded by a decreased risk of flooding.

3.5 CULTURAL RESOURCES

In addition to review under NEPA, consideration of impacts to cultural resources is mandated under Section 106 of the National Historic Preservation Act (NHPA), as amended, and implemented by 36 CFR Part 800. NHPA requires identification of significant historic properties that may be impacted by proposed Federal projects. Historic properties are defined as archaeological sites, standing structures, or other historic resources listed in or eligible for listing in the National Register of Historic Places (36 CFR 60.4).

As defined in 36 CFR Part 800.16(d), the Area of Potential Effect (APE) "is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist."

In addition to identifying historic properties that may exist in the proposed project's APE, FEMA must also determine, in consultation with the appropriate State Historic Preservation Officer (SHPO), what effect, if any, the action would have on historic properties. Moreover, if the project would have an adverse effect on any historic properties, FEMA must consult with the SHPO on ways to avoid, minimize, or mitigate the adverse effect. In letters dated August 28, 2000, and July 13, 2004, the Texas Historical Commission (THC) was asked to review the proposed project (Appendix B).

Alternative 1 – No Action Alternative

Under the No Action Alternative, no historic or archaeological resources would be disturbed; however, continued flooding may affect cultural resources in Cuero.

Alternative 2 – Eight Internal Drainage Improvements (Proposed Action)

In a response letter from the THC dated July 21, 2004, the SHPO indicated that Projects A through H of the Proposed Action would have no effect on historic properties (Appendix B). Should any potentially historic or archeologically significant materials be discovered during

project construction or staging of equipment, all activities on the site would be halted immediately and the city would consult with FEMA, the Texas Department of Public Safety DEM, and the THC or other appropriate agency for further guidance.

Alternative 3 – Construction of 16 Detention Ponds and Internal Drainage Improvements

In a response letter from the THC dated July 21, 2004, the SHPO indicated that Projects A through G of Alternative 3 would have no effect on historic properties (Appendix B). Project H would have the potential to affect archeological resources; therefore, THC recommends surveying the area where the 10 detention ponds would be located prior to construction. The survey would include trenching and shovel-testing to current survey standards. Prior to fieldwork, the applicant would coordinate with the THC to obtain a Texas Antiquities Code permit for archeological surveys and to develop the scope of work.

Should any potentially historic or archeologically significant materials be discovered during project construction or staging of equipment, all activities on the site would be halted immediately and the city shall consult with FEMA, the Texas Department of Public Safety DEM, and the THC or other appropriate agency for further guidance.

Cumulative impacts are those effects on the environment that result from the incremental effect of the action when added to past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The City of Cuero and DeWitt County have had a long history of agriculture. Since 1930, the populations of both the city and county have remained relatively unchanged. Based on this and the predominance of agriculture in the local economy, it is not expected that the city or county is likely to experience urban development at an unusual pace in the foreseeable future. Therefore, improvements to internal drainage in the city are not anticipated to affect or be affected by any foreseeable future development.

It is not anticipated that the Proposed Action would have a negative cumulative effect on the Guadalupe River. The improvement of drainage channels in the City of Cuero would allow the city to manage a 25-year storm. Any cumulative effects to the Guadalupe River would be associated with minor short-term increases in water turbidity. Anything over a 25-year storm would be consistent with current impacts to the natural and human environment. The effects of this project are not anticipated to contribute to long-term cumulative environmental impacts. In fact, the Proposed Action would reduce the amount of sedimentation that occurs in local waterways following flood events. Future drainage improvement projects in the region have the potential to increase flows in the Guadalupe River. The Guadalupe River may be reaching its capacity to accept runoff from communities in the watershed. This could lead to a backwater effect from future drainage projects, and it may reduce the capacity and effectiveness for future drainage channel projects that outlet directly to the Guadalupe River.

FEMA is the lead Federal agency for conducting the NEPA compliance process for the Internal Drainage Improvement Project in the City of Cuero, Texas. The lead agency's goal is to expedite the preparation and review of NEPA documents to be responsive to the needs of the community and the applicant, while meeting the intent of NEPA and complying with all NEPA provisions including NHPA, EO 11988 and EO 11990.

A draft EA of the Internal Drainage Improvement Project in the City of Cuero, Texas, was made available for public review between August 18 and September 16, 2004, at the Cuero Public Library, 207 East Main Street, Cuero, Texas, between the hours of 8:00 a.m. and 5:00 p.m. A Public Notice advertising the availability of the Draft EA was placed in the Cuero Record on August 18, 2004.

Public comments have been evaluated and pertinent information has been included in this EA.

The following mitigation measures would be required for the implementation of the Proposed Action:

1. If project activities include the stockpiling of soil or fill on site, the project applicant would cover these soils to help prevent fugitive dust and increased soil erosion.
2. The project applicant would use silt fencing and hay bales to reduce soil erosion during construction activities.
3. Construction equipment would be staged in existing developed areas, such as paved parking lots.
4. The project applicant would revegetate bare soils with native grasses.
5. For Projects A and B, the applicant would install energy dissipaters to minimize potential damage to receiving channels.
6. For Project H, the applicant would not disturb Gohlke Creek below the normal high-water mark, and limited amounts of vegetation would be selectively removed.
7. Projects B and F would require a Nationwide Permit 3 from the USACE.
8. Project G would require a Nationwide Permit 13 or 31 from the USACE.
9. The applicant would comply with the USACE Nationwide Permit General Conditions (Appendix E) and the TCEQ BMP guidelines for Nationwide Permits.
10. All construction activity must be in compliance with TCEQ General Permit Number TXR150000 relating to discharges from construction.
11. The project applicant would be required to water down construction areas when necessary.
12. Fuel-burning equipment running times would be kept to a minimum and engines would be properly maintained.
13. The applicant would install temporary fences around tree driplines to prevent the encroachment of personnel and construction equipment on root systems.
14. If it is determined in further analysis of this project, or if changes occur in the project that may result in loss of basking or nesting habitat of the Cagle's map turtle, further coordination with USFWS would be initiated to avoid or minimize impacts to this species.
15. Any hazardous materials discovered, generated, or used during implementation of the proposed project would be disposed of and handled by the applicant in accordance with applicable local, state, and Federal regulations.
16. Prior to construction of Project A, Cuero would obtain a lease with the railroad for the use of its ROW.
17. Prior to construction, Cuero would obtain easements from private landowners for work on private property.
18. Construction activities would occur during normal business hours.
19. Emergency service personnel would be notified of the road work schedule and provided with alternate routes prior to construction.

20. The applicant would consult with TxDOT on the effects of improved hydraulic capacity on drainage structures downstream.
21. All construction activities would be conducted by trained personnel in compliance with OSHA standards and regulations to protect worker safety.
22. Appropriate signage and fencing would be posted to alert pedestrians and motorists of project activities, as well as any changes in traffic patterns. Traffic signs would comply with the Texas Uniform Manual Traffic Control measures.
23. Steel plates would be used to allow travel over open trenches after construction hours.
24. Should any potentially historic or archeologically significant materials be discovered during project construction or staging of equipment, all activities on the site would be halted immediately and the city would consult with FEMA, the Texas Department of Public Safety DEM, and the THC or other appropriate agency for further guidance.
25. The project applicant would obtain all applicable permits before construction.

The following mitigation measure would be required for the implementation of Alternative 3:

1. If project activities include the stockpiling of soil or fill on site, the project applicant would cover these soils to help prevent fugitive dust and increased soil erosion.
2. The project applicant would use silt fencing and hay bales to reduce soil erosion during construction activities.
3. Construction equipment would be staged in existing developed areas, such as paved parking lots.
4. The project applicant would revegetate bare soils with native grasses.
5. A NPDES permit would be required for disturbances of greater than 5 acres.
6. All construction activity must be in compliance with TCEQ General Permit Number TXR150000 relating to discharges from construction.
7. The project applicant would be required to water down construction areas when necessary.
8. Fuel-burning equipment running times would be kept to a minimum and engines would be properly maintained.
9. Any hazardous materials discovered, generated, or used during implementation of the proposed project would be disposed of and handled by the applicant in accordance with applicable local, state, and Federal regulations.
10. Impacts to visual resources would be minimized by taking into account landscape character, visual sensitivity, scenic integrity, and landscape visibility or viewscape of the geographically defined viewshed in the final designs.
11. Construction activities would occur during normal business hours.
12. All construction activities would be conducted by trained personnel in compliance with OSHA standards and regulations to protect worker safety.

13. Appropriate signage and fencing would be posted to alert pedestrians and motorists of project activities, as well as any changes in traffic patterns. Traffic signs would comply with the Texas Uniform Manual Traffic Control measures.
14. The applicant would conduct a survey of Project location H prior to construction. The survey would conform to current standards, and the applicant would coordinate with the SHPO to develop a scope of work and obtain necessary permits.
15. Should any potentially historic or archeologically significant materials be discovered during project construction or staging of equipment, all activities on the site would be halted immediately and the city would consult with FEMA, the Texas Department of Public Safety DEM, and the THC or other appropriate agency for further guidance.
16. The project applicant would obtain all applicable permits before construction.

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Bothe, Clifford. City of Cuero Electric Superintendent. Telephone conversation with Tom Hay, URS, September 6, 2001.

Klein, Frank. Volunteer for Coastal Birding Trail Stop 28 – Cuero, Texas. Telephone conversation with Tom Hay, URS, September 17, 2001.

Mauser, Jon. Texas Natural Resource Conservation Commission, Edwards Aquifer Protection Program. Telephone conversation with Ryan Thompson, URS, August 27, 2001.

Riedesel, Corlis. Cuero City Manager. Telephone conversations with Tom Hay and Ryan Thompson, URS, various dates August 2001 through March 2002.

URS Group, Inc

Ryan Thompson, Senior Environmental Planner— Task Order Coordinator; Preparer

Molly Evancho, P.E., Water Resource Engineer—Preparer (Floodplain Section)

Kim Collini, Environmental Planner – Preparer

Amy Siegel—Document Coordinator

Pieter de Jong, AICP, Project Environmental Planner — Independent Technical Reviwer

Jon Randall, Project Environmental Planner —Independent Technical Reviewer

Appendix A

EO 11988 and EO 11990

Eight-Step Planning Process

Step 1: Determine whether the Proposed Action is located in a wetland and/or the 100-year floodplain, or whether it has the potential to affect or be affected by a floodplain or wetland.	**Project Analysis**: According to FIRM Community Panel Number 480196 0002 B (1981), which depicts the City of Cuero, portions of the project area are within the regulated 100-year floodplain. No wetlands were identified during an August 10, 2001, field reconnaissance survey. The proposed project does not have the potential to affect or be affected by wetlands.
Step 2: Notify public at earliest possible time of the intent to carry out an action in a floodplain or wetland, and involve the affected and interested public in the decision-making process.	**Project Analysis:** The applicant will notify the public of this action at the earliest possible time once Federal funding has been approved.
Step 3: Identify and evaluate practicable alternatives to locating the Proposed Action in a floodplain or wetland.	**Project Analysis:** No practicable alternatives were identified that meet the purpose and need of the project and do not involve construction in the 100-year floodplain. The following three alternatives were evaluated: **Alternative 1**: No Action. **Alternative 2**: Proposed Action. The City of Cuero would undertake 8 drainage improvement projects throughout the city. Project A consists of the installation of RCP storm sewers, stormwater inlets, and various culverts in the Nash Street area of the city. The project also involves the excavation and lining of existing drainage channels. Project B involves lining 500 linear feet of earthen channel wall in an existing concrete-lined channel located in the Valley Street Basin. Project C consists of the installation of RCP storm sewers and stormwater inlets in the Church Street area of Cuero. Project D consists of the installation of RCP storm sewers and stormwater inlets in the Paine Street area of the city. Project E consists of the installation of culverts, RCP storm sewers, and stormwater inlets in the West Prairie Street area of Cuero. Project F involves replacing several culverts and widening an existing channel in the Bridge Street area of the city. Project G consists of the installation of erosion-resistant lining material in an existing earthen berm channel located in the Oil Mill Ditch area of the city. Project H involves debris removal and limited removal of vegetation in portions of Gohlke Creek south of the city, in the ETJ of Cuero. **Alternative 3**: Sixteen detention ponds would be constructed in various parts of the city and existing

	channels would be lined with geo-textile erosion mats. Project A includes construction of two 6-acre detention ponds located in the Nash Street area of Cuero. Project B, located in the Valley Street Basin, involves lining 500 linear feet of earthen berm channel with geo-textile erosion mats. Project C consists of the construction of one 2.5-acre detention pond in the Church Street area of the city. Project D consists of the construction of one 3.4-acre detention pond in the Paine Street area of the city. Project E consists of the construction of one 4-acre detention pond in the West Prairie Street area of Cuero. Project F consists of the construction of one 3-acre detention pond in the Bridge Street area of the city. Project G, in the Oil Mill Ditch area of Cuero, involves lining 2,000 linear feet of earthen berm channel with geo-textile erosion mats. Project H consists of the construction of ten 10-acre detention ponds approximately 1,000 feet south of city limits in the ETJ.
Step 4: Identify the full range of potential direct or indirect impacts associated with the occupancy or modification of floodplains and wetlands and the potential direct and indirect support of floodplain and wetland development that could result from the Proposed Action.	**Project Analysis:** Potential impacts for each of the alternatives are described below. **Alternative 1:** Under the No Action Alternative, no Federal funding would be provided and EO 11988 would not be triggered. The City of Cuero would continue to experience periodic flooding. **Alternative 2**: The Proposed Action is likely to result in minor and temporary impacts associated with occupancy or modification of the floodplain. Removal of vegetation has the potential to free erodible soils, which could enter Gohlke Creek and the Guadalupe River. Additionally, the ingress and egress of equipment, along with the clearing of staging areas and log decks, would have the potential to increase soil erosion. Implementation of mitigation measures would minimize these impacts. The improvement proposed for Gohlke Creek (Project H) would allow flood waters upstream in Cuero to flow unrestricted to the Guadalupe River. Overall, the proposed projects would reduce the current erosion rate of Gohlke Creek. The Proposed Action would not indirectly support future floodplain development. **Alternative 3**: The construction of Alternative 3 would allow water to be held within the floodplain and would reduce downstream flooding. Removal of vegetation has the potential to free erodible soils, which could enter Gohlke Creek and the Guadalupe River. Additionally, the ingress and egress of equipment, along with the clearing of staging areas and log decks, would have the

	potential to increase soil erosion. Implementation of mitigation measures would minimize these impacts. Alternative 3 would not indirectly support future floodplain development.
Step 5: Minimize the potential adverse impacts to work within floodplains and wetlands to be identified under Step 4; restore and preserve the natural and beneficial values served by wetlands.	**Project Analysis:** Mitigation measures would be implemented to reduce soil erosion that could occur during construction activities. Under the Proposed Action, Projects B, F, and G would require Nationwide Permits from the USACE. The applicant would be required to comply with the terms and conditions of the Nationwide Permit, as well as the TCEQ's BMP guidance for Nationwide Permits.
Step 6: Re-evaluate the Proposed Action to determine 1) if it is still practicable in light of its exposure to flood hazards; 2) the extent to which it will aggravate the hazards to others; and 3) its potential to disrupt floodplain and wetland values.	**Project Analysis:** The Proposed Action remains practicable based on the flood prevention objective. The project would reduce flood hazards in Cuero and areas downstream.
Step 7: If the agency decides to take an action in a floodplain or wetland, prepare and provide the public with a finding and explanation of any final decision that the floodplain or wetland is the only practicable alternative. The explanation should include any relevant factors considered in the decision-making process.	**Project Analysis**: A public notice will be made indicating the FEMA decision to proceed with the Proposed Action. At a minimum, this notice shall indicate the rationale for locating the Proposed Action in the floodplain and/or for wetland impacts; a description of all significant facts considered in making the determination; a list of the alternatives considered; a statement indicating whether the action conforms to state and local floodplain protection standards; and a statement indicting how the action affects the floodplain and wetlands and how mitigation is achieved.
Step 8: Review the implementation and post-implementation phases of the Proposed Action to ensure that the requirements of the EOs are fully implemented. Oversight responsibility shall be integrated into existing processes.	**Project Analysis:** This step is integrated into the NEPA process and FEMA project management and oversight functions.

Appendix B

Agency Correspondence

URS corresponded with the following agencies:

U.S. Army Corps of Engineers
Galveston District
5151 Flynn Parkway, Suite 306
Corpus Christi, Texas 78411-4318

U.S. Fish and Wildlife Service
6300 Ocean Drive, Campus Box 338
Corpus Christi, Texas 78412

State Historic Preservation Officer
Texas Historical Commission
P.O. Box 12276
Austin, Texas 78711-2276

Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744

U.S. Department of Agriculture
Natural Resources Conservation Service
101 South Main Street
Temple, Texas 76501

Texas Department of Transportation
P.O. Box 757
Yoakum, Texas 77995

Texas Commission on Environmental Quality
6300 Ocean Drive, Suite 1200
Corpus Christi, Texas 78412-5503

Guadalupe-Blanco River Authority
933 East Court Street
Seguin, Texas 78155

To obtain copies of agency correspondence, please contact:

Ryan Thompson
URS Group, Inc.
200 Orchard Ridge Drive, Suite 101
Gaithersburg, MD 20878

Appendix C

Public Notice

PUBLIC NOTICE

Environmental Assessment for Internal Drainage Improvement Projects in the City of Cuero, DeWitt County, Texas. FEMA-1257-DR-TX

Interested persons are hereby notified that the Federal Emergency Management Agency (FEMA) is proposing to assist in the funding of the construction of drainage improvements in the City of Cuero in DeWitt County, Texas. In accordance with the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR Parts 1500 – 1508), the National Historic Preservation Act (NHPA), Executive Order 11988, Executive Order 11990, and the implementing regulations of FEMA (44 CFR Parts 9 and 10), an Environmental Assessment (EA) is being prepared to assess the potential impacts of the proposed action on the human and natural environment.

The EA evaluates alternatives that provide for compliance with applicable environmental laws. The alternatives to be evaluated include (1) no action; (2) construction of eight internal drainage improvements; and (3) construction of internal drainage improvements and 16 detention ponds.

The draft EA is available for review between August 18 and September 16, 2004, at the Cuero Public Library, 207 East Main Street, Cuero, Texas, between the hours of 8:00 a.m. and 5:00 p.m. The EA is also available for review online at the FEMA website: http://www.fema.gov/ehp/docs.shtm.

Written comments regarding this action should be directed no later than 5:00 p.m. September 16, 2004, to Ryan Thompson, URS Group, Inc., 200 Orchard Ridge Drive, Suite 101, Gaithersburg, Maryland 20878.

Appendix D
Public Comments

No public comments have been received to date.

Appendix E

USACE Nationwide Permit General Conditions

To obtain copies of USACE Nationwide Permit General Conditions, please contact:

Ryan Thompson
URS Group, Inc.
200 Orchard Ridge Drive, Suite 101
Gaithersburg, MD 20878