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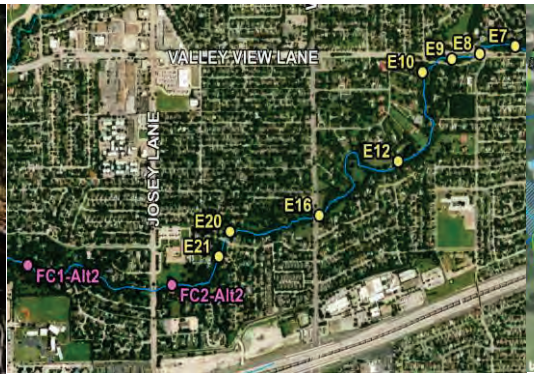

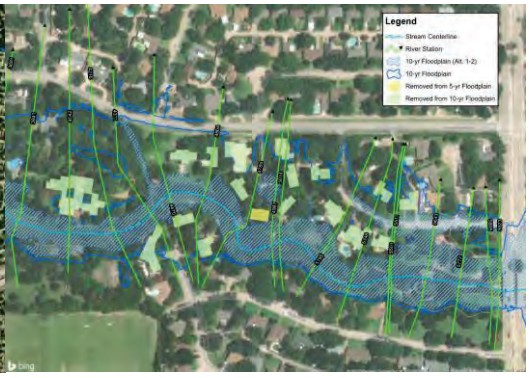

FARMERS BRANCH CREEK

WATERSHED STUDY

FBR16407

FINAL REPORT

Prepared for:

City of Farmers Branch, Texas

July 2018

Prepared by:

FREESE AND NICHOLS, INC.
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
214-217-2200

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FBR16407

FINAL REPORT

Prepared for:

City of Farmers Branch, Texas

07/30/2018

FREESE AND NICHOLS, INC.
TEXAS REGISTERED
ENGINEERING FIRM
F-2144

Prepared by:
FREESE AND NICHOLS, INC.
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Appendix C – Check Dam Inspection Summary

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Appendix F – Nationwide Permits Terms and Conditions

EXECUTIVE SUMMARY

The City of Farmers Branch retained Freese & Nichols Inc. (FNI) to identify locations throughout Farmers Branch Creek at risk for flooding and erosion and to develop concept-level alternatives to address these problem areas. In Phase I of the project, FNI created a hydrologic and hydraulic model to map existing and ultimate floodplains to identify structures at risk for flooding and inundation during various storm events. In addition, a geomorphologic site assessment was performed to classify portions of the reach as "high" or "moderate" erosion priority.

In Phase II of the project, FNI developed concept-level alternatives and cost estimates to address flood and erosion risk along the reach. Over half of the sixty-one (61) homes identified as being in the 100-year floodplain are subject to flooding during the 10-year storm; providing flood risk reduction for smaller storm events can result in noticeable improvement for properties which are subject to frequent flooding. Therefore, this study focuses on identifying alternatives to reduce flood risk during the 2-, 5-, and 10-year storm events. FNI provided alternatives at this level for three (3) flood risk priority areas. In addition, FNI provided erosion control project alternatives for twenty-three (23) areas identified as "high" or "moderate" erosion priority in the geomorphic assessment.

To prioritize the different project alternatives, FNI led the City staff and the City's Municipal Drainage Utility System (Stormwater) Advisory Committee through a pairwise criteria weighting process, which allows a set of defined criteria to be ranked against each other, establishing their weight and relative importance. FNI then scored the projects according to the defined criteria to develop a ranked list of projects which reflects the City's goals and priorities. Improvements to the Webb Chapel Road bridge ranked the highest, indicating the criticality of addressing the potential structural safety issues. In addition, the top eight projects are all erosion control projects which protect existing City infrastructure, as many of these projects lie within existing City easements and have broad system impacts.

The ranking process is not intended to provide a prioritized list for the City to complete in order without exception. Clearly, other considerations such as budget limitations and project interdependency will have a significant impact on an implementation schedule. However, this tool is still valuable for City staff as it can support their decision-making process regarding alternatives selection and provide an effective basis to identify the projects that would result in the greatest overall benefit.

FNI recommends that the City begin addressing some of the more critical projects identified in this analysis within the next fiscal year, most notably the Webb Chapel bridge repair. The City may consider looking into additional funding opportunities outside of the existing stormwater utility fund to increase the City's capacity to fund projects along Farmers Branch Creek. In addition, it is recommended that the City perform further analysis on flood control options for the reach including a full benefit-cost analysis and consider buyouts of severe repetitive loss structures. FNI further recommends that the City review drainage policies relating to development and redevelopment and to consider possible courses of action to address system impacts stemming from any inadequate stormwater management practices.

1 INTRODUCTION

The Farmers Branch Creek Watershed is located primarily in the City of Farmers Branch, with the upstream portions of the reach extending into the City of Addison. Farmers Branch Creek flows from north to south, beginning as a manmade channel near the intersection of Beltwood Parkway West and Beltwood Parkway South in Addison, and terminating approximately 7.2 miles downstream at the confluence with the Elm Fork Trinity River. The general location is shown in **Exhibit 1.1**.

The creek is a treasured aspect of the community, and private properties near the stream are highly valued. However, flooding and erosion issues have been identified through floodplain analysis, site visits, and resident reports. Many of these homes along the creek are in designated FEMA Flood Hazard Zone AE, indicating that the homes lie within the 100-year regulatory floodplain. Many areas along the creek are also experiencing streambank erosion. While to some degree erosion is natural, erosion in urban watersheds is often accelerated by development and redevelopment. Progressive erosion often leads to a degradation of water quality and may threaten habitat availability and function, in addition to creating risk of damage to infrastructure such as underground utilities, bridges, and homes.

The City of Farmers Branch retained Freese & Nichols Inc. (FNI) to identify locations throughout the creek at risk for flooding and erosion and develop concept-level alternatives to address these problem areas. In Phase I of the project, FNI created a hydrologic and hydraulic model to map the ½-, 1-, 2-, 5-, 10-, 25-, 50-, 100- and 500-year floodplains to identify structures at risk for flooding and inundation during various design storm events. In addition, a geomorphologic site assessment was performed to classify portions of the reach experiencing high and moderate erosion. These efforts are detailed in the Existing Conditions report delivered to the City in March 2017.

In Phase II of the project, FNI developed concept-level alternatives and cost estimates for twenty-three (23) erosion control project areas identified in the geomorphic assessment and three (3) areas identified as areas of high flood risk. In collaboration with City staff and a committee of Farmers Branch citizens and elected officials, FNI selected criteria by which to assess individual projects. The committee and City staff then participated in a pair-wise ranking process, to weight the criteria relative to one another. Finally, the projects were scored using the ranked criteria, and a prioritized list of Capital Improvement Plan (CIP) projects was developed to provide guidance to City staff in future project planning and budgeting.

The following report details these efforts and FNI's final recommendations to City staff.

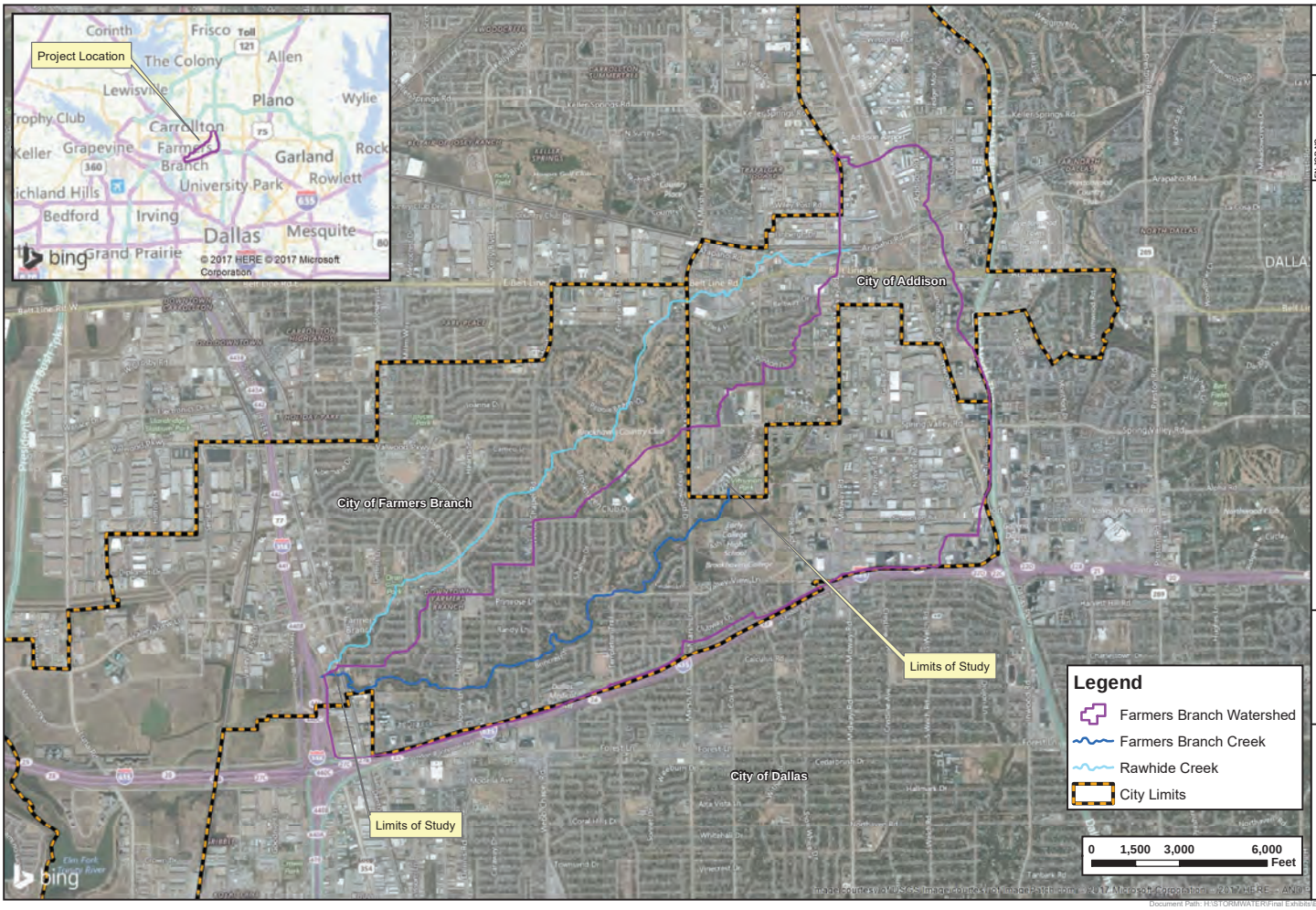

EXHIBIT 1.1

FN JOB NO F5R16407
FILE EX1.1_LocationMap
DATE 3/15/2017
SCALE 1:36,000
DRAFTED 02/28/3

Farmers Branch Creek Watershed Study

Project Location Map

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2711 North Haskell Ave.
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Dallas, Texas 75204
P: 214-217-2200

Document Path: H:\STORMWATER\Final Exhibits\EX1_1_Location Map.mxd

2 DATA COLLECTION FOR ALTERNATIVES ANALYSIS

2.1 GEOMORPHIC STREAM ASSESSMENT

Observations of stream morphology, erosion mechanisms, and instability indicators were made during the site visit to Farmers Branch Creek and provide insight into the existing and likely future physical state of the stream. Channel stability factors including critical shear stress and equilibrium slope were assessed through desktop analysis based on field observations. Each location was given a rating of low, moderate, high, or emergency erosion potential based on the conditions observed. In the study area, 36% of Farmers Branch Creek was lined with some sort of retaining wall improvement. About 11% of stream length contained ponded water and about 1% was impacted by construction. The remaining banks exhibited about 10% high, 13% moderate, and 29% low erosion potential.

Most areas observed were rated as having low erosion potential because Farmers Branch Creek has already been heavily altered from its natural state by dams, grade control structures and various bank stabilization methods. Most of these structures appear to be in good condition, although several structures such as inline structures, outfalls, bag walls and gabion mattresses are undercut or somewhat degraded. Several exposed pipelines and utilities were observed along the reach, and future erosion may threaten these areas. Other concerns include unprotected, bare, near-vertical banks which have high erosion potential. Please reference **Appendix B** for detailed geomorphologic analysis.

2.2 HYDRAULIC MODELING

An unsteady state hydraulic model of Farmers Branch Creek was developed in HEC-RAS 5.0.3 as part of the initial analysis of existing conditions. For ease of evaluating alternatives, the unsteady model was converted to steady state to allow simulations for multiple storm events to be run simultaneously on the same alternative geometry. Flood control alternatives were evaluated for the 2-, 5-, and 10-year (ultimate) storm events. To convert between unsteady and steady state, major flow change locations were identified from the unsteady model and used to develop the steady state flow file.

In addition, the steady state model was calibrated to match the water surface elevations of the unsteady model within a half of a foot average throughout defined reaches, as shown in **Table 2.1**. Differences in Reach 12 were ignored, as the model was attempting to resolve the downstream boundary condition, and no structural flooding is being evaluated in this reach. Convergence was otherwise achieved by iteratively adjusting the Manning n-values of the steady state model. Special attention was given to the floodplain within portions of the reach identified as flood control project areas to ensure that the model was capturing the floodplain accurately and allowing suitable analysis of alternatives in these areas.

Table 2.1 – Results of Model Calibration

Reach Number	Descriptor	River Station	WSEL Difference by Storm Event (ft)			
			10-year (Ult.)	5-year (Ult.)	2-year (Ult.)	Average
1	Vitruvian Park to Marsh Lane	20699 - 18539	0.04	-0.09	-0.18	-0.08
2	Marsh Lane to Valley View Park Estates HOA Dam	18469 - 16594	0.50	0.42	0.29	0.40
3	Valley View Park Estates HOA Dam to Valley View Lane (WB)	16522 - 14034	0.53	0.47	0.30	0.44
4	Valley View Lane (WB) to Valley View Lane (EB)	14008 - 13271	0.09	0.10	0.10	0.09
5	Valley View Lane (EB) to Temple Trails Park	13158-11778	0.06	0.03	0.04	0.05
6	Temple Trails Park to Webb Chapel Road	11763 - 9235	-0.02	-0.02	0.01	-0.01
7	Webb Chapel Road to Veronica Road	9207-7585	0.47	0.33	0.34	0.38
8	Veronica Road to Josey Lane	7569 - 6150	-0.47	-0.09	0.29	-0.09
9	Josey Lane to “Bonneau” Dam	6127 - 3841	0.08	0.11	0.09	0.09
10	“Bonneau” Dam to Ford Road	3681 - 2566	0.51	0.52	0.43	0.49
11	Ford Road to Denton Road	2435 - 711	0.03	-0.16	-0.38	-0.17
12	Denton Road to Harry Hines Boulevard	626 - 184	0.81	0.36	1.02	0.73

3 OVERVIEW OF PROJECT AREAS

3.1 FLOOD RISK REDUCTION PROJECT AREAS

Development and redevelopment are occurring rapidly in Farmers Branch, so flood risk reduction alternatives were evaluated for ultimate watershed conditions. The hydraulic model identified 61 structures located in the ultimate 100-year floodplain. Forty-nine (49) of these homes were identified in the existing conditions model to be inundated during lower recurrence storm events, as noted in **Table 3.1**.

Table 3.1 – Structural Flooding by Storm Event

Storm Event (Ultimate Conditions)	Total Number of Structures in Floodplain
2-year	20
5-year	23
10-year	32
25-year	42
50-year	49
100-year	61

Due to the proximity of homes to Farmers Branch Creek, as well as the highly-urbanized characteristics of the upstream watershed, City staff acknowledged the difficulty of achieving feasible flood risk reduction alternatives which would remove homes from the 100-year regulatory floodplain. Nevertheless, FNI provided high-level evaluations of both detention and channelization alternatives for the 100-year event. Generally, these projects would require a great deal of land acquisition upstream in the commercial district of Farmers Branch and/or purchase and demolition of residential properties along the creek. These alternatives were not deemed feasible, with respect to both public perception and loss of tax revenue.

Over half of the homes identified as being in the 100-year floodplain are subject to flooding during the 10-year storm. Providing flood risk reduction for smaller storm events can result in noticeable improvement for properties which are subject to frequent flooding. For example, an alternative which takes a home from the 2- to the 10-year floodplain reduces the annual risk of flooding at that property by 40%. Considering these factors, the City chose to focus this study on identifying alternatives to reduce flood risk during the 2-, 5-, and 10-year storm events.

Based on the ultimate conditions hydraulic model, FNI identified three areas of residential flooding which were the subject of alternative analysis, listed below and shown in **Figure 3.1**.

- **Area 1 – Mallon Park** neighborhood, between Farmers Branch Lane and Reedcroft Drive
- **Area 2 – Sunbeck** neighborhood, between Josey Lane and Selma Lane
- **Area 3 – East Brookhaven and Wooded Creek** neighborhoods, primarily along Wooded Creek Drive and Tanglewood Drive

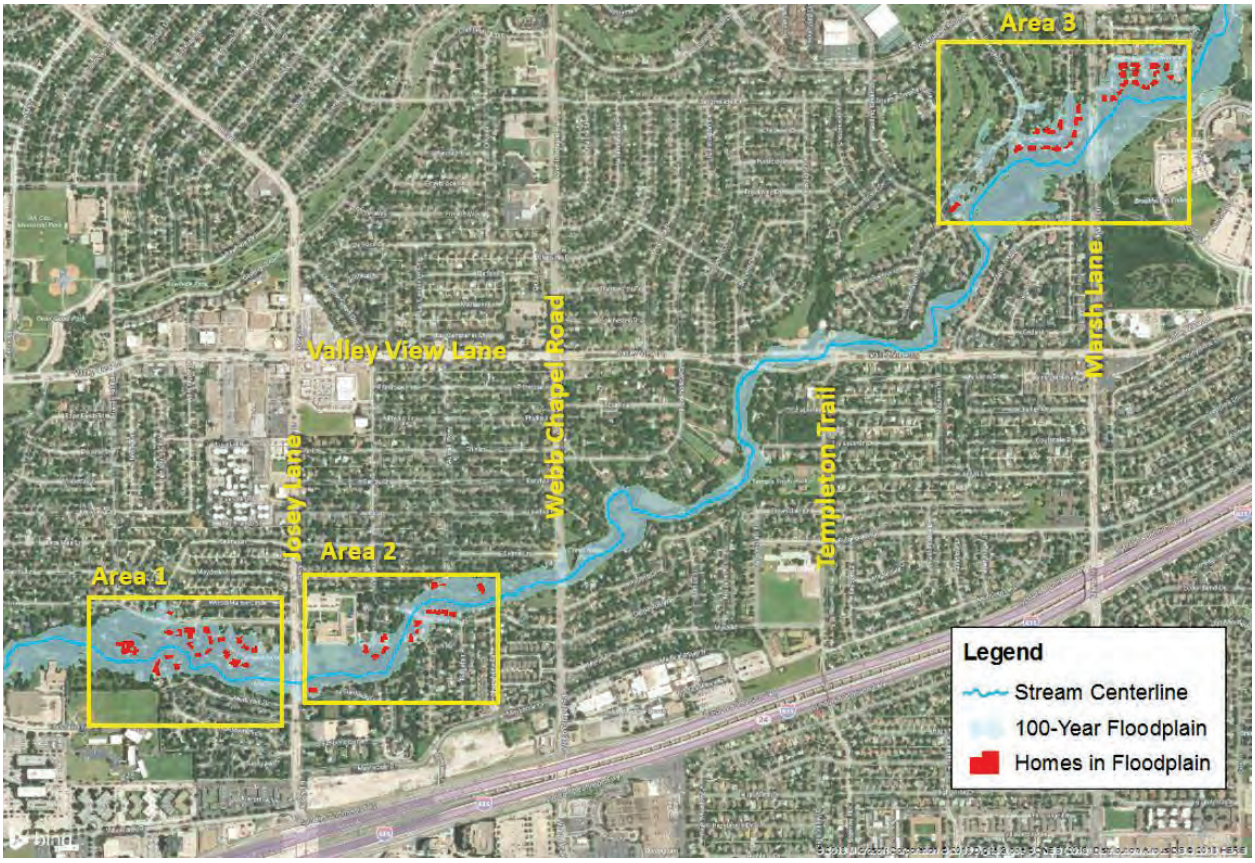


Figure 3.1 – Flood Risk Reduction Project Areas

3.1.1 Residential Flooding Area 1 – Mallon Park

Eighteen structures are shown to be at-risk for flooding during the 10-year storm, with 14 of those structures shown to be at-risk for flooding during the 2-year event. This reach is subject to impoundment from a 6-ft tall dam, which is cracked and undermined on the left side. The dam was classified as poor condition by both the structural dam assessment and geomorphological stream assessment. In addition, there is substantial sediment deposition along this portion of the reach upstream of the dam, as well as an exposed sanitary sewer line downstream of the dam.

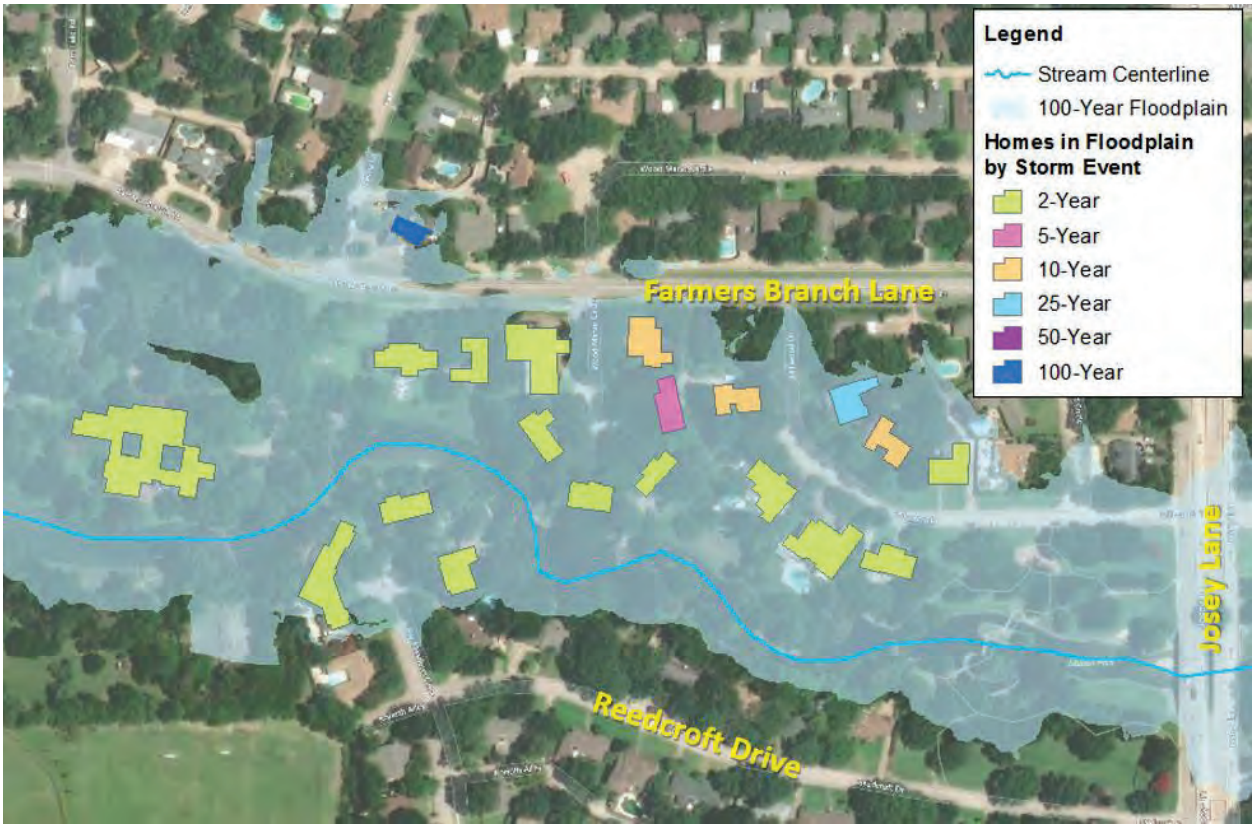


Figure 3.2 – Area 1 Flood Risk

3.1.2 Residential Flooding Area 2 – Sunbeck

Josey Lane bridge is shown to be subject to flooding at the 2-year storm. Three homes adjacent to Janie Stark Elementary School are subject to flooding during the 10-yr event, with 1 of those structures subject to flooding during the 2-yr event. In addition, there are areas of moderate and high erosion potential along this reach.

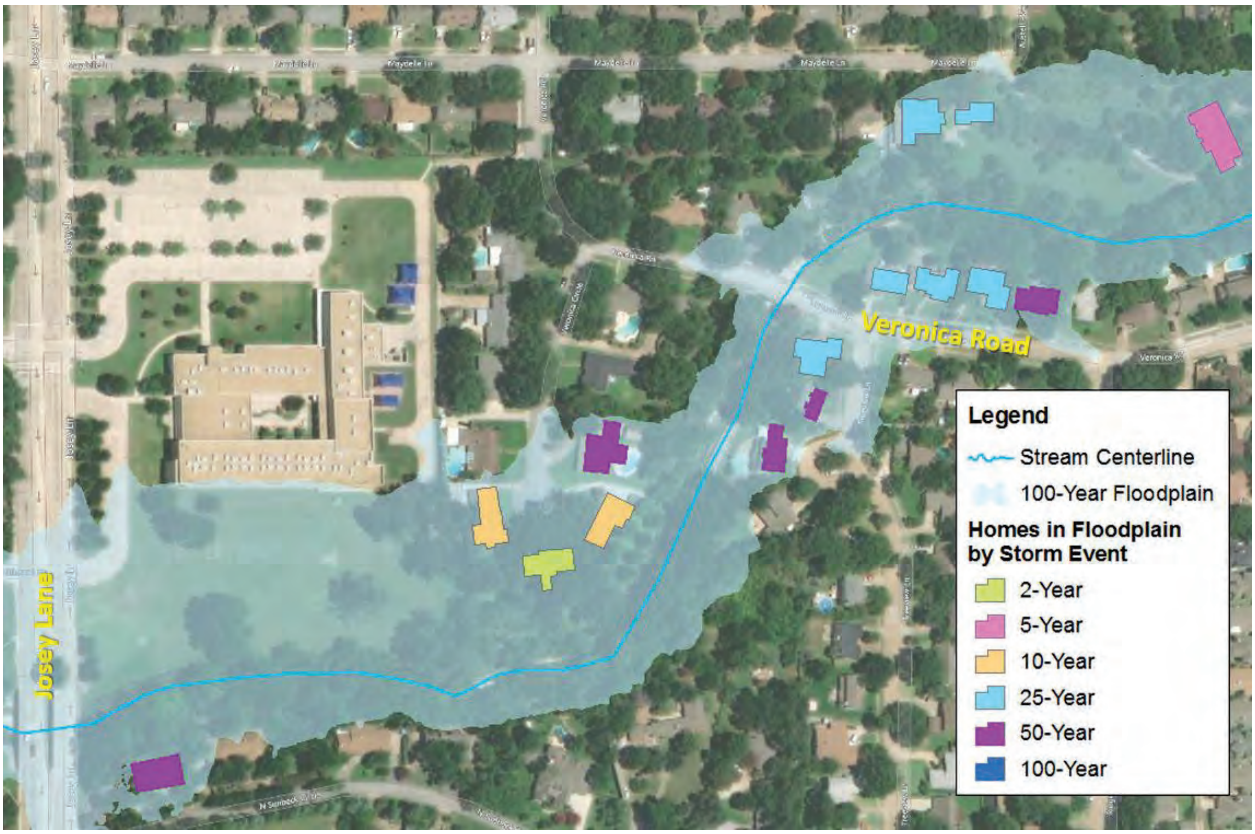


Figure 3.3 – Area 2 Flood Risk

3.1.3 Residential Flooding Area 3 – East Brookhaven and Wooded Creek

Eleven (11) structures along Braemar Drive and Tanglewood Drive are shown to be at-risk of flooding during the 10-year flood event, with six (6) of those structures shown to be at-risk of flooding during the 2-year flood event. This reach is subject to impoundment from an existing dam. Farmers Branch Creek along this reach is relatively narrow and bounded on its left bank by the Valley View Estates HOA pond, which is impounded by another dam located adjacent to the one on the creek. The area is environmentally sensitive due to the presence of wetlands near the pond area.

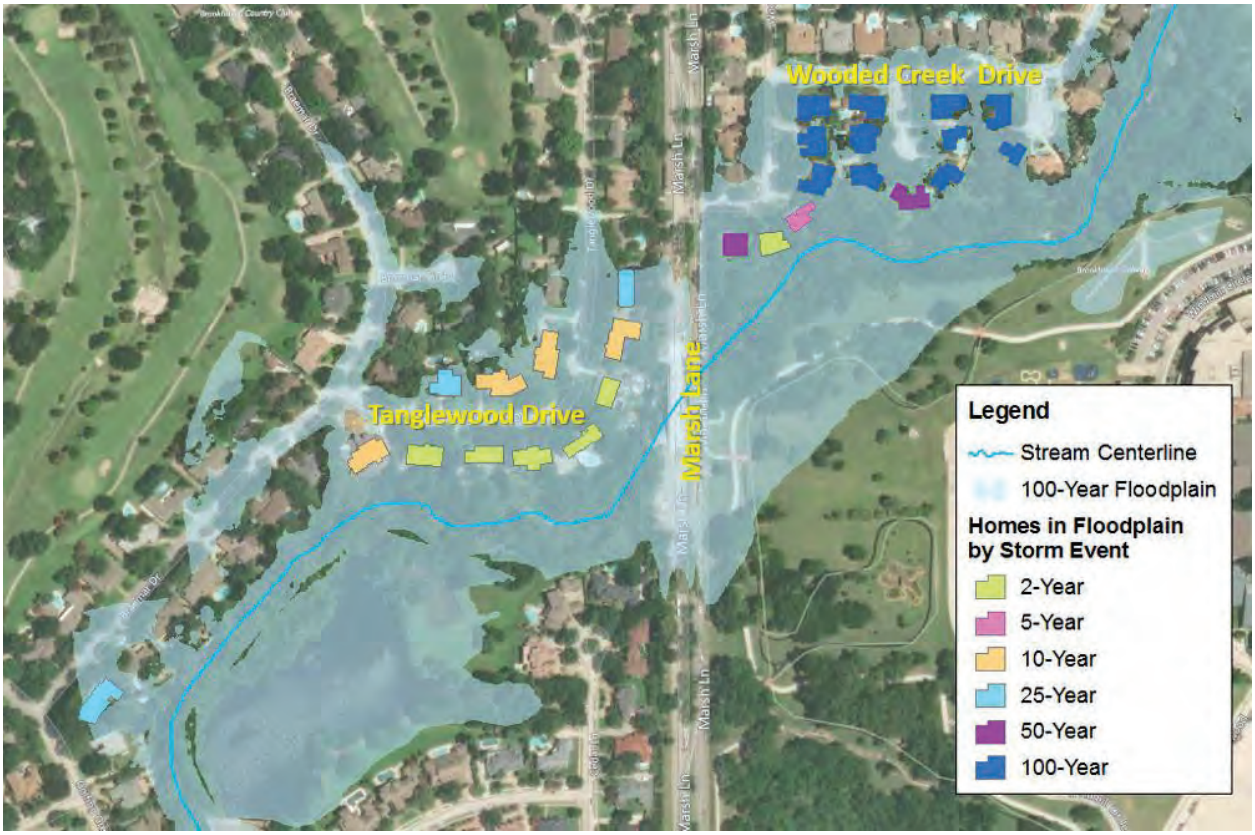
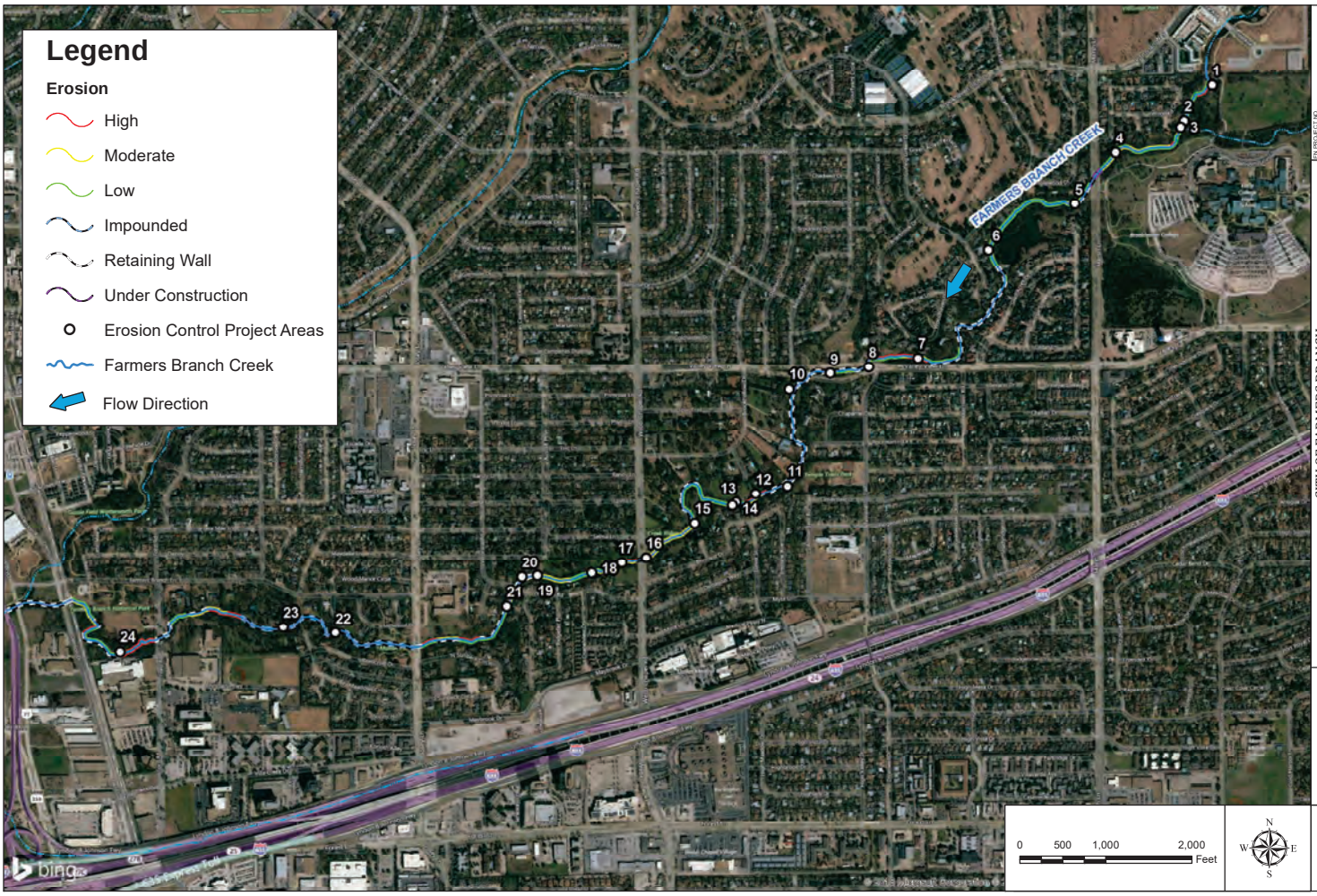


Figure 3.4 – Area 3 Flood Risk

3.2 EROSION CONTROL PROJECTS

Several areas of "high" and "moderate" erosion priority were identified during the geomorphologic stream assessment. In total, 23 project areas were identified as potential project sites. **Exhibit 3.1** shows the location of erosion control alternative project areas, with descriptions and costs listed below in **Table 3.2**. Detailed opinions of probable construction cost (OPCCs) are included in the project information sheets in **Appendix A**. Project areas in bold typeface indicate that the alternative addresses erosion threatening City infrastructure. For more information and for site photos, please refer to the geomorphologic stream assessment report, attached as **Appendix B**.



CITY OF FARMERS BRANCH

Farmers Branch Creek Watershed Study

Erosion Control Project Locations

FB1 PROJECT NO: FBR16607
DATE CREATED: 8/1/2016
DATUM & COORDINATE SYSTEM: NAD83 State Plane (feet) Texas North Central
FILE NAME: ErosionControl_Locations1
PREPARED BY: WJS

FREESE NICHOLS
4500 International Plaza Suite 300
Fort Worth, Texas 76109-4895
(817) 735-7300

EXHIBIT

3.1

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Table 3.2 – Erosion Control Project Locations

Project Area	Description	Estimated Cost
E-1	Gully headcutting toward culvert under walking trail; high erosion of 15-FT bank near Brookhaven College	$1,388,130
E-2	Fill placed on left bank at outfall; erosion of fill could lead to damaged gabions	$130,620
E-3	Streambank erosion near fence	$267,050
E-4*	Stormwater outfall undercut by 2 FT	$53,020
E-5	Collapsing bag wall	$495,010
E-6	Collapsing bagwall; leaning trees	$309,850
E-7*	Cracked concrete channel lining on left bank; eroded right bank with leaning trees and undercut banks	$1,138,840
E-8*	Gully undercutting trail crossing near Valley View Lane; shale on bed of gully	$128,230
E-9*	Timber crib wall leaning toward channel; protects Valley View Lane East; might need replacing	$117,690
E-10	Damaged sheet pile check dam; acts as grade control and protects sewer line	$214,110
E-11	Concrete drop grade control with broken concrete and deep pool on downstream side	$105,730
E-12*	Pipe exposed downstream of manhole; pipe exposed on bed; Manhole in center of channel at a junction of three lines; Eroded right bank next to manhole; exposed pipes show >12 FT of erosion	$764,340
E-13	Deck at top of unprotected bank appears to be leaning toward stream	$163,980
E-14*	Collapsed headwall and section of pipe, evidence of widening	$42,550
E-15	Gabion mattress toe undercut on upstream and downstream ends	$139,740
E-16*	Upstream right bridge protection collapsed; Exposed utility (gray pipe, potentially fiber cable line) has caused debris jam; 2-FT vertical undercutting and 5.5-FT horizontal undercutting of Webb Chapel Road	$623,700
E-17	10-FT tall, south-facing, unvegetated bank; tension cracks, high erosion	$131,950
E-18	Collapsed bag wall and damaged fence from rotational failure	$29,700
E-19	Erosion of right retaining wall (flow through wall)	$47,320
E-20*	Erosion of left bank above retaining wall, exposing manhole at downstream end	$76,560
E-21*	Manhole threatened by high bank erosion	$243,330
E-22	Private dam with downstream left abutment undercut 2-3 FT	$59,250
E-23	Degraded check dam with water flowing underneath	$55,690

***indicates project which addresses erosion threatening City infrastructure**

4 ALTERNATIVES ANALYSIS

4.1 FLOOD RISK REDUCTION ALTERNATIVES

Concept-level alternatives were explored for each flood and erosion control area identified in **Section 3**. The alternatives focused on reducing flood risk during the 2-, 5- and 10-year storm events. Two alternatives with different levels of flood-risk reduction were identified for each of the three flood risk reduction project areas. The estimated costs of the flood risk reduction alternatives range from $1 - $5 million. Site-specific alternatives are described in detail in the project information sheets attached as **Appendix A**. One alternative is provided for each area that includes only channel grading and does not require private property acquisitions (buyouts) or changes to major structures. The second alternative for each area requires more substantial changes to the creek, surrounding areas, and associated in-line structures. These include:

- Removing the "Bonneau" property dam in **Area 1** and installing a series of smaller drop structures
- Raising the Josey Lane bridge in **Area 2**
- Executing buyouts of private homes in **Area 3**

While the second set of alternatives are costlier, these also provide more substantive flood risk reduction benefits to surrounding homes and structures. It is important to note that flood risk was estimated based on location of homes within the floodplain boundary and does not account for site-specific flood-proofing or finished floor elevations. It is recommended that these characteristics be evaluated as part of a larger cost-benefit analysis of flood risk reduction projects.

4.2 EROSION CONTROL PROJECT AREAS

Engineering and geomorphic assessment of the erosion control project locations facilitated development of a conceptual project alternative for each site. The proposed projects generally fall into three main categories of improvements: slope grading and mechanically stabilized earth (MSE), traditional "hard armor" structural retaining walls, and structural repairs to bridges and in-line structures. The following section describes general bank stabilization solutions; for site-specific alternatives and repairs, please reference the project information sheets attached as **Appendix A**.

An effort was made to preserve existing creek aesthetic or restore natural channel banks wherever possible. Several solutions propose removing failed hard armor structures, re-grading the banks at a shallower slope, and in some cases installing MSE, a method of strengthening soils by layering compacted dirt with geosynthetic reinforcement materials. This solution allows for regrowth of vegetation and repopulation of aquatic species.

MSE and grading are effective forms of bank stabilization; however, this solution is not appropriate where space is constrained or in some cases where proximity to major infrastructure necessitates a hard-armor solution. In some instances, structural retaining walls of modular concrete block (MCB), gabion, or Envirolok are a preferred alternative. MCB are interlocking blocks used to create a retaining structure that can be constructed relatively easy as a gravity system or anchored to fit in a smaller footprint. In other

situations, gabion baskets or mattresses are proposed, generally to replace or tie-on to existing gabion structures.

Envirolok walls are somewhat of a happy medium between the hard-armor and natural solution. The wall is constructed of layered, soil-filled bags made of a geotextile material and staked together, which provides stability and reinforcement while allowing for a smaller footprint. When vegetation is established, the plant roots grow through the bags, locking the soil in place and providing for permanent stabilization along with a façade of riparian vegetation.

FNI conducted a visual inspection of 11 dams and inline structures along the reach, with an inspection summary prepared and provided to the City in May 2017. The memorandum is included for reference as **Appendix C**. Generally, the dams are in fair or good condition and do not require extensive repairs. The exception is the dam on the Bonneau family property, approximately 900 feet upstream of the Ford Road crossing. It is recommended that this dam be removed or replaced, though planning-level analysis has only been performed at this time. Removal of the dam is included as a component of the flood risk reduction alternatives for Area 1. Other structural repairs generally include backfilling and spot repairs of existing in-line structures, and some replacement of minor stormwater infrastructure including headwalls.

The total estimated cost of all 23 erosion control projects is $6.1 million. These costs include design fees and construction but do not include environmental coordination and permitting. Intentional phasing of individual projects into larger project areas is recommended, as it may help reduce mobilization fees as well as the cost of materials.

4.3 SECTION 404 PERMITTING REQUIREMENTS

A desktop review was conducted to identify potential Section 404 permitting requirements related to the construction of the proposed erosion and flood risk reduction projects as described in the previous sections. Results from this evaluation indicate that the proposed projects would occur in Farmers Branch Creek, which is classified as jurisdictional Waters of the U.S. and therefore subject to Section 404 of the Clean Water Act permitting regulations.

Based on our desktop review of available design information, it is our preliminary opinion that the proposed erosion projects could be authorized by a Nationwide Permit (NWP) with or without requiring a submittal of a Pre-Construction Notification (PCN) to the US Army Corps of Engineers (USACE). Projects that involve the repair, rehabilitation, or replacement of existing structures such as gabion walls, outfalls, and drop structures should be designed to meet the terms and conditions of NWP 3, Maintenance. Projects that involve maintenance, repair, and removal of utility lines should be designed to meet the terms and conditions of NWP 12, Utility Lines. Projects that involve activities necessary for erosion control or prevention, such as retaining walls, toe protection, and grading and reestablishment of banks should be designed to meet the terms and conditions of NWP 13, Bank Stabilization. Projects that involve the protection of existing linear transportation crossings such as roads, bridges, and trails should be designed to meet the terms and conditions of NWP 14, Linear Transportation Projects. Copies of the terms and conditions of these NWPs are provided in **Appendix F**.

This is a preliminary assessment based on available information for planning purposes. Once the proposed repair projects are under design, a more detailed permitting evaluation should be completed. The permitting evaluation would include tasks such as a site visit with delineation of the ordinary high water mark (OHWM) of Farmers Branch Creek and any adjacent wetlands, review and coordination with design engineers regarding the linear feet, volume and type of fill proposed below the OHWM or in other jurisdictional areas, and preparation of an environmental permitting evaluation technical memorandum which provides a summary of our findings and opinion as to whether or not the project has been designed to meet the terms and conditions of applicable NWP(s) including PCN requirements.

For projects that require a PCN, a preliminary jurisdictional determination report and PCN should be prepared and submitted to the USACE. For projects that exceed NWP impact thresholds an individual permit application should be prepared and submitted to the USACE. The following table provides preliminary Section 404 permitting requirements, estimated timelines and costs for planning purposes:

Table 4.1 – Preliminary Section 404 Permitting Requirements

Project ID	Potential Section 404 Permitting Requirement	Estimated Permitting Timeline	Estimated Permitting Cost
E16	NWP 14 without PCN for bridge protection. NWP 12 without PCN for lowering of utilities.	1-2 months from 60% design	$10K-$15K
E12	NWP 13 without PCN for MSE wall. NWP 12 without PCN for encasing of sanitary sewer line.	1-2 months from 60% design	$10K-$15K
E20	NWP 3 without PCN	1-2 months from 60% design	$10K-$15K
E21	NWP 13 without PCN	1-2 months from 60% design	$10K-$15K
E7	NWP 13 without PCN	1-2 months from 60% design	$10K-$15K
E9	NWP 13 without PCN	1-2 months from 60% design	$10K-$15K
E10	NWP 3 with a PCN for removal of sheet pile dam and accumulated sediment. NWP 12 without PCN for sanitary sewer encasement.	3-6 months from 60% design	$30K-$40K

Project ID	Potential Section 404 Permitting Requirement	Estimated Permitting Timeline	Estimated Permitting Cost
E24	NWP 3 without PCN	1-2 months from 60% design	$10K-$15K
E8	NWP 13 without PCN	1-2 months from 60% design	$10K-$15K
FC1-Alt2	NWP 27 with PCN	9-12 months from 60% design	$80K-$100K
FC2-Alt2	NWP 13 with PCN	6-9 months from 60% design	$50K-$60K
E14	NWP 3 without PCN for CIP and headwall replacement. NWP 13 without PCN for new rip rap protection.	1-2 months from 60% design	$10K-$15K
E19	NWP 3 without PCN	1-2 months from 60% design	$10K-$15K
E13	NWP 13 without PCN	1-2 months from 60% design	$10K-$15K
E6	NWP 3 without PCN	1-2 months from 60% design	$10K-$15K
E5	NWP 3 without PCN	1-2 months from 60% design	$10K-$15K
E3	NWP 13 without PCN	1-2 months from 60% design	$10K-$15K
E4	NWP 3 without PCN	1-2 months from 60% design	$10K-$15K
E18	NWP 13 without PCN	1-2 months from 60% design	$10K-$15K
E17	NWP 13 without PCN	1-2 months from 60% design	$10K-$15K
E15	NWP 13 without PCN	1-2 months from 60% design	$10K-$15K
FC1-Alt1	Individual Permit	12-24 months from 60% design	$100K-$200K

Project ID	Potential Section 404 Permitting Requirement	Estimated Permitting Timeline	Estimated Permitting Cost
E2	NWP 3 without PCN for removal fill. NWP 13 without a PCN for new rip rap protection.	1-2 months from 60% design	$10K-$15K
E1	NWP 13 with PCN	3-6 months from 60% design	$30K-$40K
E11	NWP 3 without PCN	1-2 months from 60% design	$10K-$15K
E22	NWP 3 without PCN	1-2 months from 60% design	$10K-$15K
FC3-Alt2	Individual Permit	12-24 months from 60% design	$100K-$200K
E23	NWP 3 without PCN	1-2 months from 60% design	$10K-$15K
FC2-Alt1	Individual Permit	12-24 months from 60% design	$100K-$200K
FC3-Alt1	Individual Permit	12-24 months from 60% design	$100K-$200K

Notes: NWP 13 without PCN assumes proposed fill will not exceed 500 linear feet or 1 cubic yard per running foot below the plane of the OHWM. NWP 3 assumes the existing structures would be considered previously authorized and as-built plans and information can be provided by the City. Estimated timeline is subject to change based on USACE review and approval. Estimated permitting cost does not include potential compensatory mitigation cost.

5 RISK MATRIX AND PROJECT PRIORITIZATION

The stormwater capital improvement projects (CIP) described in **Section 4** were prioritized according to a ranking system developed in coordination with City staff and the City's Municipal Drainage Utility System (Stormwater) Advisory Committee. Presentations from the Committee meetings are attached as **Appendix D**. The ranking system was used as a tool to assess the relative importance of the CIP projects identified in this study.

The first step in the process is to select and define the criteria to be used in the ranking procedure. A pairwise comparison table is then developed which allows criteria to be ranked against each other, thus establishing their weight or relative importance. Each project is then evaluated and scored based on the selected criteria. The final product is a ranked list of projects which reflects the City's goals and priorities.

It is important to note that this ranking process is not intended to provide a prioritized list for the City to complete in order without exception. Clearly, other considerations such as budget limitations and project interdependency will have a significant impact on an implementation schedule. However, this tool is still valuable for City staff as it can support their decision-making process regarding alternatives selection and provide an effective basis to identify the projects that would result in the greatest overall benefit.

5.1 CRITERIA SELECTION AND DEFINITION

FNI coordinated with City staff and the Stormwater Advisory Committee to identify and define eleven different ranking criteria:

- Aesthetics/Usability
- Area of Impact
- Availability of Easements
- Construction Cost
- Environmental Impacts
- Erosion Classification
- Flood Risk Reduction
- Infrastructure Benefits
- Life Safety
- Maintenance
- Schedule

The definition and basis of scoring for each criterion is provided below. It was determined that each criterion would have a 10-point scoring range, ranging from a minimum score of one to a maximum score of ten. FNI developed quantifiable ranges for some criteria, while others were based on qualitative factors.

5.1.1 Aesthetics/Usability

Projects are awarded points for this criterion if they will preserve the intended use or aesthetics of existing facilities. This criterion reflects that projects which will require major changes to creek geometry or reduce natural creek aesthetics are unfavorable to the community.

Description	Score
Project improves existing creek aesthetic and preserves the intended use of facilities (stabilizes backyards, repairs favorable structures, restores natural channel where practical)	10
Project maintains existing creek aesthetics and usability (installation of new retaining structures required)	7
Project requires extensive changes to creek geometry, including removal of inline structures	3
Project requires buy-outs of private offline structures and/or removal of existing public facilities	1

5.1.2 Area of Impact

This criterion awards more points to projects that result in broad system impacts, as opposed to localized reduction in flood risk or erosion potential.

Description	Score
Project results in reach-scale improvements or provides broad community benefit	10
Project results in improvements to adjacent and off-site areas	7
Project results in improvements to concurrent and adjacent parcels only	5
Project results in improvements on local parcel only	3

5.1.3 Availability of Easements

This criterion is scored based on the availability of easements around the proposed project footprint. The City places high value on the ability to acquire a permanent easement to maintain any improvement constructed with City funds. A project receives the highest score if the proposed project lies entirely within an existing City easement.

Description	Score
Project will be constructed entirely within existing City easement	10
An available easement for a single property will need to be obtained for the project	3
Available easements for multiple properties will need to be obtained for the project	2
Project will be constructed without necessary City easement	1

5.1.4 Construction Cost

This criterion is scored based on the estimated construction cost of the project. Lower cost projects are given a higher score to represent the benefit of implementing projects within available budgets while making noticeable improvements to the creek.

Estimated Construction Cost	Score
< $50,000	10
$50,000 - $125,000	8
$125,000 - $500,000	5
$500,000 - $1,000,000	3
$1,000,000 - $2,000,000	2
>$2,000,000	1

5.1.5 Environmental Impacts

This criterion awards points to projects based on anticipated environmental impacts. Projects which will restore riparian habitat or otherwise provide environmental benefit receive higher scores to highlight sustainable practices and reflect anticipated reduced environmental permitting efforts. For more information on environmental permitting, see **Section 4.3**.

Description	Score
Project employs natural creek restoration techniques (restores natural floodplain function, reestablishes creek habitats, etc.)	10
Project provides moderate environmental benefit (reduces I&I, increases vegetation)	6
Project provides low environmental benefit (reduces sedimentation)	4
Project has no perceived environmental benefit	2
Project has negative environmental impacts	1

5.1.6 Erosion Classification

This criterion awards points to projects to reflect the urgency in addressing areas of high erosion which are threatening existing structures. Erosion classification was determined during the geomorphic field assessment performed in January and February 2017. It is important to note that flood risk reduction alternatives will also receive points in this category if the improvement also addresses an area classified as moderate or high erosion.

Description	Score
High - Erosion affecting or threatening a structure; requires attention	10
Moderate/High – Erosion affecting retaining walls and fences	7
Moderate - Substantial erosion affecting trees and loss of land	4
Moderate/Low - Minor erosion affecting trees and loss of land	1

5.1.7 Flood Risk Reduction

Flood risk reduction alternatives were scored against each other based on the level of flood risk reduction which would be achieved by implementing the project. Flood risk was assessed based on the return interval event at which structural flooding begins, comparing between the post-project and pre-project (existing) conditions. The reduction in exceedance frequency for each structure provided incremental flood reduction scores for each structure; the sum of these incremental scores provided a total structural flood reduction score. The flood reduction scores were normalized to the 1-10 scale to be consistent with the scoring of the other criteria. For a detailed breakdown of the flood risk reduction scoring, please see the score sheets attached as **Appendix E**.

5.1.8 Infrastructure Benefits

This criterion awards points to projects which protect existing public infrastructure or private structures. Projects which provide protection to City infrastructure receive higher scores to reflect the criticality associated with failure of such structures.

Description	Score
Project provides protection to existing City infrastructure (bridges, culverts, roads, buildings, etc.)	10
Project provides protection to existing City infrastructure; (manholes, pipes, headwalls, etc.)	8
Project provides protection to existing private structures (houses, decks, or living areas)	6
Project provides protection to existing private structures (bag walls, gabions, landscaping)	4
Project does not provide protection to existing structures (no imminent threat)	2
Project requires removal of existing City infrastructure or private structures	1

5.1.9 Life Safety

This criterion awards points for the life safety component of the project. The project receives a higher score if it will provide substantial life safety impacts through notable flood risk reduction or improvement of a bridge or building at risk of structural failure.

Description	Score
Project provides potential substantial life safety impacts	10
Project provides limited life safety impacts	5
Project provides minimal life safety impacts	2

5.1.10 Maintenance

This criterion is scored based on the anticipated effort and associated cost to maintain the improvement on the part of the City. A project receives a higher score if the anticipated maintenance effort is within the existing capacities of City public works staff.

Description	Score
Project will not require City maintenance	10
Project maintenance will be performed by City staff with existing capabilities and equipment (i.e. trimming foliage, clearing debris)	8
Project maintenance may require training, additional staff, and/or purchase of equipment	5
Project maintenance will be extensive and may require outside contract work (i.e. major structural repairs, dredging)	1

5.1.11 Schedule

This criterion awards points to projects which can be completed quickly, considering project-readiness factors including availability of resources, pre-construction coordination, and construction schedule.

Description	Score
Projects has all necessary resources available and can complete construction quickly	10
Project requires some pre-construction coordination, but construction can be completed quickly	7
Project requires extensive pre-construction coordination or demands a longer construction schedule	4
Project requires extensive pre-construction coordination and demands a longer construction schedule	1

5.2 CRITERIA WEIGHTING

A pairwise comparison table was developed to rank each of the eleven criteria against each other. FNI led the Stormwater Advisory Committee and City staff through a pairwise ranking exercise, which allowed the criteria to be prioritized according to community goals. A score of 3 means that the criterion being evaluated is more important than the one in which it is being compared to, a score of 1 means that the criterion is considered less important than the other, and a score of 2 is given if both criteria are considered equally important. The individual scores for each response were averaged to determine the score to be input into the pairwise matrix.

The sum of scores for each category is considered its "weight", which divided by the total score of all categories (220) provides the weighted percentage. City staff and the Stormwater Advisory Committee reviewed the results of the pairwise analysis and provided comments. The final pairwise matrix and the weighted criteria ranking are shown in **Table 5.1** and **5.2**, respectively.

Table 5.1 – Pairwise Evaluation Criteria Matrix

		1	2	3	4	5	6	7	8	9	10	11		
	Criteria	Construction Cost	Maintenance	Availability of Easements	Schedule	Life Safety	Infrastructure Benefits	Flood Risk Reduction	Erosion Classification	Environmental Impacts	Aesthetics/ Usability	Area of Impact	Sum	Rank
1	Construction Cost		2.00	2.13	2.75	1.00	1.75	1.13	1.88	1.50	2.00	1.50	17.63	7
2	Maintenance	2.00		2.13	2.13	1.00	1.38	1.13	1.38	1.50	1.88	1.63	16.13	9
3	Availability of Easements	1.88	1.88		2.13	1.00	1.50	1.25	1.25	1.50	1.63	1.50	15.50	10
4	Schedule	1.25	1.88	1.88		1.00	1.25	1.25	1.25	1.50	1.38	1.38	14.00	11
5	Life Safety	3.00	3.00	3.00	3.00		2.88	2.63	2.75	2.88	2.88	2.75	28.75	1
6	Infrastructure Benefits	2.25	2.63	2.50	2.75	1.13		1.50	1.88	2.38	2.63	1.75	21.38	4
7	Flood Risk Reduction	2.88	2.88	2.75	2.75	1.38	2.50		2.88	2.63	3.00	2.38	26.00	2
8	Erosion Classification	2.13	2.63	2.75	2.75	1.25	2.13	1.13		2.00	2.63	2.25	21.63	3
9	Environmental Impacts	2.50	2.50	2.50	2.50	1.13	1.63	1.38	2.00		2.13	2.13	20.38	6
10	Aesthetics/ Usability	2.00	2.13	2.38	2.63	1.13	1.38	1.00	1.38	1.88		1.50	17.38	8
11	Area of Impact	2.50	2.38	2.50	2.63	1.25	2.25	1.63	1.75	1.88	2.50		21.25	5

Table 5.2 – Pairwise Evaluation Criteria Ranking

Rank	Weighted Percentage	Criteria
1	13.07%	Life Safety
2	11.82%	Flood Risk Reduction
3	9.83%	Erosion Classification
4	9.72%	Infrastructure Benefits
5	9.66%	Area of Impact
6	9.26%	Environmental Impacts
7	8.01%	Construction Cost
8	7.90%	Aesthetics/ Usability
9	7.33%	Maintenance
10	7.05%	Availability of Easements
11	6.36%	Schedule

5.3 PROJECT SCORES AND RANKING

To normalize the scoring, each score (1-10) was multiplied by the total number of projects (29) and divided by the highest possible score (10). The normalized ranking scores were then multiplied by their weighted percentage. This provided a point value where the project with the highest point total was considered the most desirable. The score for each criterion and the resulting ranking of the 29 projects evaluated in this study are presented in **Table 5.3** and shown graphically in **Figure 5.1**.

A detailed breakdown of scoring for each project is provided in the Project Information sheets, attached as **Appendix A**. A map showing the distribution of the ten projects receiving the highest scores is shown as **Exhibit 5.1**. Project E16 (improvements to Webb Chapel Road bridge) ranked the highest, indicating the criticality of addressing the potential structural safety issues. In addition, the top eight projects are all erosion control projects which protect existing City infrastructure, as many of these projects are within existing City easements and have broad system impacts.

The final two projects in the top 10 are flood risk reduction alternatives for Mallon Park and Sunbeck, respectively. Though they are some of the most expensive projects, the scores reflect the benefit of providing relief from frequent flooding to residents along the creek. In addition, the Sunbeck alternative ranked #10 proposes to raise the Josey Lane bridge, providing additional life safety impacts. The project scores and rankings were reviewed by the Stormwater Committee, who formally recommended that the City Council accept the rankings as proposed at the City Council Study Session on June 19, 2018.

Table 5.3 – Detailed Project Scores and Ranking

Rank	Project Number	Construction Cost	Maintenance	Availability of Easements	Schedule	Life Safety	Infrastructure Benefits	Flood Risk Reduction	Erosion Classification	Environmental Impacts	Aesthetics/ Usability	Area of Impact	Normalized Score
1	E16	3	8	10	4	10	10	1	10	2	7	10	19.9
2	E12	3	10	2	7	2	10	1	10	6	7	10	17.3
3	E20	8	10	1	10	2	8	1	7	4	10	7	16.7
4	E21	5	10	1	7	2	8	1	10	4	7	10	16.5
5	E7	2	10	10	7	2	10	1	7	4	7	5	15.9
6	E9	8	10	10	7	2	2	1	7	6	7	5	15.6
7	E10	5	10	1	7	2	8	1	7	6	7	7	15.3
8	E8	8	8	10	7	2	8	1	7	2	7	1	14.7
9	FC1-Alt2	1	8	1	1	5	6	9	1	10	3	7	14.6
10	FC2-Alt2	1	8	1	1	10	10	2	1	4	3	10	14.5
11	E14	10	10	1	10	2	8	1	7	2	7	1	14.3
12	E19	10	10	1	10	2	4	1	7	2	7	3	13.7
13	E13	5	10	1	7	5	6	1	7	4	7	1	13.7
14	E6	5	10	1	7	5	6	1	7	1	7	3	13.4
15	E5	5	10	1	7	2	4	1	7	6	7	3	13.1
16	E3	5	10	1	4	2	6	1	7	4	7	3	12.5
17	E4	10	8	1	10	2	8	1	1	2	7	1	12.1
18	E18	10	8	1	10	2	2	1	1	6	7	3	12.1
19	E17	8	10	1	7	2	2	1	4	4	7	3	11.8
20	E15	5	10	1	7	2	2	1	7	2	7	3	11.4
21	FC1-Alt1	2	8	1	1	2	6	7	1	4	3	7	11.4
22	E2	8	8	1	4	2	4	1	7	2	7	1	11.1
23	E1	2	8	1	4	2	2	1	4	4	7	5	10.0
24	E11	8	10	1	7	2	2	1	1	2	7	1	9.9
24	E22	8	10	1	7	2	2	1	1	2	7	1	9.9
26	FC3-Alt2	1	8	1	1	5	6	4	1	1	1	5	9.5
27	E23	8	8	1	7	2	2	1	1	2	7	1	9.4
28	FC2-Alt1	2	8	1	4	2	6	1	1	4	3	5	9.3
29	FC3-Alt1	2	8	1	1	2	6	1	1	1	3	5	8.0

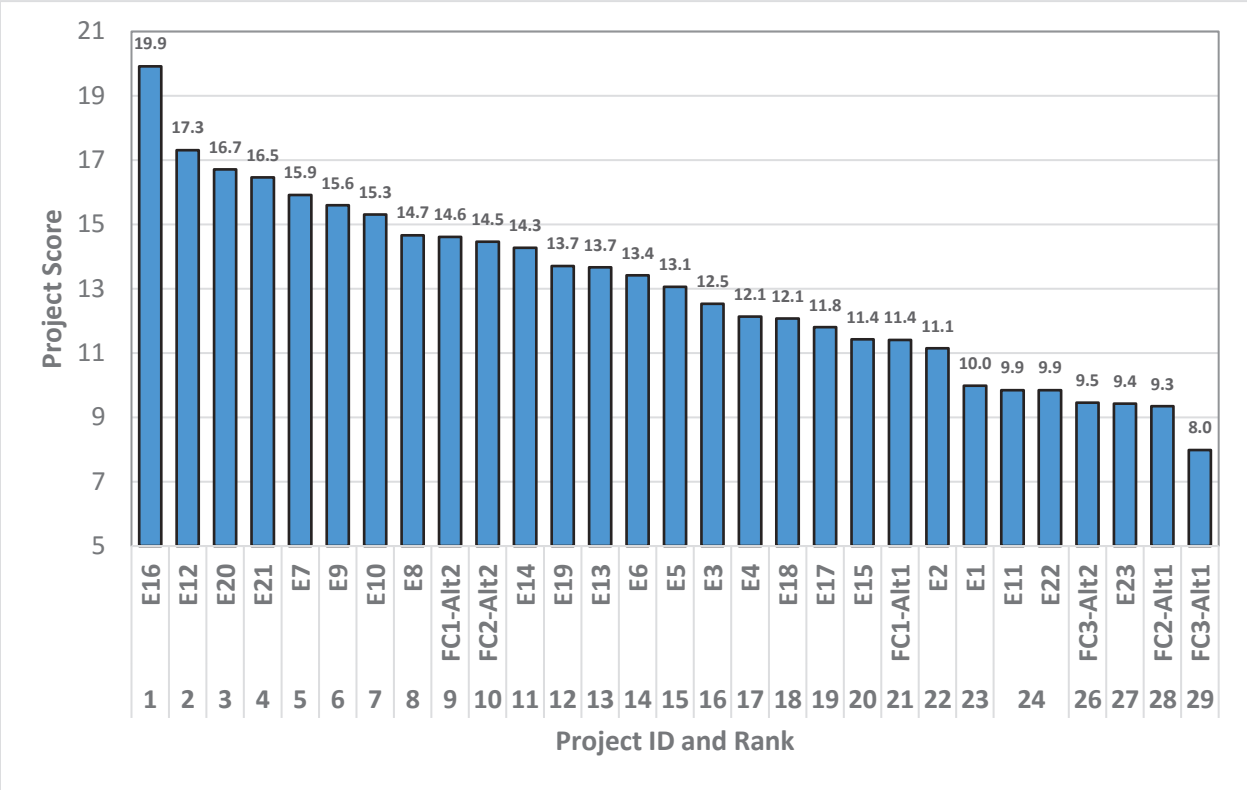
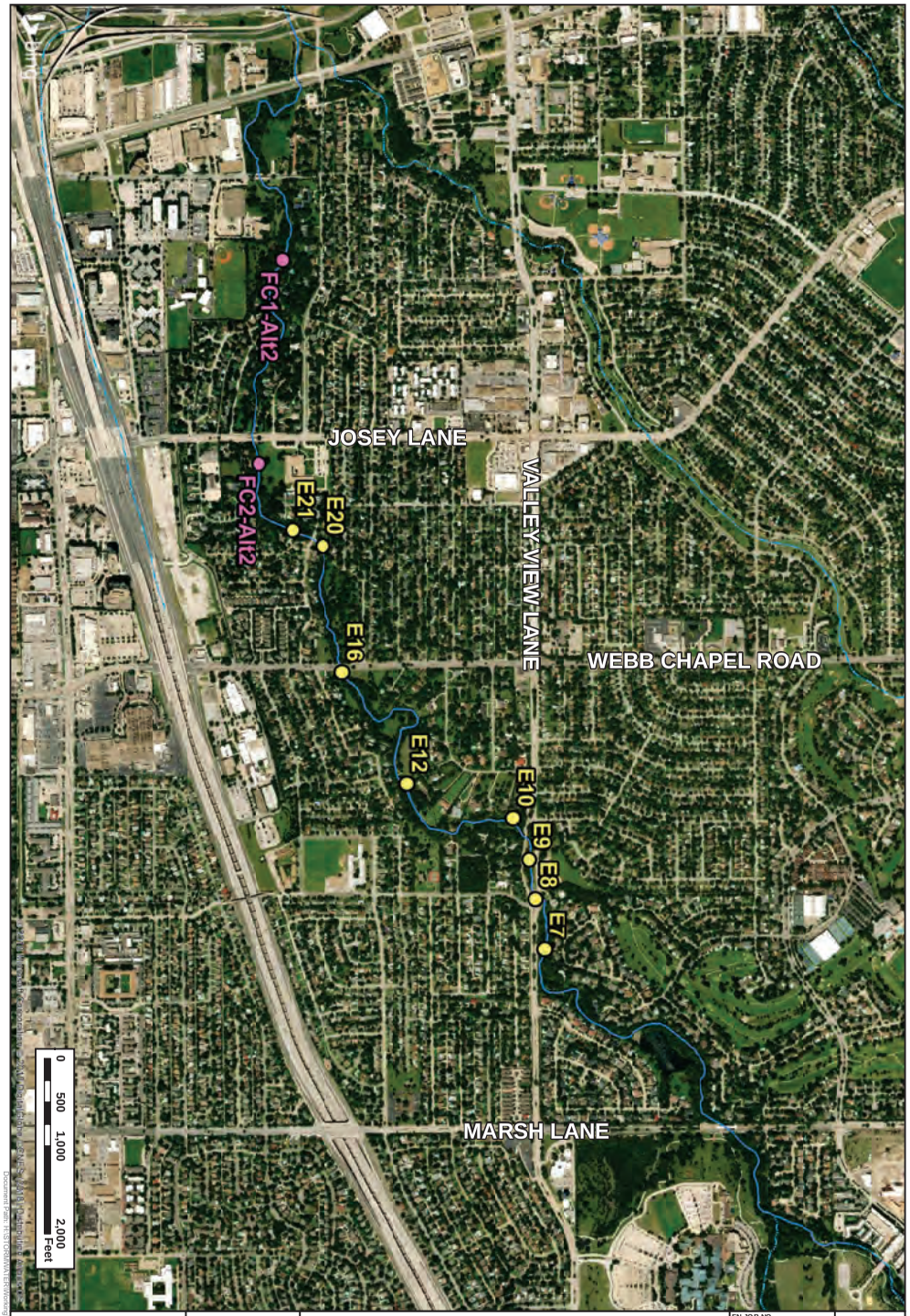


Figure 5.1 – Project Score and Ranking Summary



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Suite 3300
Dallas, Texas 75204
P: 214-217-2200

Top 10 Project Locations

City of Farmers Branch, Texas

FN JOB NO	FBR16407
FILE	Top10Projects_Only
DATE	7/12/2018
SCALE	1:12,000
DRAFTED	02537

EXHIBIT 5.1

5.4 PROJECT COORDINATION AND MEETINGS

FNI worked closely with City staff and the Stormwater Advisory Committee to develop and rank project alternatives. Below is a general overview of project coordination tasks:

- **May 2, 2018 –** FNI met with the Stormwater Advisory Committee and City staff to present an overview of project alternatives and cost estimates and to guide the Committee through the CIP criteria ranking exercise.
- **May 16, 2018 –** FNI met with the Stormwater Advisory Committee and City staff to provide the final CIP criteria ranking and a list of prioritized projects for review.
- **May 31, 2018 –** FNI met with the Stormwater Advisory Committee and City to review the Committee recommendations. The Committee recommended accepting the CIP project prioritization list as provided by FNI and requested that FNI prepare materials and attend the City Council Study Session.
- **June 19, 2018 –** FNI provided slides and the prioritized CIP list and attended the City Council Study Session, where the Stormwater Advisory Committee presented recommendations to Council.

6 CONCLUSION

The prioritized list of CIP projects will serve as a useful tool in decision making and budgeting as the City assesses it's stormwater program going forward. It is recommended that the City begin addressing some of the more critical projects identified in this analysis within the next fiscal year, including most notably the Webb Chapel bridge repair. The estimated total cost of the erosion control projects is $6.1 million, and it is recommended that individual projects be combined into larger project areas for environmental permitting and to help reduce mobilization fees and the cost of materials.

It is estimated that many of these projects can be completed in the next 5-10 years using the City's current stormwater utility fee. To shorten the timeline as well as to address more expensive flooding problems, the City may consider increasing the stormwater utility fee, providing for public-private cost-sharing, applying for state and federal grant funding, or creating bond packages.

In addition, it is recommended that the City perform further analysis on flood risk reduction options for the reach including a full benefit-cost analysis and consider buyouts of severe repetitive loss structures. FNI further recommends that the City review drainage policies relating to development and redevelopment and to enact changes including ordinance updates to address system impacts stemming from any inadequate stormwater management policies.

Appendix A
Project Information Sheets

CIP Project Prioritization

Farmers Branch Watershed Study

City Council Study Session Meeting

June 19, 2018

FARMERS BRANCH

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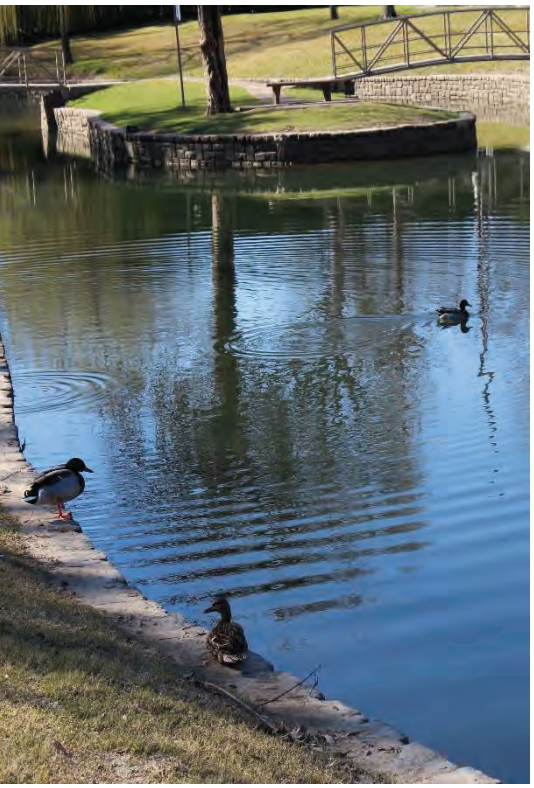
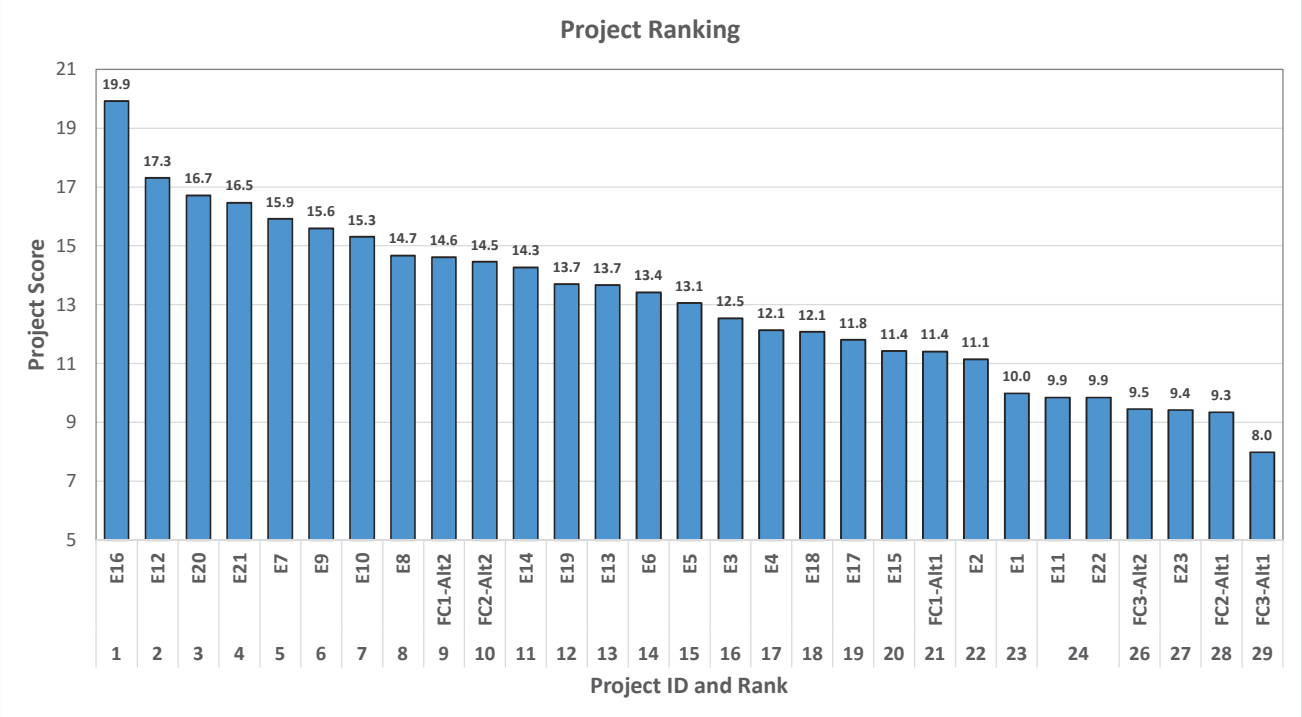


Farmers Branch Watershed Study - CIP Project Rankings					
Rank	**Reference Address**	**Project Type**	**Project ID**	**Project Cost**	**Score**
1	Webb Chapel Rd Bridge	Erosion Control	E16	$623,700	19.9
2	3100 Block of Brookhollow Dr	Erosion Control	E12	$764,340	17.3
3	2900 Block of Maydelle Ln	Erosion Control	E20	$76,560	16.7
4	12200 Block of Treeview Ln	Erosion Control	E21	$243,330	16.5
5	3500 Block of Valley View Ln	Erosion Control	E7	$1,138,840	15.9
6	3300 Block of Chaparral Dr	Erosion Control	E9	$117,690	15.6
7	3100 Block of Brookhollow Dr	Erosion Control	E10	$214,110	15.3
8	3300 Block of Valley View Ln	Erosion Control	E8	$128,230	14.7
9	Farmers Branch Lane	Flood Risk Reduction	FC1-Alt2	$5,000,000	14.6
10	Josey Lane to Veronica Road	Flood Risk Reduction	FC2-Alt2	$5,000,000	14.5
11	3200 Block of Brincrest Dr	Erosion Control	E14	$42,550	14.3
12	2900 Block of Maydelle Ln	Erosion Control	E19	$47,320	13.7
13	Lost Vally Dr	Erosion Control	E13	$163,980	13.7
14	13100 Block of Glad Acres Dr	Erosion Control	E6	$309,850	13.4
15	13200 Block of Cedar Ln	Erosion Control	E5	$495,010	13.1
16	13800 Block of New Bark Cir	Erosion Control	E3	$267,050	12.5
17	13800 Block of Wooded Creek Dr	Erosion Control	E4	$53,020	12.1
18	2900 Block of Maydelle Ln	Erosion Control	E18	$29,700	12.1
19	3000 Block of Selma Ln	Erosion Control	E17	$131,950	11.8
20	3200 Block of Brincrest Dr	Erosion Control	E15	$139,740	11.4
21	Farmers Branch Lane	Flood Risk Reduction	FC1-Alt1	$2,000,000	11.4
22	3700 Block of Wooded Creek Ln	Erosion Control	E2	$130,620	11.1
23	3900 Block of Valley View Ln	Erosion Control	E1	$1,388,130	10.0
24	12200 Block of Brisbane Ave	Erosion Control	E11	$105,730	9.9
24	2800 Block of Reedcroft Dr	Erosion Control	E22	$59,250	9.9
26	Marsh Lane	Flood Risk Reduction	FC3-Alt2	$5,000,000	9.5
27	2700 Block of Farmers Branch Ln	Erosion Control	E23	$55,690	9.4
28	Josey Lane to Veronica Road	Flood Risk Reduction	FC2-Alt1	$2,000,000	9.3
29	Marsh Lane	Flood Risk Reduction	FC3-Alt1	$2,000,000	8.0



Reference Address:	Webb Chapel Rd Bridge		
Project ID: E-16	**CIP Rank: 1 of 29**	**Score: 19.9**	**Estimated Cost: $623,700**
Problem Description:	Upstream right bridge protection collapsed; Exposed utility (gray pipe, potentially fiber cable line) has caused debris jam; 2-FT vertical undercutting and 5.5-FT horizontal undercutting of Webb Chapel Road		
Proposed Improvement:	Bridge structural assessment required. Consider structural assessment of Ford Road bridge in conjunction with Webb Chapel assessment. Depending on the outcome of the structural assessment, proposed improvements include removal of existing concrete rip rap, buildup of existing grade at abutments to original levels, installation of gabion mattress rip rap at abutments, across channel bed, and upstream to protect bridge. If structural assessment of bridge indicates it is near the end of its lifespan, total replacement of the bridge may be required.		

Right Abutment

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-16

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-16				
1	Site Preparation	1	LS	$50,000	$50,000
2	Demolition	1	LS	$50,000	$50,000
3	Temporary Creek Crossing for Equipment	1	EA	$2,500	$2,500
4	Restore Pre-Construction Site Conditions	1	LS	$25,000	$25,000
5	Dewatering	1	LS	$15,000	$15,000
6	CIP Concrete Sanitary Sewer Encasement	7	CY	$1,000	$7,000
7	Bridge Structural Assessment	1	LS	$20,000	$20,000
8	Gabion Mattress	350	CY	$350	$122,500
9	Bridge Structural Improvements	1	LS	$100,000	$100,000
10	Unclassified Channel Excavation	100	CY	$25	$2,500
11	Rock Rip Rap (18")	100	CY	$155	$15,500
12	Stormwater Pollution Prevention	1	LS	$10,000	$10,000
				Subtotal	**$420,000**
	Mobilization	5	%	$21,000	$21,000
	Contingency	30	%	$126,000	$126,000
	Design Fee - Basic Services	10	%	$42,000	$42,000
	Design Fee - Special Services	3.5	%	$14,700	$14,700
				Project Total	**$623,700**

Notes:

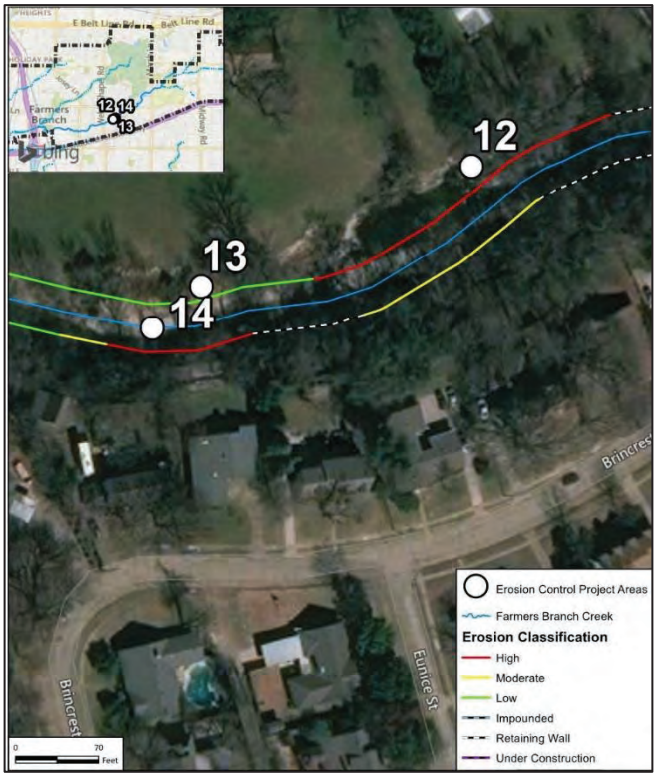
Costs do not include environmental coordination and permitting.

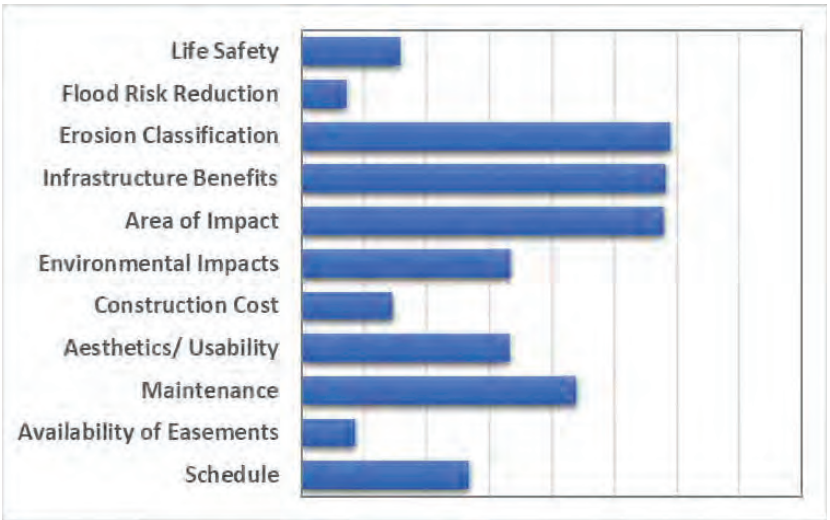
Farmers Branch Watershed Study
June 14, 2018

Reference Address:	3100 Block of Brookhollow Dr		
Project ID: E-12	**CIP Rank: 2 of 29**	**Score: 17.3**	**Estimated Cost: $764,340**
Problem Description:	Pipe exposed downstream of manhole; pipe exposed on bed; Manhole in center of channel at a junction of three lines; Eroded right bank next to manhole; exposed pipes show >12 FT of erosion		
Proposed Improvement:	Encase 50 LF exposed sanitary sewer line. Monitor existing sanitary sewer manhole and consider removal and relocation. Install 100 LF, 15-FT tall MSE wall with 5 FT stone toe protection through concrete-lined portion of the channel.		

Main Channel

Right Bank





Opinion of Probable Construction Cost
Preliminary – Intended for Review Only

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-12

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-12				
1	Site Preparation	1	LS	$15,000	$15,000
2	Demolition	1	LS	$25,000	$25,000
3	Temporary Creek Crossing for Equipment	1	EA	$2,500	$2,500
4	Restore Pre-Construction Site Conditions	1	LS	$10,000	$10,000
5	CIP Concrete Sanitary Sewer Encasement	15	CY	$1,000	$15,000
6	Dewatering	1	LS	$15,000	$15,000
7	Temporary Structural Shoring	1,650	SF	$50	$82,500
8	Mechanically Stabilized Earth (MSE) Wall	3,170	SF	$50	$158,500
9	Ground Anchor Earth Reinforcement	90	EA	$1,500	$135,000
10	Cut Stone Toe Reinforcement	124	TON	$300	$37,200
11	Unclassified Channel Excavation	560	CY	$25	$14,000
12	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$514,700**
	Mobilization	5	%	$25,735	$25,740
	Contingency	30	%	$154,410	$154,410
	Design Fee - Basic Services	10	%	$51,470	$51,470
	Design Fee - Special Services	3.5	%	$18,015	$18,020
				Project Total	**$764,340**

Notes:

Costs do not include environmental coordination and permitting.

Farmers Branch Watershed Study
June 14, 2018

Reference Address:	2900 Block of Maydelle Ln		
Project ID: E-20	**CIP Rank: 3 of 29**	**Score: 16.7**	**Estimated Cost: $76,560**
Problem Description:	Erosion of left bank above retaining wall, exposing manhole at downstream end		
Proposed Improvement:	Install riprap to protect existing manhole. Repair undermined wall structure with CIP concrete. Consider repairs or unclogging to low level outlet structure.		

Left Bank

Opinion of Probable Construction Cost
Preliminary – Intended for Review Only

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-20

City of Farmers Branch

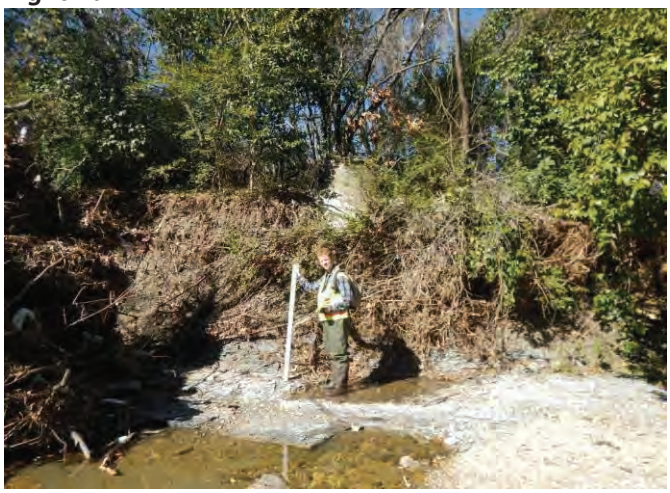
ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

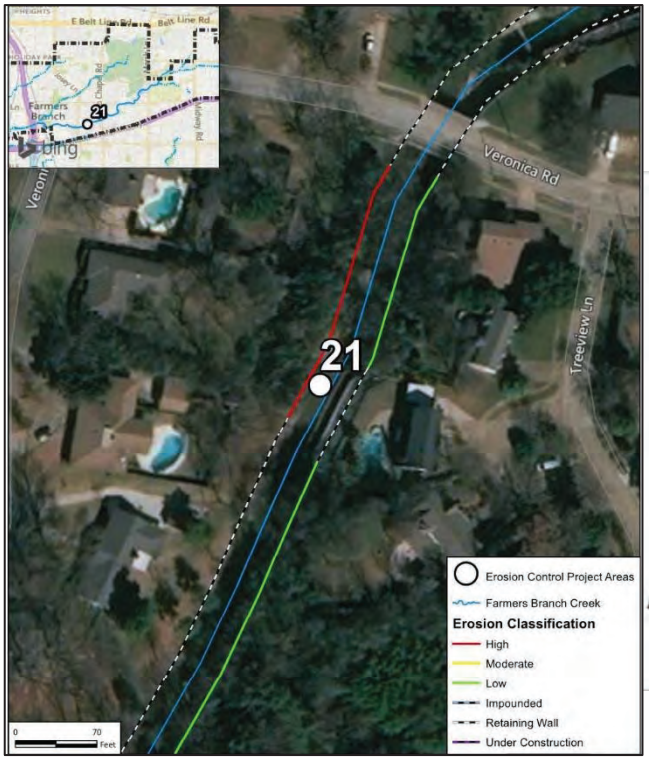
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-20				
1	Site Preparation	1	LS	$5,000	$5,000
2	Demolition	1	LS	$5,000	$5,000
3	Restore Pre-Construction Site Conditions	1	LS	$2,500	$2,500
4	Dewatering	1	LS	$10,000	$10,000
5	Manhole Stabilization	1	LS	$10,000	$10,000
6	CIP Concrete Wall Repair	5	CY	$2,500	$12,500
7	Rock Rip Rap (18")	10	CY	$155	$1,550
8	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$51,550**
	Mobilization	5	%	$2,578	$2,580
	Contingency	30	%	$15,465	$15,470
	Design Fee - Basic Services	10	%	$5,155	$5,160
	Design Fee - Special Services	3.5	%	$1,804	$1,800
				Project Total	**$76,560**

Notes:
Costs do not include environmental coordination and permitting.

Reference Address:	12200 Block of Treeview Ln		
Project ID: E-21	**CIP Rank: 4 of 29**	**Score: 16.5**	**Estimated Cost: $243,330**
Problem Description:	Manhole threatened by high bank erosion		
Proposed Improvement:	Extend anchored gabions 50 LF downstream to protect existing manhole. Install gabion mattress around bend. Add rock rip rap protection around manhole and downstream of gabion structure.		

Right Bank





Opinion of Probable Construction Cost
Preliminary – Intended for Review Only

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-21

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-21				
1	Site Preparation	1	LS	$15,000	$15,000
2	Temporary Creek Crossing for Equipment	1	EA	$2,500	$2,500
3	Restore Pre-Construction Site Conditions	1	LS	$5,000	$5,000
4	Dewatering	1	LS	$15,000	$15,000
5	Manhole Stabilization	1	LS	$10,000	$10,000
6	Ground Anchor Earth Reinforcement	40	EA	$1,500	$60,000
7	Gabion Basket	130	CY	$350	$45,500
8	Rock Rip Rap (18")	38	CY	$155	$5,850
9	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$163,850**
	Mobilization	5	%	$8,193	$8,190
	Contingency	30	%	$49,155	$49,160
	Design Fee - Basic Services	10	%	$16,385	$16,390
	Design Fee - Special Services	3.5	%	$5,735	$5,740
				Project Total	**$243,330**

Notes:

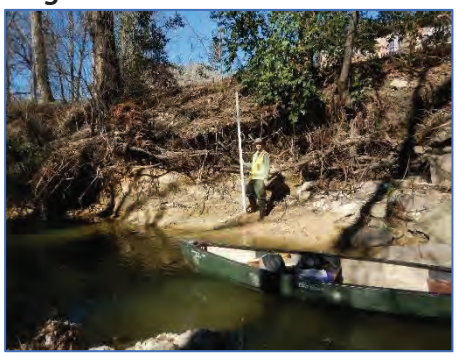
Costs do not include environmental coordination and permitting.

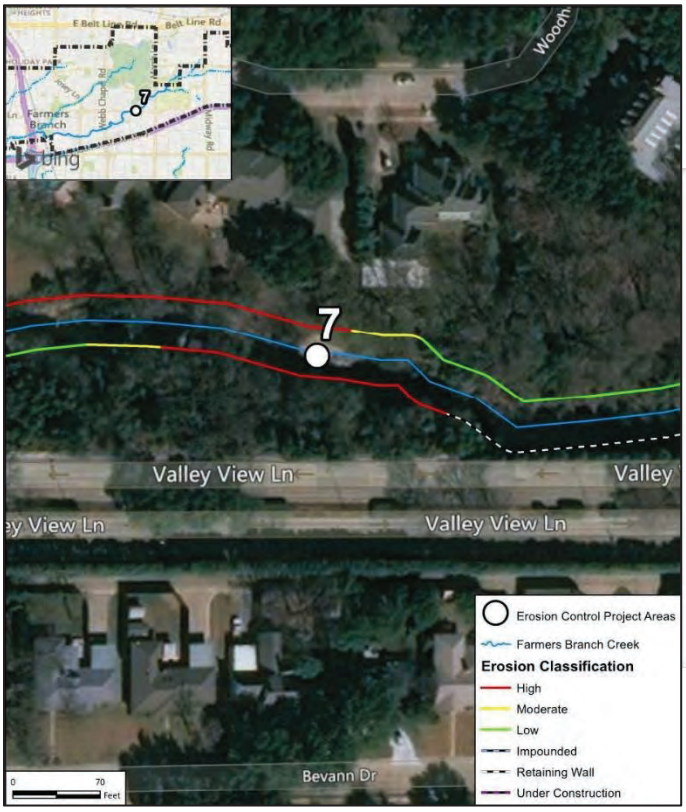
Farmers Branch Watershed Study
June 14, 2018

Reference Address:	3500 Block of Valley View Ln		
Project ID: E-7	**CIP Rank: 5 of 29**	**Score: 15.9**	**Estimated Cost: $1,138,840**
Problem Description:	Cracked concrete channel lining on left bank; eroded right bank with leaning trees and undercut banks		
Proposed Improvement:	Remove existing concrete bank stabilization. Existing concrete in channel bed to remain. Install 240 LF, 6-FT high modular concrete block wall on left bank to protect Valley View Lane bridge. Install 170 LF, 6-FT high MSE wall with 5-FT stone toe reinforcement on right bank.		

Left Bank

Right Bank





Opinion of Probable Construction Cost
Preliminary – Intended for Review Only

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-7

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

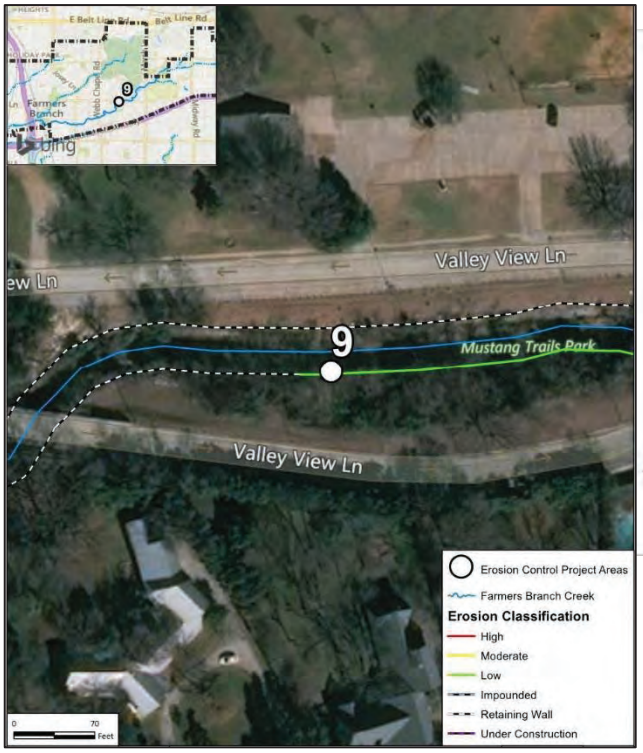
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-7				
1	Site Preparation	1	LS	$25,000	$25,000
2	Demolition	1	LS	$10,000	$10,000
3	Remove Concrete Channel Lining	150	CY	$30	$4,500
4	Temporary Creek Crossing for Equipment	1	EA	$2,500	$2,500
5	Temporary Structural Shoring	2,160	SF	$50	$108,000
6	Restore Pre-Construction Site Conditions	1	LS	$10,000	$10,000
7	Dewatering	1	LS	$15,000	$15,000
8	Mechanically Stabilized Earth (MSE) Wall	3,610	SF	$50	$180,500
9	Ground Anchor Earth Reinforcement	120	EA	$1,500	$180,000
10	Cut Stone Toe Reinforcement	210	TON	$300	$63,000
11	Modular Concrete Block Wall	1,810	SF	$75	$135,750
12	Unclassified Channel Excavation	570	CY	$25	$14,250
13	Hydromulch	2,500	SY	$2	$5,000
14	Fence	170	LF	$20	$3,400
15	Stormwater Pollution Prevention	1	LS	$10,000	$10,000
				Subtotal	**$766,900**
	Mobilization	5	%	$38,345	$38,340
	Contingency	30	%	$230,070	$230,070
	Design Fee - Basic Services	10	%	$76,690	$76,690
	Design Fee - Special Services	3.5	%	$26,842	$26,840
				Project Total	**$1,138,840**

Notes:

Costs do not include environmental coordination and permitting.

Reference Address:	3300 Block of Chaparral Dr		
Project ID: E-9	**CIP Rank: 6 of 29**	**Score: 15.6**	**Estimated Cost: $117,690**
Problem Description:	Timber crib wall leaning toward channel; protects Valley View Lane East; might need replacing		
Proposed Improvement:	Remove 30 LF timber crib wall. Remove 5 CY existing concrete. Reestablish natural bank slope and riparian vegetation. Preserve trees as possible.		

Left Bank



Opinion of Probable Construction Cost
Preliminary – Intended for Review Only

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-9

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-9				
1	Site Preparation	1	LS	$10,000	$10,000
2	Demolition	1	LS	$15,000	$15,000
3	Remove Timber Crib Wall	1	LS	$8,000	$8,000
4	Restore Pre-Construction Site Conditions	1	LS	$5,000	$5,000
5	Dewatering	1	LS	$15,000	$15,000
6	Turf Reinforcement Mat (TRM)	190	SY	$20	$3,800
7	Sod	190	SY	$10	$1,900
8	2" Top Soil	190	SY	$5	$950
9	Establish Vegetation	190	SY	$35	$6,650
10	Unclassified Channel Excavation	310	CY	$25	$7,750
11	Hydromulch	100	SY	$2	$200
12	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$79,250**
	Mobilization	5	%	$3,963	$3,960
	Contingency	30	%	$23,775	$23,780
	Design Fee - Basic Services	10	%	$7,925	$7,930
	Design Fee - Special Services	3.5	%	$2,774	$2,770
				Project Total	**$117,690**

Notes:

Costs do not include environmental coordination and permitting.

Farmers Branch Watershed Study
June 14, 2018

Reference Address:	3100 Block of Brookhollow Dr		
Project ID: E-10	**CIP Rank: 7 of 29**	**Score: 15.3**	**Estimated Cost: $214,110**
Problem Description:	Damaged sheet pile check dam; acts as grade control and protects sewer line		
Proposed Improvement:	Remove sheet pile dam. Sheet pile bank protection to remain. Encase sanitary sewer in CIP grade control structure. Remove sediment buildup.		

Right Bank

Main Channel

Opinion of Probable Construction Cost
Preliminary – Intended for Review Only

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-10

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-10				
1	Site Preparation	1	LS	$15,000	$15,000
2	Demolition	1	LS	$15,000	$15,000
3	Remove Sheet Pile dam	1	LS	$30,000	$30,000
4	Temporary Creek Crossing for Equipment	1	EA	$2,500	$2,500
5	Restore Pre-Construction Site Conditions	1	LS	$10,000	$10,000
6	Dewatering	1	LS	$25,000	$25,000
7	CIP Grade Control Structure	15	CY	$2,500	$37,500
8	Remove Existing Concrete	45	CY	$30	$1,350
9	Unclassified Channel Excavation	20	CY	$25	$500
10	Rock Rip Rap (18")	15	CY	$155	$2,330
11	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$144,180**
	Mobilization	5	%	$7,209	$7,210
	Contingency	30	%	$43,254	$43,250
	Design Fee - Basic Services	10	%	$14,418	$14,420
	Design Fee - Special Services	3.5	%	$5,046	$5,050
				Project Total	**$214,110**

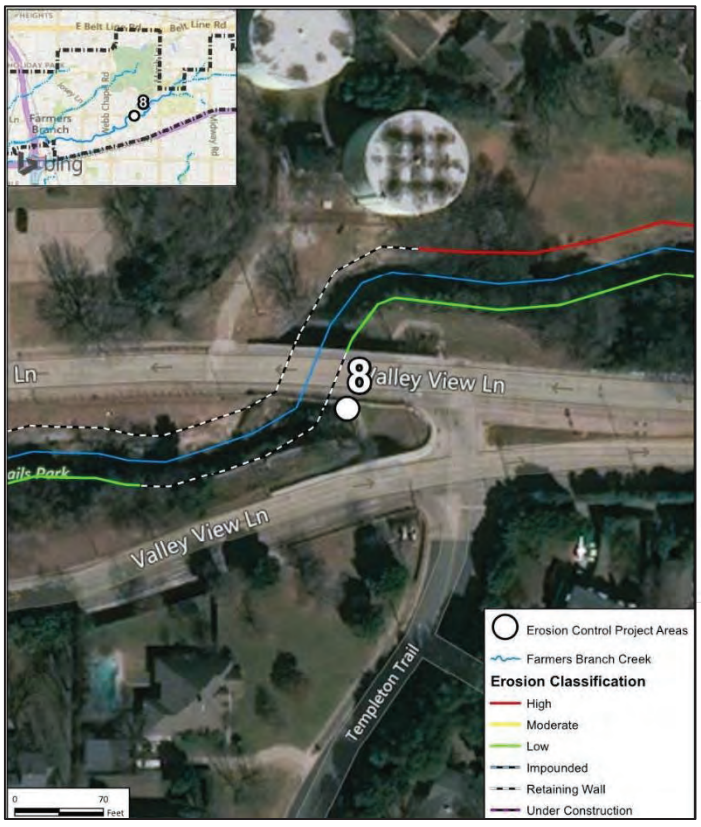
Notes:

Costs do not include environmental coordination and permitting.

Farmers Branch Watershed Study
June 14, 2018

Reference Address:	3300 Block of Valley View Ln		
Project ID: E-8	**CIP Rank: 8 of 29**	**Score: 14.7**	**Estimated Cost: $128,230**
Problem Description:	Gully undercutting trail crossing near Valley View Lane; shale on bed of gully		
Proposed Improvement:	Backfill undercut outlet structure. Install 20 FT x 20 FT x 4.5 FT gabion mattress downstream of outfall. Embed below flowline. Connect to existing gabion wall. Install riprap upstream of outlet structure and downstream of mattress. Establish natural slope and riparian vegetation 100 LF downstream of mattress or as necessary.		

Main Channel



Opinion of Probable Construction Cost
Preliminary – Intended for Review Only

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-8

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

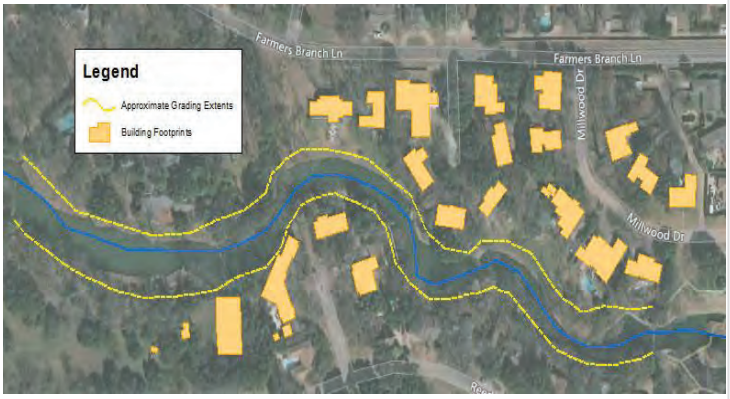
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-8				
1	Site Preparation	1	LS	$15,000	$15,000
2	Demolition	1	LS	$10,000	$10,000
3	Temporary Creek Crossing for Equipment	1	EA	$2,500	$2,500
4	Restore Pre-Construction Site Conditions	1	LS	$5,000	$5,000
5	Dewatering	1	LS	$15,000	$15,000
6	Flowable Fill	5	CY	$120	$600
7	Gabion Mattress	60	CY	$350	$21,000
8	Establish Vegetation	100	SY	$35	$3,500
9	Unclassified Channel Excavation	50	CY	$35	$1,750
10	Rock Rip Rap (18")	40	CY	$150	$6,000
11	Hydromulch	500	SY	$2	$1,000
12	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$86,350**
	Mobilization	5	%	$4,318	$4,320
	Contingency	30	%	$25,905	$25,900
	Design Fee - Basic Services	10	%	$8,635	$8,640
	Design Fee - Special Services	3.5	%	$3,022	$3,020
				Project Total	**$128,230**

Notes:

Costs do not include environmental coordination and permitting.

Farmers Branch Watershed Study
July 27, 2018

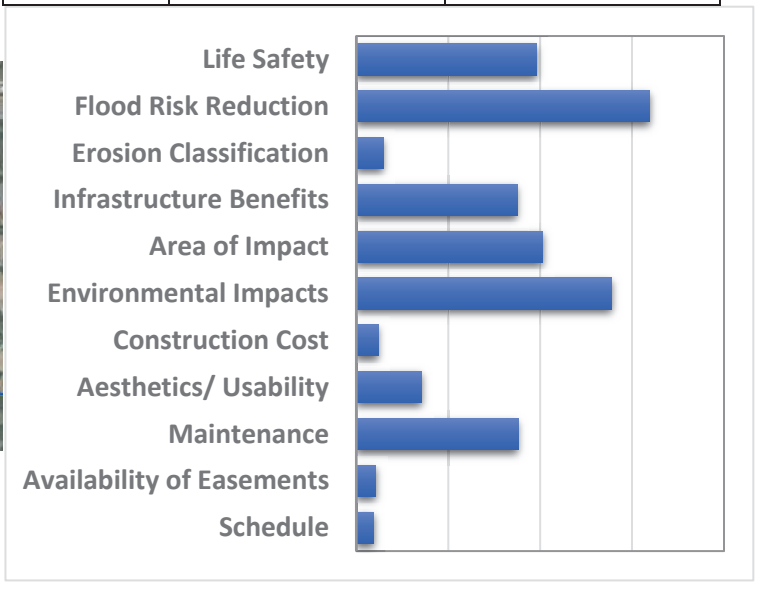
Reference Area:	**Farmers Branch Lane (Station: 3620 to 5511)**		
Project ID: Area 1	**CIP Rank: 9 of 29**	**Score: 14.6**	**Estimated Project Cost Range: $2,000,000 - $5,000,000**
Problem Description:	Eighteen structures are shown to be at-risk for flooding during the 10-year storm, with 14 of those structures shown to be at-risk for flooding during the 2-year event. This reach is subject to impoundment from a 6-ft tall dam, which is cracked and undermined on the left side. The dam was classified as poor condition by both the structural dam assessment and geomorphological stream assessment. In addition, there is substantial sediment deposition along this portion of the reach upstream of the dam, as well as an exposed utility approximately 400' downstream.		
Alternative 1-2 (FC1-Alt2):	Remove existing dam at station 3620. Install series of rock drop structures (18"- 24" height) approximately every 500' upstream to station 5502 to lower channel flowline and establish equilibrium slope. Maximize in-line storage during flood events by performing 1890 LF of channel grading. Grade slide slopes back at 3:1 – 6:1 (H:V), and maximize channel bottom width. Install bank stabilization (turf reinforcement mat, mechanically stabilized earth) along portions of reach at risk for stream bank erosion. **Alternative 1-2** provides 10-yr level of service to all but one structure. The remaining structure has a 5-yr level of service.		



Grading Extent Alternative 1-2

Flood Risk Reduction Benefit

Storm Event	Structures in Floodplain – **Existing**	Structures in Floodplain – **Alternative 1-2**
2-year (Ult)	14	0
5-year (Ult)	15	0
10-year (Ult)	18	1



Area 1 - Existing Conditions

City of Farmers Branch, Texas

FIGURE 1-A

FN JOB NO FBR19407
FILE Hydraulic Workmap_20180711
DATE 7/27/2018
SCALE 1:1,600
DRAFTED DS/JT

FREESE NICHOLS
2711 North Haskell Ave.
Suite 3300
Dallas, Texas 75204
P: 214-217-2200

Document Path: H:\STORMWATER\Working\Hydraulic Workmap_20180711.mxd

Alternative 1-2

City of Farmers Branch, Texas

FIGURE 1-2

FN JOB NO	FBR19407
FILE	Hydraulic Workmap_20180711
DATE	7/9/2018
SCALE	1:1,600
DRAFTED	GSY

FREESE NICHOLS
2711 North Haskell Ave.
Suite 3300
Dallas, Texas 75204
P: 214-217-2200

Document Path: H:\STORMWATER\Working\Hydraulic Workmap_20180711.mxd

Farmers Branch Watershed Study
July 27, 2018

Reference Area:	**Josey Lane to Veronica Road (Station: 6126 to 7518)**		
Project ID: Area 2	**CIP Rank: 10 of 29**	**Score: 14.5**	**Estimated Project Cost: $5,000,000**
Problem Description:	Josey Lane bridge is shown to be subject to flooding at the 2-year storm. Three homes adjacent to Janie Stark Elementary School are subject to flooding during the 10-yr event, with 2 of those structures subject to flooding during the 2-yr event. In addition, there are areas of moderate and high erosion potential along this portion of the reach.		
Alternative 2-2 (FC2-Alt2):	Raise Josey Lane bridge 5.5' to pass 100-year flow. Maximize in-line storage during flood events by performing 820 LF of channel grading. Establish approximately 30' wide channel bottom, expanding channel towards Janie Stark Elementary School. Grade slide slopes at 3:1 – 6:1 (H:V). Grade portion extending to main school yard area at ~3% slope to match to existing grade. Install bank stabilization (turf reinforcement mat, mechanically stabilized earth) along portions of reach at risk for stream bank erosion. **Alternative 2-2** provides 100-yr flood protection to Josey Ln. and 10-yr flood protection to all but 1 private structure in the reach. *Note that effective flood risk reduction alternatives may require buyouts of existing private structures in this reach.*		

Grading Extents Alternative 2-2

Flood Risk Reduction Benefit

Storm Event	Structures in Floodplain – **Existing**	Structures in Floodplain – **Alternative 2-2**
2-year (Ult)	1	0
5-year (Ult)	1	0
10-year (Ult)	3	1

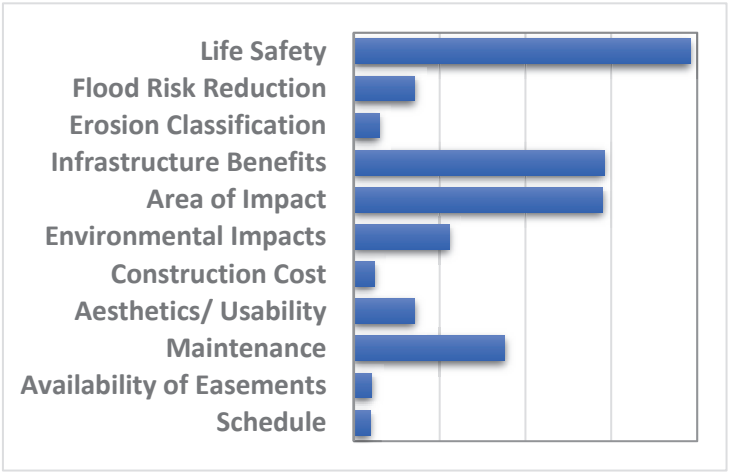


FIGURE 2-A

Area 2 - Existing Conditions

City of Farmers Branch, Texas

FN JOB NO FBR19407
FILE Hydraulic Workmap_20180711
DATE 7/27/2018
SCALE 1:1,000
DRAFTED DS/ZT

FREESE NICHOLS
2711 North Haskell Ave.
Suite 3300
Dallas, Texas 75204
P: 214-217-2200

Document Path: H:\STORMWATER\Working\Hydraulic Workmap_20180711.mxd

FIGURE 2-2

FN JOB NO F5R184.07
FILE Hydraulic Workmap_20180711
DATE 7/26/2018
SCALE 1:1,000
DRAFTED DS/ZT

Alternative 2-2

City of Farmers Branch, Texas

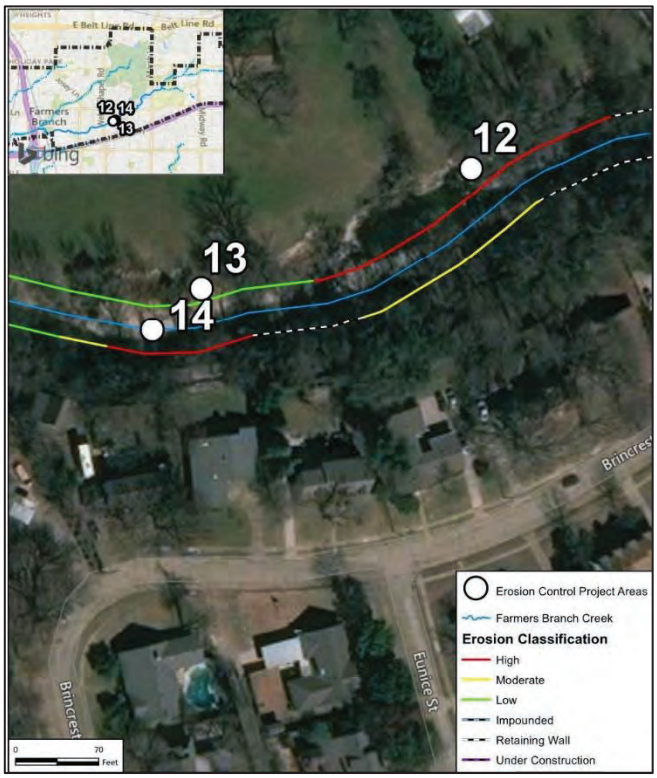
FREESE NICHOLS
2711 North Haskell Ave.
Suite 3300
Dallas, Texas 75204
P: 214-217-2200

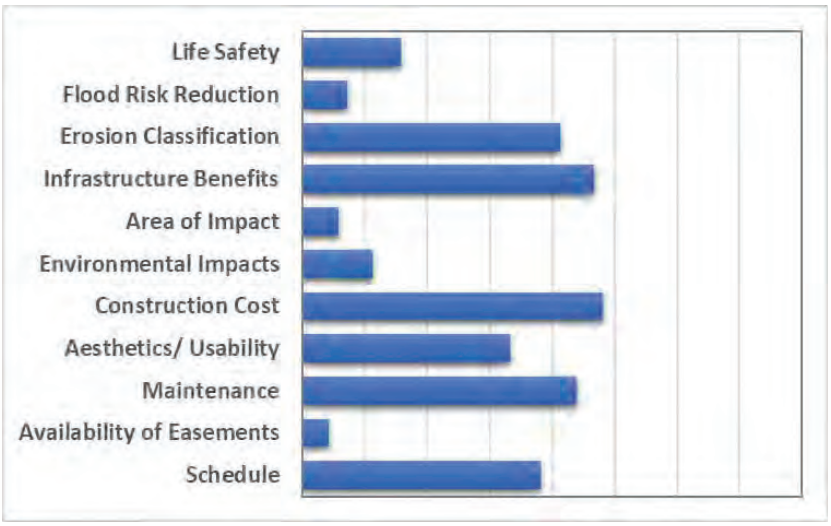
Document Path: H:\STORMWATER\Working\Hydraulic Workmap_20180711.mxd

Farmers Branch Watershed Study
June 14, 2018

Reference Address:	3200 Block of Brincrest Dr		
Project ID: E-14	**CIP Rank: 11 of 29**	**Score: 14.3**	**Estimated Cost: $42,550**
Problem Description:	Collapsed headwall and section of pipe, evidence of widening		
Proposed Improvement:	Install 24" CIP headwall. Install rock rip rap protection around outfall.		

Left Bank





Opinion of Probable Construction Cost
Preliminary – Intended for Review Only

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-14

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

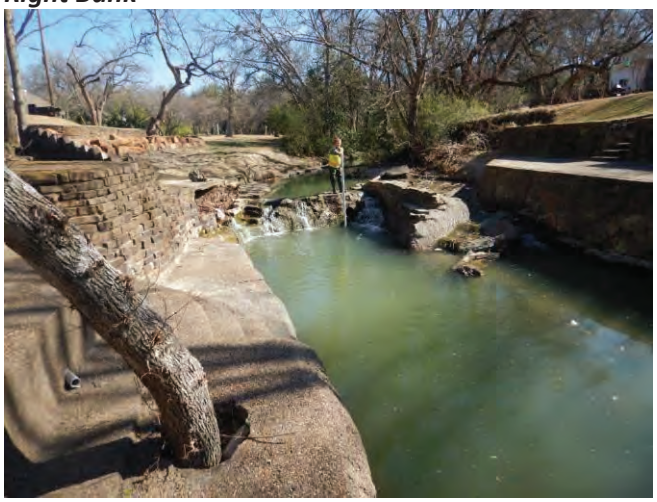
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-14				
1	Site Preparation	1	LS	$1,500	$1,500
2	Demolition	1	LS	$5,000	$5,000
3	Restore Pre-Construction Site Conditions	1	LS	$2,000	$2,000
4	Dewatering	1	LS	$5,000	$5,000
5	24" RCP Headwall	1	EA	$8,000	$8,000
6	Rock Rip Rap (18")	30	CY	$155	$4,650
7	Stormwater Pollution Prevention	1	LS	$2,500	$2,500
				Subtotal	**$28,650**
	Mobilization	5	%	$1,433	$1,430
	Contingency	30	%	$8,595	$8,600
	Design Fee - Basic Services	10	%	$2,865	$2,870
	Design Fee - Special Services	3.5	%	$1,003	$1,000
				Project Total	**$42,550**

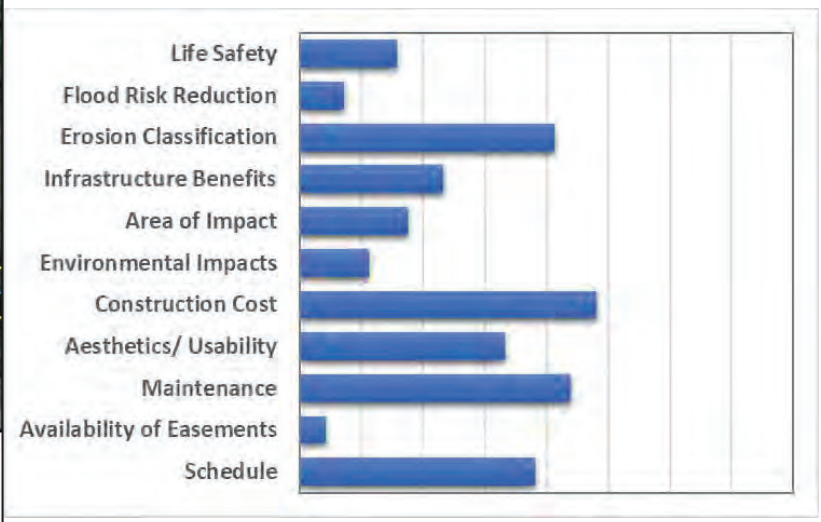
Notes:

Costs do not include environmental coordination and permitting.

Reference Address:	2900 Block of Maydelle Ln		
Project ID: E-19	**CIP Rank: 12 of 29**	**Score: 13.7**	**Estimated Cost: $47,320**
Problem Description:	Erosion of right retaining wall (flow through wall)		
Proposed Improvement:	Repair undermined wall structure with CIP concrete.		

Right Bank





Opinion of Probable Construction Cost
Preliminary – Intended for Review Only

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-19

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

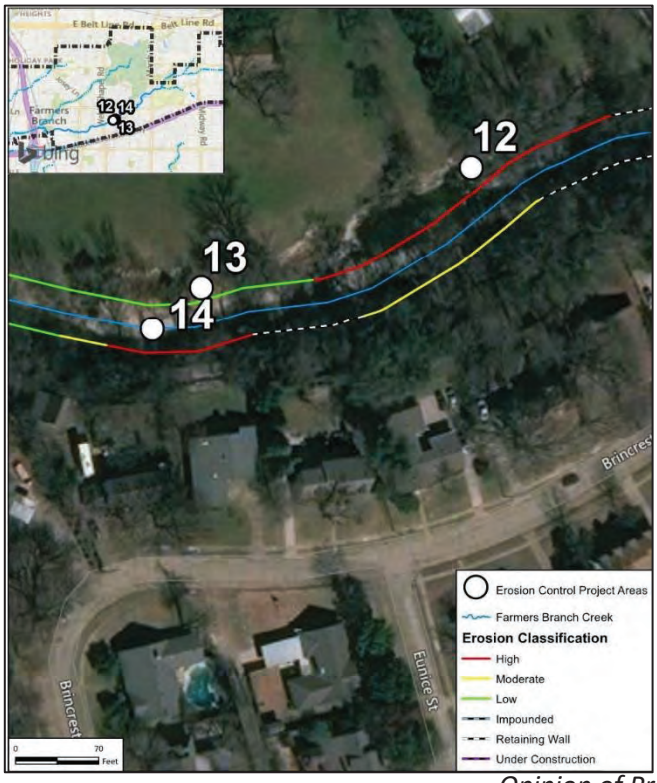
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-19				
1	Site Preparation	1	LS	$2,500	$2,500
2	Demolition	1	LS	$2,500	$2,500
3	Restore Pre-Construction Site Conditions	1	LS	$2,500	$2,500
4	Dewatering	1	LS	$10,000	$10,000
5	Rock Rip Rap (18")	12	CY	$155	$1,860
6	CIP Concrete Wall Repair	3	CY	$2,500	$7,500
7	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$31,860**
	Mobilization	5	%	$1,593	$1,590
	Contingency	30	%	$9,558	$9,560
	Design Fee - Basic Services	10	%	$3,186	$3,190
	Design Fee - Special Services	3.5	%	$1,115	$1,120
				Project Total	**$47,320**

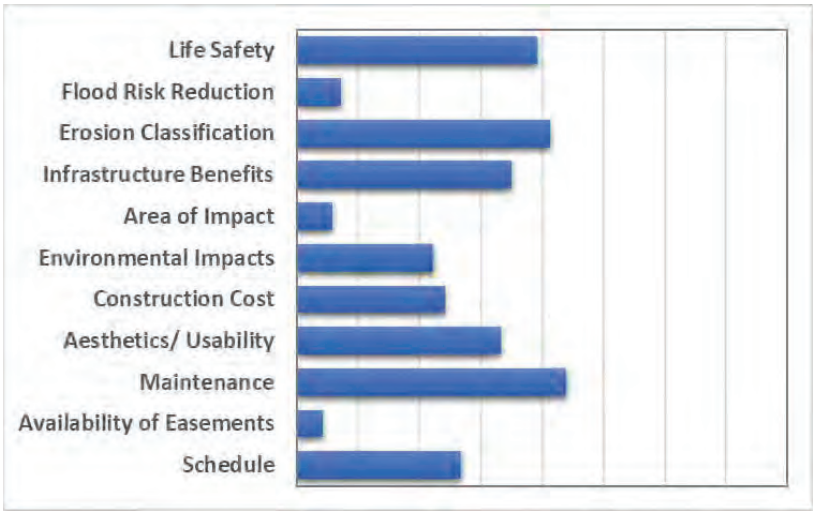
Notes:

Costs do not include environmental coordination and permitting.

Reference Address:	Lost Vally Dr		
Project ID: E-13	**CIP Rank: 13 of 29**	**Score: 13.7**	**Estimated Cost: $163,980**
Problem Description:	Deck at top of unprotected bank appears to be leaning toward stream		
Proposed Improvement:	Install 40 LF, 5-FT stone toe protection. Geotechnical evaluation may be necessary to assess shoring and stability of deck structure. Install 24" CIP headwall. Install rock rip rap protection around outfall.		

Left Bank





Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-13

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

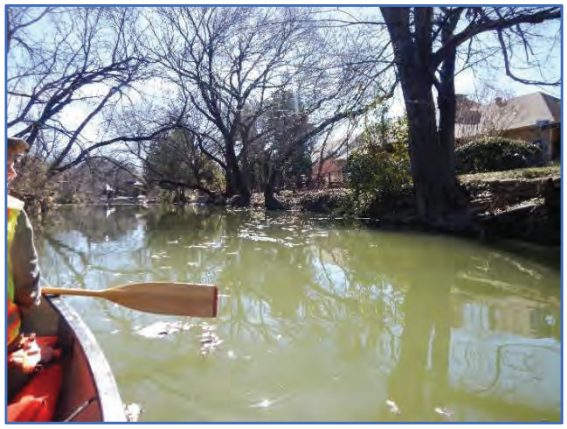
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-13				
1	Site Preparation	1	LS	$10,000	$10,000
2	Demolition	1	LS	$5,000	$5,000
3	Restore Pre-Construction Site Conditions	1	LS	$10,000	$10,000
4	Dewatering	1	LS	$15,000	$15,000
5	Temporary Structural Shoring	530	SF	$50	$26,500
6	Cut Stone Toe Reinforcement	60	TON	$300	$18,000
7	Geotechnical Evaluation	1	LS	$15,000	$15,000
8	Unclassified Channel Excavation	36	CY	$35	$1,270
9	Rock Rip Rap (18")	30	CY	$155	$4,650
10	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$110,420**
	Mobilization	5	%	$5,521	$5,520
	Contingency	30	%	$33,126	$33,130
	Design Fee - Basic Services	10	%	$11,042	$11,040
	Design Fee - Special Services	3.5	%	$3,865	$3,870
				Project Total	**$163,980**

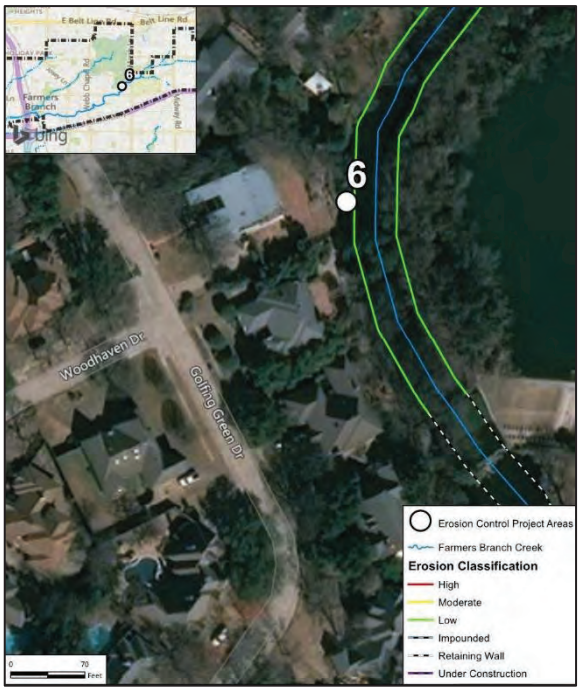
Notes:

Costs do not include environmental coordination and permitting.

Reference Address:	13100 Block of Glad Acres Dr		
Project ID: E-6	**CIP Rank: 14 of 29**	**Score: 13.4**	**Estimated Cost: $309,850**
Problem Description:	Collapsing bagwall; leaning trees		
Proposed Improvement:	Remove failing concrete bag wall. Remove 2 trees, leave stumps in place. Install 125 LF, 8-FT high modular concrete block wall.		

Right Bank





Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-6

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-6				
1	Site Preparation	1	LS	$10,000	$10,000
2	Demolition	1	LS	$15,000	$15,000
3	Restore Pre-Construction Site Conditions	1	LS	$5,000	$5,000
4	Dewatering	1	LS	$30,000	$30,000
5	Modular Concrete Block Wall	1,810	SF	$75	$135,750
6	Unclassified Channel Excavation	10	CY	$40	$400
7	Establish Vegetation	100	SY	$35	$3,500
8	Tree Removal	2	EA	$2,000	$4,000
9	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$208,650**
	Mobilization	5	%	$10,433	$10,430
	Contingency	30	%	$62,595	$62,600
	Design Fee - Basic Services	10	%	$20,865	$20,870
	Design Fee - Special Services	3.5	%	$7,303	$7,300
				Project Total	**$309,850**

Notes:

Costs do not include environmental coordination and permitting.

Reference Address:	13200 Block of Cedar Ln		
Project ID: E-5	**CIP Rank: 15 of 29**	**Score: 13.1**	**Estimated Cost: $495,010**
Problem Description:	Collapsing bag wall		
Proposed Improvement:	Remove failing concrete bag wall. Install 150 LF, 6-FT high Envirolok bag wall with 4-FT stone toe protection. Extend structure to tie in behind existing concrete structure downstream. Install stream barbs to protect outside bend and deflect water away from bank.		

Left Bank

Opinion of Probable Construction Cost
Preliminary – Intended for Review Only

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-5

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

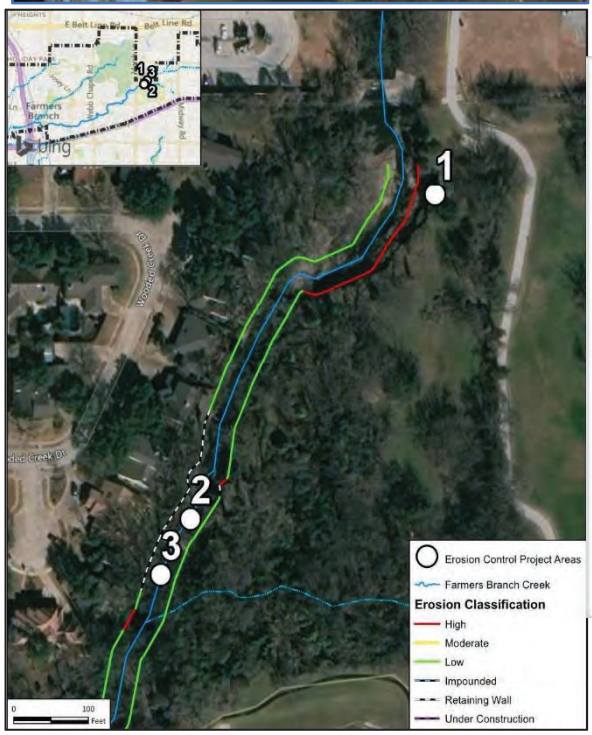
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-5				
1	Site Preparation	1	LS	$10,000	$10,000
2	Demolition	1	LS	$7,500	$7,500
3	Remove Concrete Bag Wall	120	CY	$30	$3,600
4	Restore Pre-Construction Site Conditions	1	LS	$5,000	$5,000
5	Dewatering	1	LS	$15,000	$15,000
6	Ground Anchor Earth Reinforcement	100	EA	$1,500	$150,000
7	Envirolok Bag Wall	1,070	SF	$65	$69,550
8	Cut Stone Toe Reinforcement	186	TON	$300	$55,690
9	Install Stream Barb	2	EA	$5,000	$10,000
10	Unclassified Channel Excavation	40	CY	$50	$2,000
11	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$333,340**
	Mobilization	5	%	$16,667	$16,670
	Contingency	30	%	$100,002	$100,000
	Design Fee - Basic Services	10	%	$33,334	$33,330
	Design Fee - Special Services	3.5	%	$11,667	$11,670
				Project Total	**$495,010**

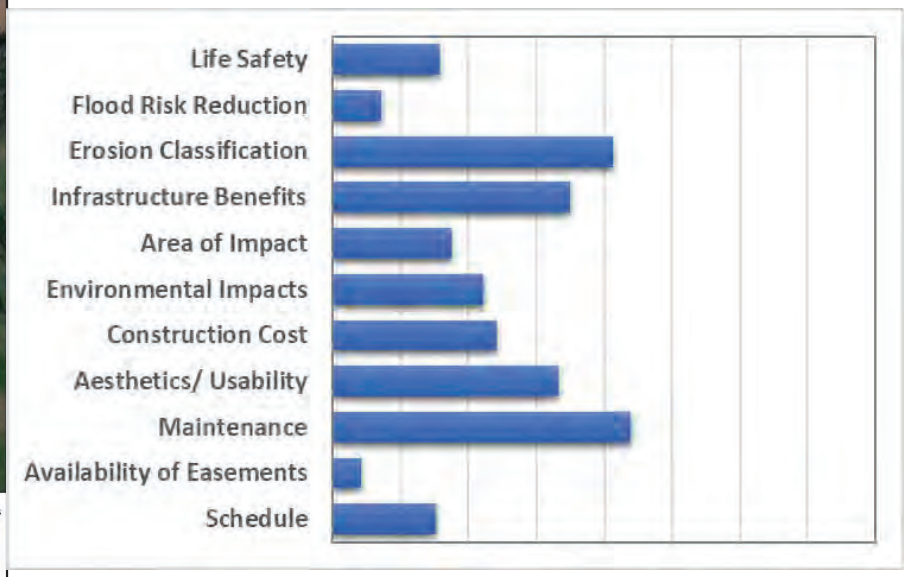
Notes:

Costs do not include environmental coordination and permitting.

Reference Address:	13800 Block of New Bark Cir		
Project ID: E-3	**CIP Rank: 16 of 29**	**Score: 12.5**	**Estimated Cost: $267,050**
Problem Description:	Streambank erosion near fence		
Proposed Improvement:	Install 60 LF, 5-FT high MSE wall with 5-FT stone toe protection on right bank. Blend into vegetated, stable upper bank. Subsurface easement acquisition may be required for ground anchors. Geotechnical evaluation may be necessary to ensure stability of nearby fence and backyard patio area.		

Right Bank





Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-3

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

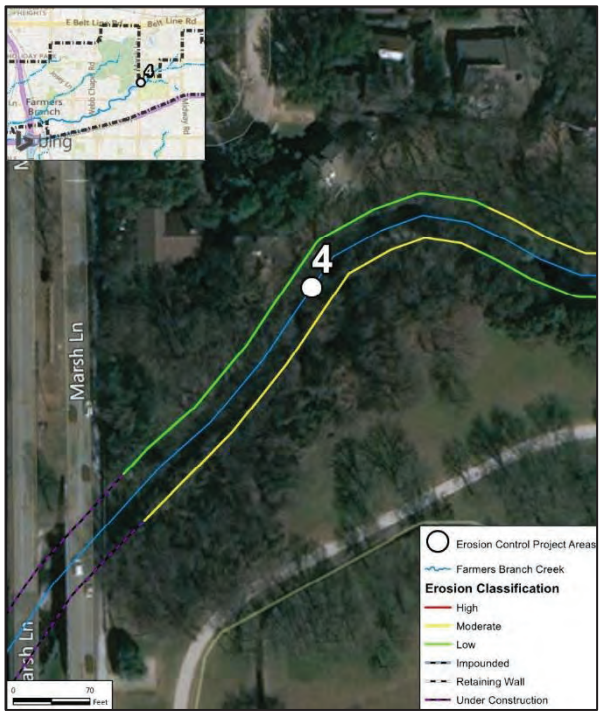
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-3				
1	Site Preparation	1	LS	$10,000	$10,000
2	Demolition	1	LS	$5,000	$5,000
3	Temporary Structural Shoring	660	SF	$50	$33,000
4	Restore Pre-Construction Site Conditions	1	LS	$5,000	$5,000
5	Dewatering	1	LS	$15,000	$15,000
6	Mechanically Stabilized Earth (MSE) Wall	430	SF	$50	$21,500
7	Ground Anchor Earth Reinforcement	40	EA	$1,500	$60,000
8	Cut Stone Toe Protection	75	TON	$300	$22,500
9	Unclassified Channel Excavation	30	CY	$25	$750
10	Hydromulch	100	SY	$2	$200
11	Fence	60	FT	$20	$1,200
12	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$179,150**
	Mobilization	5	%	$8,958	$8,960
	Contingency	30	%	$53,745	$53,750
	Design Fee - Basic Services	10	%	$17,915	$18,920
	Design Fee - Special Services	3.5	%	$6,270	$6,270
				Project Total	**$267,050**

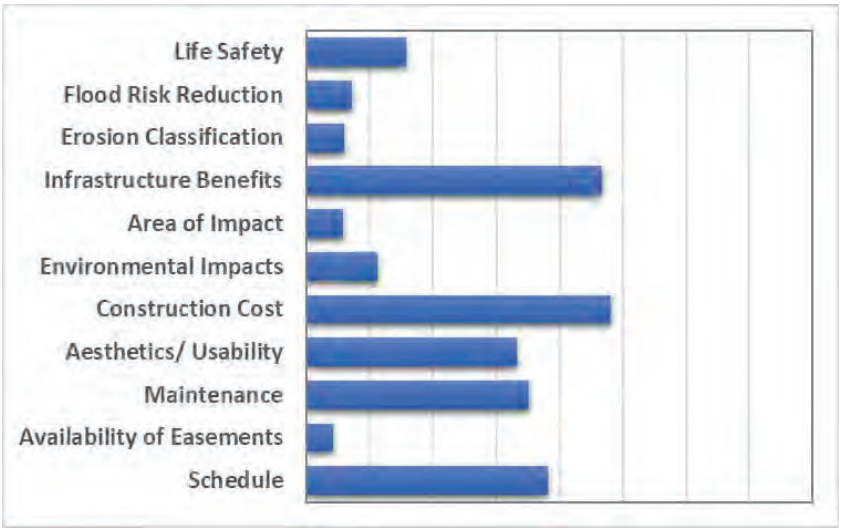
Notes:

Costs do not include environmental coordination and permitting.

Reference Address:	13800 Block of Wooded Creek Dr		
Project ID: E-4	**CIP Rank: 17 of 29**	**Score: 12.1**	**Estimated Cost: $53,020**
Problem Description:	Stormwater outfall undercut by 2 FT		
Proposed Improvement:	Existing structure to remain. Backfill and install CIP footer. Add 15 LF rock riprap protection upstream and downstream of outfall structure.		

Right Bank





Opinion of Probable Construction Cost
Preliminary – Intended for Review Only

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-4

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

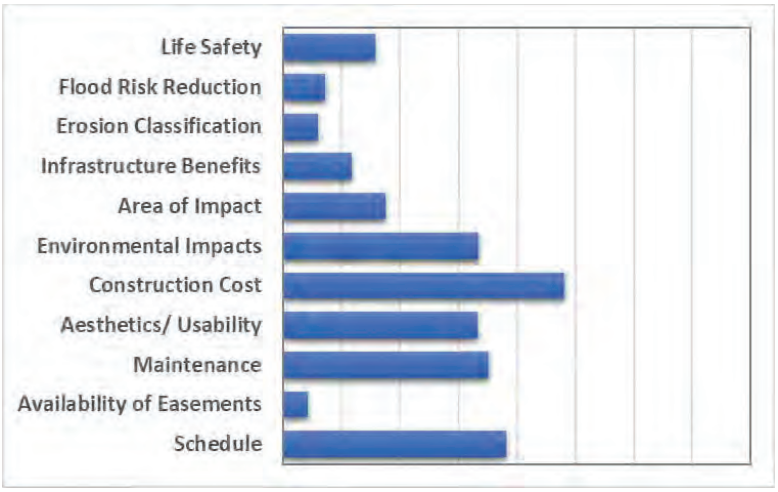
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-4				
1	Site Preparation	1	LS	$2,500	$2,500
2	Demolition	1	LS	$2,500	$2,500
3	Restore Pre-Construction Site Conditions	1	LS	$2,000	$2,000
4	Dewatering	1	LS	$10,000	$10,000
5	CIP Footer	1	EA	$10,000	$10,000
6	Rock Rip Rap (18")	40	CY	$155	$6,200
7	Stormwater Pollution Prevention	1	LS	$2,500	$2,500
				Subtotal	**$35,700**
	Mobilization	5	%	$1,785	$1,790
	Contingency	30	%	$10,710	$10,710
	Design Fee - Basic Services	10	%	$3,570	$3,570
	Design Fee - Special Services	3.5	%	$1,250	$1,250
				Project Total	**$53,020**

Notes:

Costs do not include environmental coordination and permitting.

Reference Address:	2900 Block of Maydelle Ln		
Project ID: E-18	**CIP Rank: 18 of 29**	**Score: 12.1**	**Estimated Cost: $29,700**
Problem Description:	Collapsed bag wall and damaged fence from rotational failure		
Proposed Improvement:	Bag wall and rock toe to remain for slope stabilization. Plant and live-stake over bag wall. Promote natural revegetation.		

Left Bank



Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-18

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

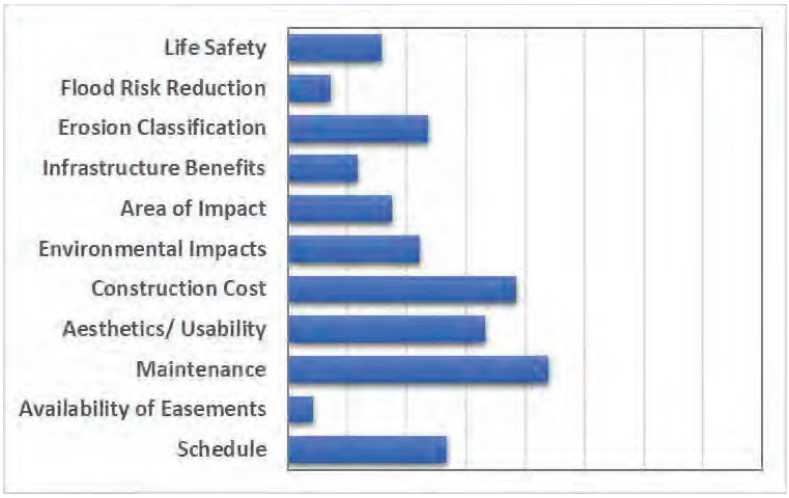
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-18				
1	Site Preparation	1	LS	$5,000	$5,000
2	Restore Pre-Construction Site Conditions	1	LS	$2,500	$2,500
3	2" Top Soil	50	SY	$8	$400
4	Establish Vegetation	50	SY	$35	$1,750
5	Live Stake	470	EA	$5	$2,350
6	Hydromulch	1,000	SY	$2	$2,000
7	Fence	50	LF	$20	$1,000
8	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$20,000**
	Mobilization	5	%	$1,000	$1,000
	Contingency	30	%	$6,000	$6,000
	Design Fee - Basic Services	10	%	$2,000	$2,000
	Design Fee - Special Services	3.5	%	$700	$700
				Project Total	**$29,700**

Notes:

Costs do not include environmental coordination and permitting.

Reference Address:	3000 Block of Selma Ln		
Project ID: E-17	**CIP Rank: 19 of 29**	**Score: 11.8**	**Estimated Cost: $131,950**
Problem Description:	10-FT tall, south-facing, unvegetated bank; tension cracks, high erosion		
Proposed Improvement:	Restore natural bank slope and reestablish vegetation along 290 LF right bank.		

Right Bank



Opinion of Probable Construction Cost
Preliminary – Intended for Review Only

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-17

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

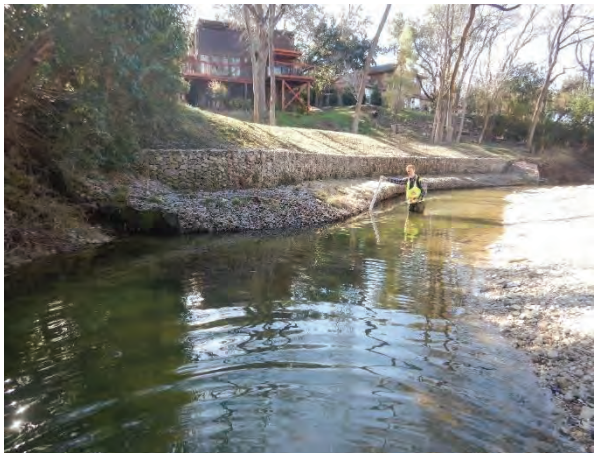
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-17				
1	Site Preparation	1	LS	$15,000	$15,000
2	Demolition	1	LS	$10,000	$10,000
3	Temporary Creek Crossing for Equipment	1	EA	$2,500	$2,500
4	Restore Pre-Construction Site Conditions	1	LS	$10,000	$10,000
5	Dewatering	1	LS	$15,000	$15,000
6	Turf Reinforcement Mat (TRM)	510	SY	$20	$10,200
7	Sod	190	SY	$10	$1,900
8	Establish Vegetation	190	SY	$35	$6,650
9	2" Top Soil	190	SY	$5	$950
10	Unclassified Channel Excavation	190	CY	$35	$6,650
11	Hydromulch	2,500	SY	$2	$5,000
12	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$88,850**
	Mobilization	5	%	$4,443	$4,440
	Contingency	30	%	$26,655	$26,660
	Design Fee - Basic Services	10	%	$8,885	$8,890
	Design Fee - Special Services	3.5	%	$3,110	$3,110
				Project Total	**$131,950**

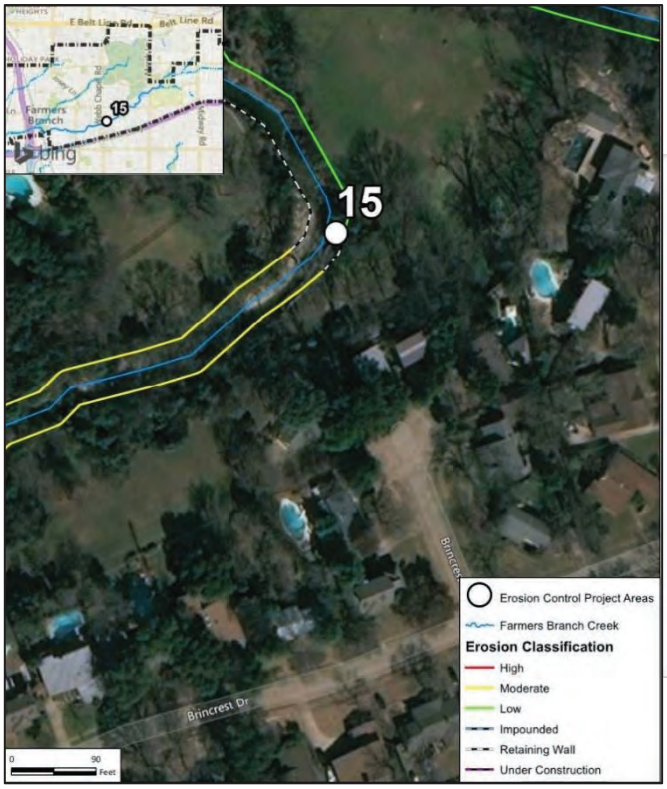
Notes:

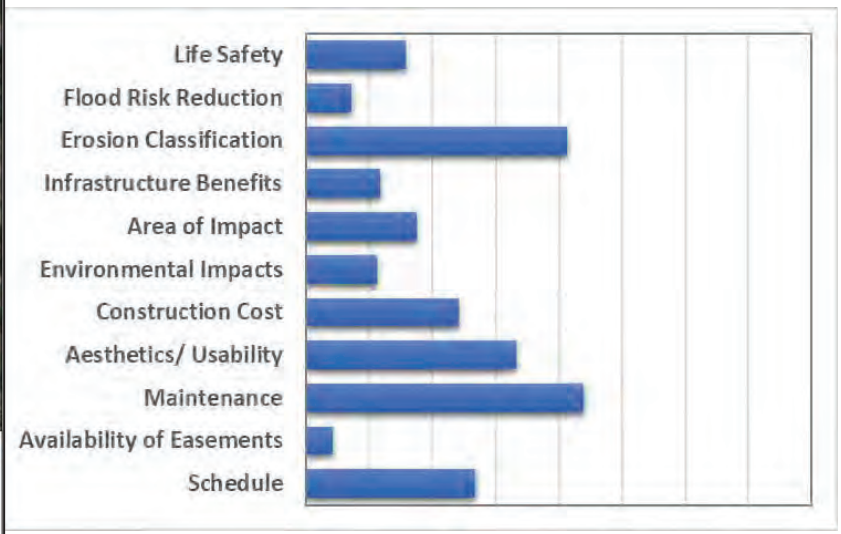
Costs do not include environmental coordination and permitting.

Reference Address:	3200 Block of Brincrest Dr		
Project ID: E-15	**CIP Rank: 20 of 29**	**Score: 11.4**	**Estimated Cost: $139,740**
Problem Description:	Gabion mattress toe undercut on upstream and downstream ends		
Proposed Improvement:	Remove 50 LF gabion mattress. Install cut stone toe protection below gabion wall and bury below channel flowline and key into banks. Install rock rip rap protection around key.		

Left Bank







Opinion of Probable Construction Cost
Preliminary – Intended for Review Only

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-15

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-15				
1	Site Preparation	1	LS	$5,000	$5,000
2	Remove Gabion Mattress	1	LS	$30,000	$30,000
3	Restore Pre-Construction Site Conditions	1	LS	$10,000	$10,000
4	Dewatering	1	LS	$10,000	$10,000
5	Cut Stone Toe Reinforcement	100	TON	$300	$30,000
6	Rock Rip Rap (18")	20	CY	$155	$3,100
7	Unclassified Channel Excavation	25	CY	$40	$1,000
8	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$94,100**
	Mobilization	5	%	$4,705	$4,700
	Contingency	30	%	$28,230	$28,230
	Design Fee - Basic Services	10	%	$9,410	$9,410
	Design Fee - Special Services	3.5	%	$3,294	$3,300
				Project Total	**$139,740**

Notes:

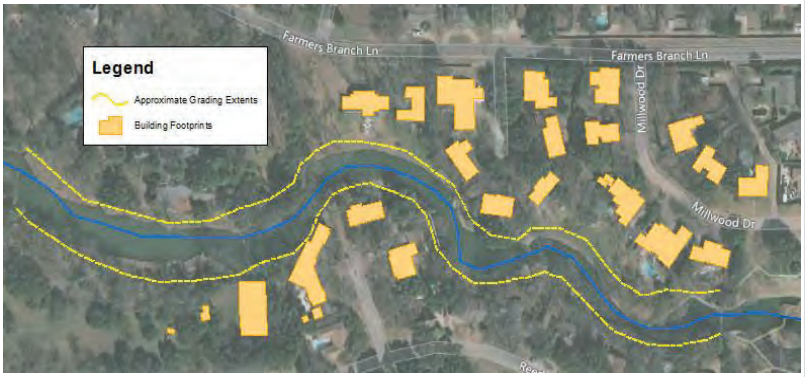
Costs do not include environmental coordination and permitting.

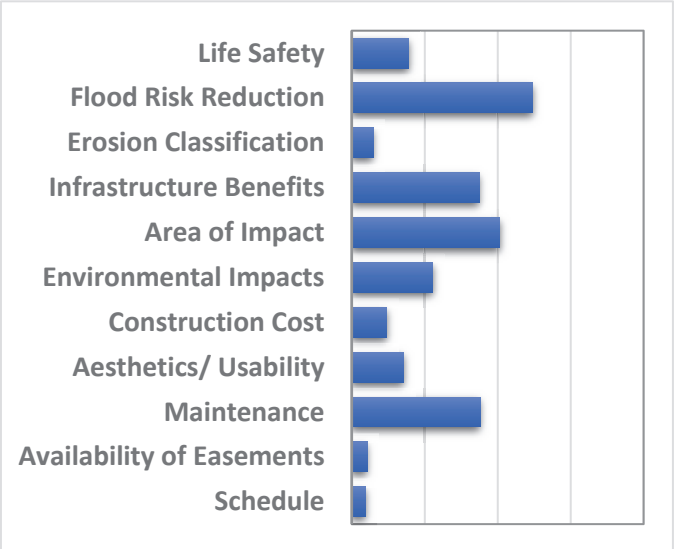
Reference Area:	Farmers Branch Lane (Station: 3620 to 5511)		
Project ID: Area 1	**CIP Rank: 21 of 29**	**Score: 11.4**	**Estimated Project Cost Range: $1,000,000 - $2,000,000**
Problem Description:	Eighteen structures are shown to be at-risk for flooding during the 10-year storm, with 14 of those structures shown to be at-risk for flooding during the 2-year event. This reach is subject to impoundment from a 6-ft tall dam, which is cracked and undermined on the left side. The dam was classified as poor condition by both the structural dam assessment and geomorphological stream assessment. In addition, there is substantial sediment deposition along this portion of the reach upstream of the dam, as well as an exposed utility approximately 400' downstream.		
Alternative 1-1 (FC1-Alt1):	Leave dam in place. Maximize in-line storage during flood events by performing 1890 LF of channel grading. Grade slide slopes back at 3:1 – 6:1 (H:V), and maximize channel bottom width. Install bank stabilization (turf reinforcement mat, mechanically stabilized earth) along portions of reach at risk for stream bank erosion. **Alternative 1-1** provides 2-yr level of service to all structures.		

Flood Risk Reduction Benefit

Storm Event	Structures in Floodplain – **Existing**	Structures in Floodplain – **Alternative 1-1**
2-year (Ult)	14	0
5-year (Ult)	15	9
10-year (Ult)	18	11

Grading Extent - Alternative 1-1





Area 1 - Existing Conditions

City of Farmers Branch, Texas

FIGURE 1-A

FN JOB NO FBR19407
FILE Hydraulic Workmap_20180711
DATE 7/27/2018
SCALE 1:1,600
DRAFTED DS/JT

FREESE NICHOLS
2711 North Haskell Ave.
Suite 3300
Dallas, Texas 75204
P: 214-217-2200

Document Path: H:\STORMWATER\Working\Hydraulic Workmap_20180711.mxd

FIGURE 1-1

Alternative 1-1

City of Farmers Branch, Texas

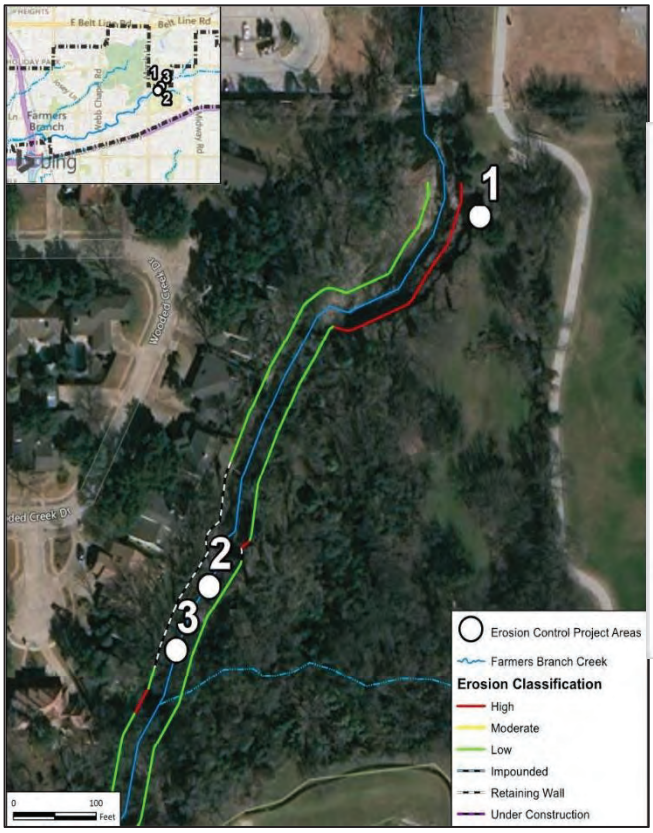
FN JOB NO	FBR19407
FILE	Hydraulic Workmap_20180711
DATE	7/9/2018
SCALE	1:1,600
DRAFTED	DS/CT

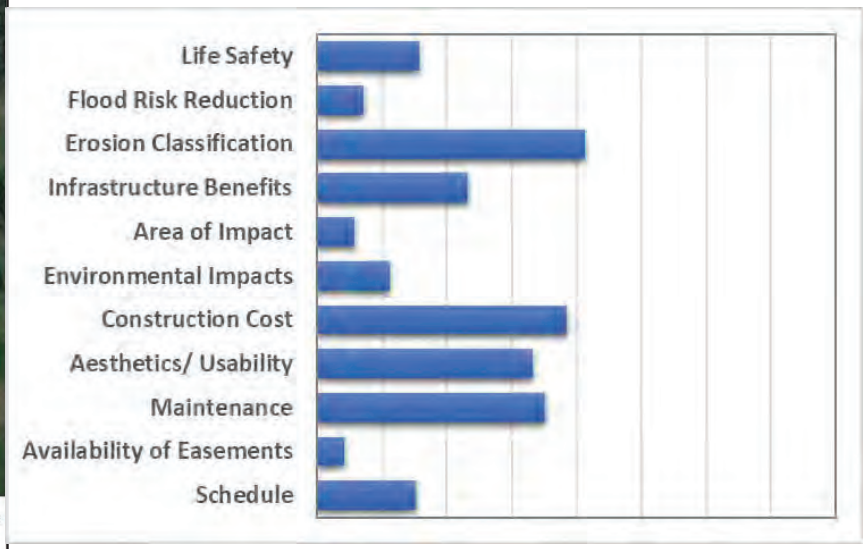
FREESE NICHOLS
2711 North Haskell Ave.
Suite 3300
Dallas, Texas 75204
P: 214-217-2200

Document Path: H:\STORMWATER\Working\Hydraulic Workmap_20180711.mxd

Reference Address:	3700 Block of Wooded Creek Ln		
Project ID: E-2	**CIP Rank: 22 of 29**	**Score: 11.1**	**Estimated Cost: $130,620**
Problem Description:	Fill placed on left bank at outfall; erosion of fill could lead to damaged gabions		
Proposed Improvement:	Remove excess fill causing flow constriction. Install 25 LF rock rip rap upstream and downstream of outfall structure to protect gabion walls.		

Left Bank





Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-2

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-2				
1	Site Preparation	1	LS	$10,000	$10,000
2	Demolition	1	LS	$10,000	$10,000
3	Restore Pre-Construction Site Conditions	1	LS	$5,000	$5,000
4	Dewatering	1	LS	$15,000	$15,000
5	Unclassified Channel Excavation	540	CY	$25	$13,500
6	Rock Rip Rap (18")	190	CY	$155	$29,450
7	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$87,950**
	Mobilization	5	%	$4,398	$4,400
	Contingency	30	%	$26,385	$26,390
	Design Fee - Basic Services	10	%	$8,795	$8,800
	Design Fee - Special Services	3.5	%	$3,078	$3,080
				Project Total	**$130,620**

Notes:

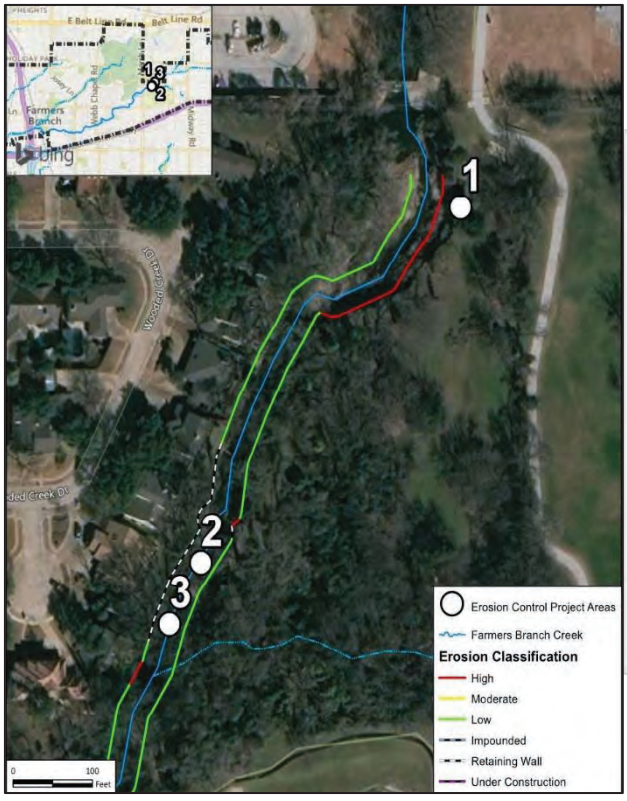
Costs do not include environmental coordination and permitting.

Farmers Branch Watershed Study
June 14, 2018

Reference Address:	3900 Block of Valley View Ln		
Project ID: E-1	**CIP Rank: 23 of 29**	**Score: 10.0**	**Estimated Cost: $1,388,130**
Problem Description:	Gully headcutting toward culvert under walking trail; high erosion of 15-FT bank near Brookhaven College		
Proposed Improvement:	Install 250 LF, 10-FT high MSE wall with 5-FT stone toe protection on left bank. Install area inlet to collect overland flow from walking trail culvert. Install conduit and CIP headwall to discharge flow from left bank at channel flowline. Install rock rip rap to stabilize outfall. Remove sediment, rebuild stable slope and establish riparian vegetation on right bank.		

Left Bank

Right Bank



Opinion of Probable Construction Cost
Preliminary – Intended for Review Only

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-1

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

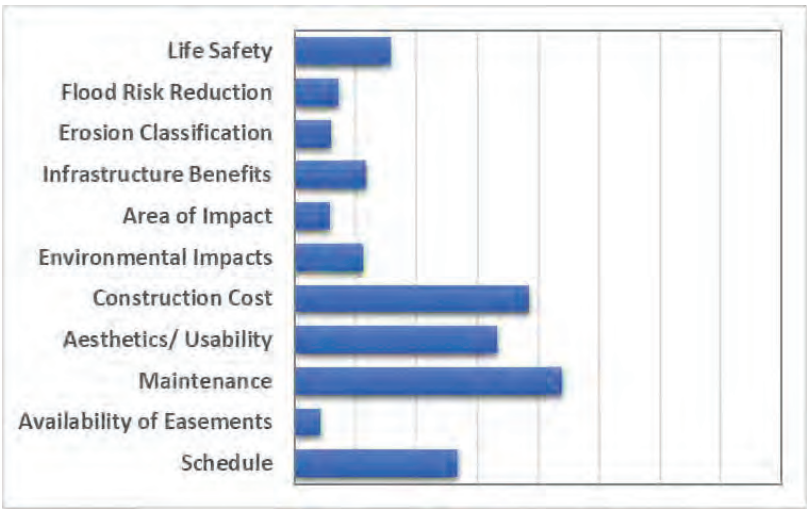
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-1				
1	Site Preparation	1	LS	$15,000	$15,000
2	Demolition	1	LS	$10,000	$10,000
3	Temporary Creek Crossing for Equipment	1	EA	$2,500	$2,500
4	Restore Pre-Construction Site Conditions	1	LS	$10,000	$10,000
5	Dewatering	1	LS	$15,000	$15,000
6	Mechanically Stabilized Earth (MSE) Wall	7,910	SF	$50	$395,500
7	Ground Anchor Earth Reinforcement	210	EA	$1,500	$315,000
8	Cut Stone Toe Reinforcement	310	TON	$300	$93,000
9	Turf Reinforcement Mat (TRM)	330	SY	$20	$6,600
10	Sod	330	SY	$10	$3,300
11	2" Top Soil	330	SY	$5	$1,650
12	Establish Vegetation	330	SY	$35	$11,550
13	Unclassified Channel Excavation	1,390	CY	$25	$34,750
14	Hydromulch	2,000	SY	$2	$4,000
15	18" RCP	25	LF	$85	$2,130
16	18" CIP Headwall	1	EA	$5,000	$5,000
17	Rock Rip Rap (18")	5	CY	$155	$780
18	Drop Area Inlet	1	EA	$4,000	$4,000
19	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$934,760**
	Mobilization	5	%	$46,738	$46,740
	Contingency	30	%	$280,428	$280,430
	Design Fee - Basic Services	10	%	$93,476	$93,480
	Design Fee - Special Services	3.5	%	$32,717	$32,720
				Project Total	**$1,388,130**

Notes:

Costs do not include environmental coordination and permitting.

Reference Address:	12200 Block of Brisbane Ave		
Project ID: E-11	**CIP Rank: 24 of 29**	**Score: 9.9**	**Estimated Cost: $105,730**
Problem Description:	Concrete drop grade control with broken concrete and deep pool on downstream side		
Proposed Improvement:	Backfill and repair existing concrete drop structure.		

Main Channel



Opinion of Probable Construction Cost
Preliminary – Intended for Review Only

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-11

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

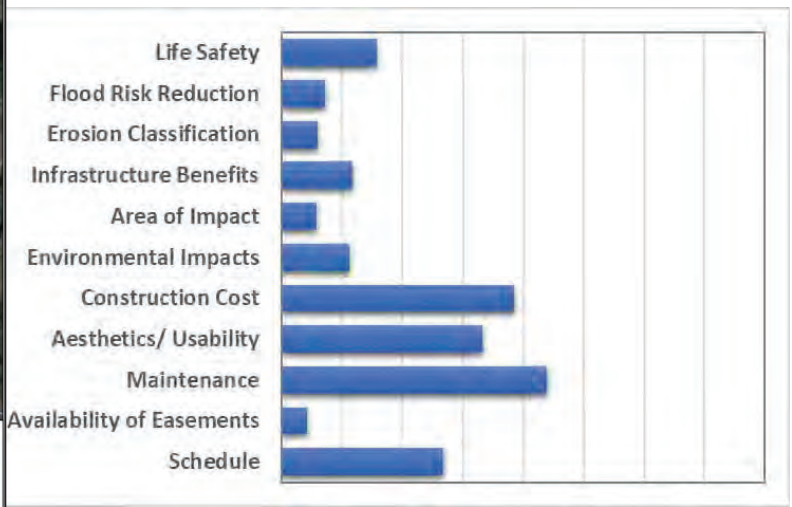
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-11				
1	Site Preparation	1	LS	$10,000	$10,000
2	Demolition	1	LS	$5,000	$5,000
3	Erosion Control	1	LS	$5,000	$5,000
4	Dewatering	1	LS	$15,000	$15,000
5	Protect Existing Structures	1	LS	$10,000	$10,000
6	Flowable Fill	10	CY	$120	$1,200
7	CIP Concrete Footer	8	CY	$2,500	$20,000
8	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$71,200**
	Mobilization	5	%	$3,560	$3,560
	Contingency	30	%	$21,360	$21,360
	Design Fee - Basic Services	10	%	$7,120	$7,120
	Design Fee - Special Services	3.5	%	$2,492	$2,490
				Project Total	**$105,730**

Notes:

Costs do not include environmental coordination and permitting.

Reference Address:	2800 Block of Reedcroft Dr		
Project ID: E-22	**CIP Rank: 24 of 29**	**Score: 9.9**	**Estimated Cost: $59,250**
Problem Description:	Private dam with downstream left abutment undercut 2-3 FT		
Proposed Improvement:	Backfill and repair abutment		

Left Bank



Opinion of Probable Construction Cost
Preliminary – Intended for Review Only

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-22

City of Farmers Branch

ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-22				
1	Site Preparation	1	LS	$5,000	$5,000
2	Demolition	1	LS	$5,000	$5,000
3	Restore Pre-Construction Site Conditions	1	LS	$2,500	$2,500
4	Dewatering	1	LS	$10,000	$10,000
5	Flowable Fill	7	CY	$120	$840
6	CIP Concrete Structural Repairs	10	CY	$1,000	$10,000
7	Rock Rip Rap (18")	10	CY	$155	$1,550
8	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$39,890**
	Mobilization	5	%	$1,995	$2,000
	Contingency	30	%	$11,967	$11,970
	Design Fee - Basic Services	10	%	$3,989	$3,990
	Design Fee - Special Services	3.5	%	$1,396	$1,400
				Project Total	**$59,250**

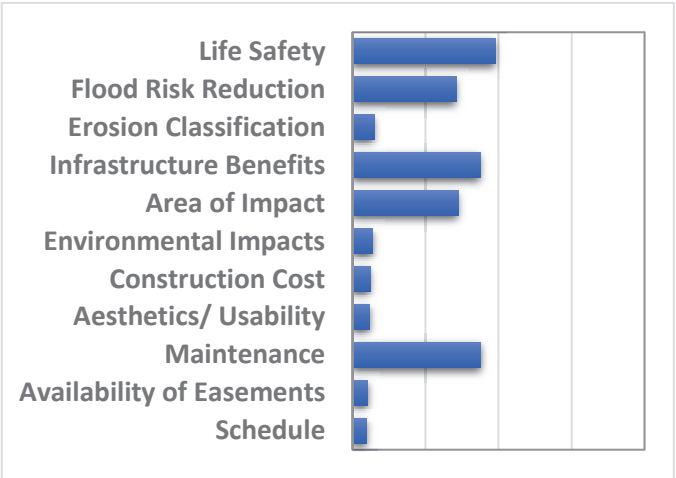
Notes:
Costs do not include environmental coordination and permitting.

Reference Area:	**Marsh Lane (Station: 16595 to 19770)**		
Project ID: Area 3	**CIP Rank: 26 of 29**	**Score: 9.5**	**Estimated Project Cost Range: $2,000,000 - $5,000,000**
Problem Description:	Eleven structures along Braemar Dr and Tanglewood Dr are shown to be at-risk of flooding during the 10-year flood event, with six of those structures shown to be at-risk of flooding during the 2-year flood event. This reach is subject to impoundment from an existing dam. Farmers Branch Creek along this reach is relatively narrow and bounded on its left bank by the Valley View Estates HOA pond, which is impounded by another dam located next to the one on the creek. The area is environmentally sensitive due to the presence of wetlands near the pond area.		
Alternative 3-2 (FC3-Alt2):	Establish approximately 20' wide channel bottom. Maximize in-line storage during flood events by performing 1120 LF of channel grading. Grade slide slopes at 2:1 – 4:1 (H:V) from station 16595 to station 18326. Install bank stabilization (turf reinforcement mat, mechanically stabilized earth) along portions of reach at risk for stream bank erosion. Buyout 4 properties on south side of Tanglewood Drive. Grade lots at 3:1 (H:V) to provide additional inline storage. Alternative 3-2 provides 10-yr flood protection to all but one structure in the reach. Consider buyout option for remaining property. Project will require substantial coordination with homeowners and may trigger an Individual Permit with the US Army Corps of Engineers (USACE). *Note that effective flood risk reduction alternatives may require buyouts of existing private structures in this reach.*		

Grading Extents Alternative 3-2

Flood Risk Reduction Benefit

Storm Event	Structures in Floodplain – **Existing**	Structures in Floodplain – **Alternative 3-2**
2-year (Ult)	6	0
5-year (Ult)	7	1
10-year (Ult)	11	1



Area 3 - Existing Conditions

City of Farmers Branch, Texas

FIGURE 3-A

FN JOB NO F5R19407
FILE Hydraulic Workmap_20180711
DATE 7/27/2018
SCALE 1:1,000
DRAFTED GS/JT

FREESE NICHOLS
2711 North Haskell Ave.
Suite 3300
Dallas, Texas 75204
P: 214-217-2200

Document Path: H:\STORMWATER\Working\Hydraulic Workmap_20180711.mxd

FIGURE 3-2

Alternative 3-2

City of Farmers Branch, Texas

FN JOB NO F9R184I7
FILE Hydraulic Workmap_20180711
DATE 7/27/2018
SCALE 1:1,000
DRAFTED DS/CT

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P: 214-217-2200

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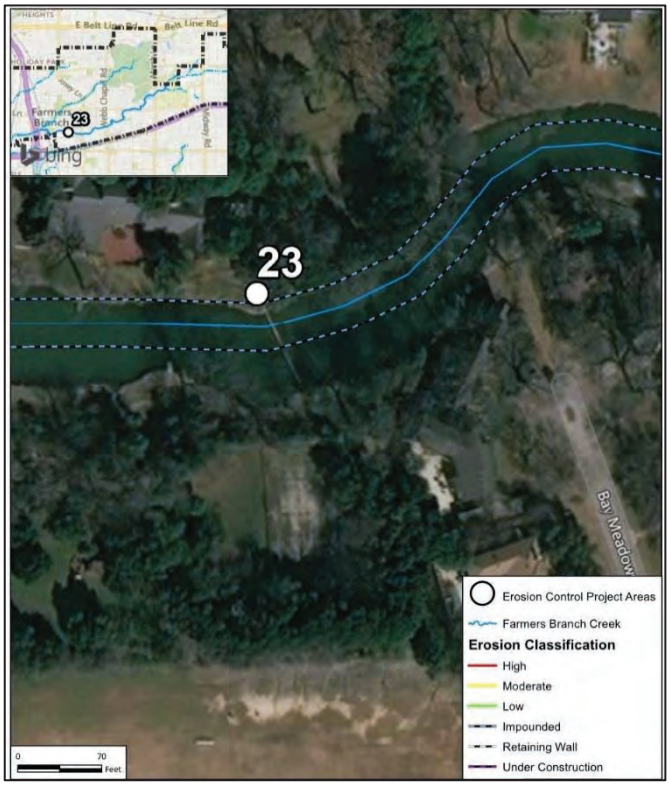
Reference Address:	2700 Block of Farmers Branch Ln		
Project ID: E-23	**CIP Rank: 27 of 29**	**Score: 9.4**	**Estimated Cost: $55,690**
Problem Description:	Degraded check dam with water flowing underneath		
Proposed Improvement:	Stabilize and repair check dam		

Main Channel



Opinion of Probable Construction Cost
Preliminary – Intended for Review Only

Farmers Branch Creek Watershed Study

Opinion of Probable Construction Cost

E-23

City of Farmers Branch

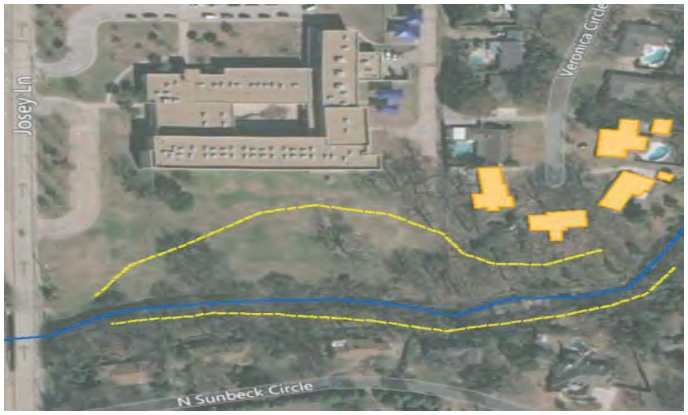
ACCOUNT NO.	ESTIMATOR	CHECKED BY	DATE
FBR16407	WJG	KMH	June 1, 2018

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	E-23				
1	Site Preparation	1	LS	$5,000	$5,000
2	Demolition	1	LS	$5,000	$5,000
3	Restore Pre-Construction Site Conditions	1	LS	$2,500	$2,500
4	Dewatering	1	LS	$10,000	$10,000
5	Check Dam Repair	1	LS	$10,000	$10,000
6	Stormwater Pollution Prevention	1	LS	$5,000	$5,000
				Subtotal	**$37,500**
	Mobilization	5	%	$1,875	$1,880
	Contingency	30	%	$11,250	$11,250
	Design Fee - Basic Services	10	%	$3,750	$3,750
	Design Fee - Special Services	3.5	%	$1,313	$1,310
				Project Total	**$55,690**

Notes:

Costs do not include environmental coordination and permitting.

Reference Area:	**Josey Lane to Veronica Road (Station: 6126 to 7518)**		
Project ID: Area 2	**CIP Rank: 28 of 29**	**Score: 9.3**	**Estimated Project Cost Range: $1,000,000 - $2,000,000**
Problem Description:	Josey Lane bridge is shown to be subject to flooding at the 2-year storm. Three homes adjacent to Janie Stark Elementary School are subject to flooding during the 10-yr event, with 1 of those structures subject to flooding during the 2-yr event. In addition, there are areas of moderate and high erosion potential along this portion of the reach.		
Alternative 2-1 (FC2-Alt1):	Maximize in-line storage during flood events by performing 820 LF of channel grading. Establish approximately 30' wide channel bottom, expanding channel towards Janie Stark Elementary School. Grade slide slopes of main channel at 3:1 – 6:1 (H:V) from Josey Lane bridge to station 6970. Grade portion extending to main school yard area at ~3% slope to match to existing grade. Install bank stabilization (turf reinforcement mat, mechanically stabilized earth) along portions of reach at risk for stream bank erosion. **Alternative 2-1** provides 2-yr flood protection to all structures in the reach. *Note that effective flood risk reduction alternatives may require buyouts of existing private structures in this reach.*		



Grading Extent Alternative 2-1

Flood Risk Reduction Benefit

Storm Event	Structures in Floodplain – **Existing**	Structures in Floodplain – **Alternative 2-1**
2-year (Ult)	1	0
5-year (Ult)	1	1
10-year (Ult)	3	2

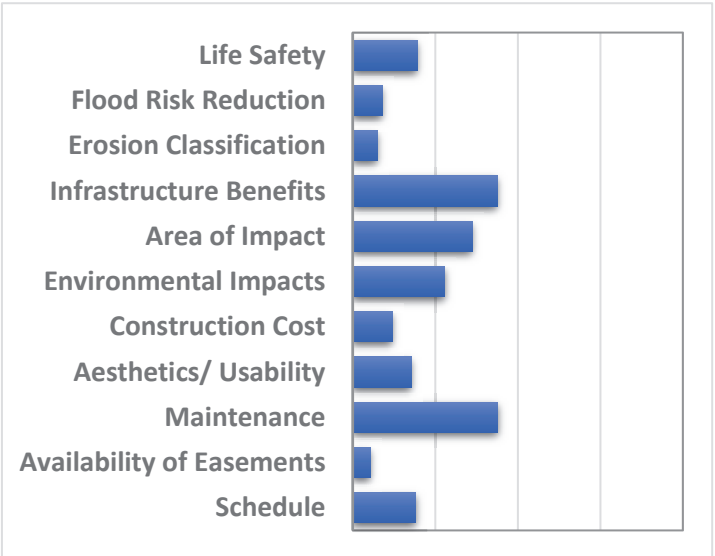


FIGURE 2-A

Area 2 - Existing Conditions

City of Farmers Branch, Texas

FN JOB NO FBR19407
FILE Hydraulic Workmap_20180711
DATE 7/27/2018
SCALE 1:1,000
DRAFTED DS/ZT

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Suite 3300
Dallas, Texas 75204
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FIGURE 2-1

Alternative 2-1

City of Farmers Branch, Texas

FN JOB NO F5R184/7
FILE Hydraulic Workmap_20180711
DATE 7/26/2018
SCALE 1:1,000
DRAFTED DS/ZT

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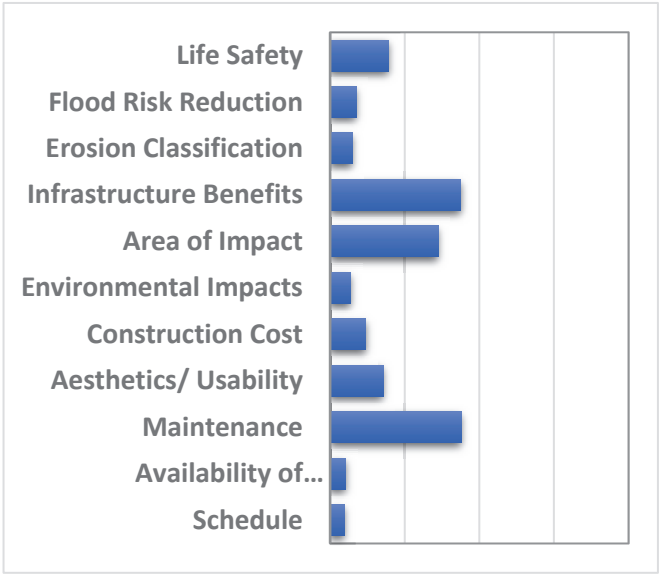
Farmers Branch Watershed Study
July 27, 2018

Reference Area:	**Marsh Lane (Station: 16595 to 19770)**		
Project ID: Area 3	**CIP Rank: 29 of 29**	**Score: 8.0**	**Estimated Project Cost Range: $1,000,000 - $2,000,000**
Problem Description:	Eleven structures along Braemar Dr and Tanglewood Dr are shown to be at-risk of flooding during the 10-year flood event, with six of those structures shown to be at-risk of flooding during the 2-year flood event. This reach is subject to impoundment from an existing dam. Farmers Branch Creek along this reach is relatively narrow and bounded on its left bank by the Valley View Estates HOA pond, which is impounded by another dam located next to the one on the creek. The area is environmentally sensitive due to the presence of wetlands near the pond area.		
Alternative 3-1 (FC3-Alt1):	Establish approximately 20' wide channel bottom. Maximize in-line storage during flood events by performing 1120 LF of channel grading. Grade slide slopes at 2:1 – 4:1 (H:V) from station 16595 to station 18326. Install bank stabilization (turf reinforcement mat, mechanically stabilized earth) along portions of reach at risk for stream bank erosion. Alternative 3-1 removes 4 homes from 10-yr floodplain. *Note that effective flood risk reduction alternatives may require buyouts of existing private structures in this reach.*		

Grading Extents Alternative 3-1

Flood Risk Reduction Benefit

Storm Event	Structures in Floodplain – **Existing**	Structures in Floodplain – **Alternative 3-1**
2-year (Ult)	6	4
5-year (Ult)	7	5
10-year (Ult)	11	8



Area 3 - Existing Conditions

City of Farmers Branch, Texas

FIGURE 3-A

FN JOB NO F5R19407
FILE Hydraulic Workmap_20180711
DATE 7/27/2018
SCALE 1:1,000
DRAFTED GS/JT

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Document Path: H:\STORMWATER\Working\Hydraulic Workmap_20180711.mxd

Legend
Stream Centerline
River Station
5-yr Floodplain (Alt. 3-1)
10-yr Floodplain (Alt. 3-1)
10-yr Floodplain
Remains in 2-yr Floodplain
Removed from 2-yr Floodplain
Removed from 5-yr Floodplain
Remains in 10-yr Floodplain
Removed from 10-yr Floodplain
Marsh Ln
Woodcrest Dr
Wooded Creek Dr
Brookhollow Dr
Denver Country Club
17573
18066
17794
17921
17242
17053
18469
18336
18375
18448
18559
18581
19133
19280
19618
18751
bing
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FIGURE 3-1
Alternative 3-1
City of Farmers Branch, Texas
FN JOB NO F5R19407
FILE Hydraulic Workmap_20180711
DATE 7/27/2018
SCALE 1:1,000
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2711 North Haskell Ave.
Suite 3300
Dallas, Texas 75204
P: 214-217-2200
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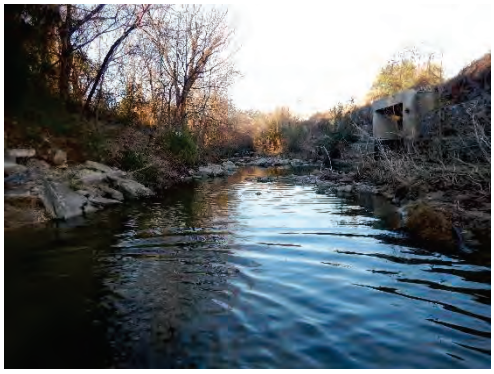
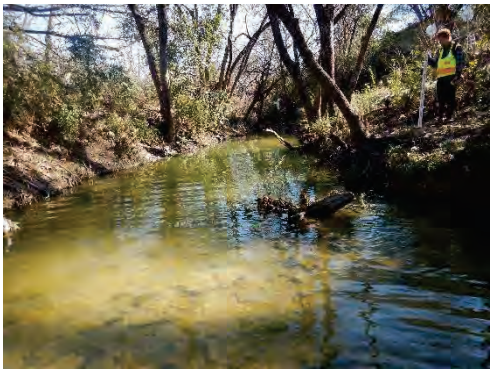
Appendix B

Geomorphic Stream Assessment Report

FREESE AND NICHOLS

Innovative approaches
Practical results
Outstanding service

Farmers Branch Creek
Stream Geomorphic Assessment

Prepared for:

City of Farmers Branch

April 19, 2017

Prepared by:

FREESE AND NICHOLS, INC.
4055 International Plaza, Suite 200
Fort Worth, Texas 76109
817-735-7300

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EXECUTIVE SUMMARY

Introduction	On January 31 and February 1, 2017, FNI conducted a condition assessment along approximately 20,500 feet of Farmers Branch Creek in the City of Farmers Branch from upstream city limits to the confluence with Rawhide Creek. The City selected Farmers Branch Creek to evaluate stream geomorphic processes and document the condition of the stream including locations where stream erosion is threatening, or could threaten, public and/or private property and infrastructure.
Stream Assessment Methodology	The stream assessment included field notes that contained a visual summary of stream conditions and identification of definitive characteristics of stream erosion, lateral and vertical stability, and potential threats to property and infrastructure. All locations were photographed with a GPS-enabled digital camera and include the image direction. Bank stability and erosion potential were noted qualitatively and evaluated quantitatively using the bank erosion hazard index (BEHI) methodology developed by Rosgen (2006). Emphasis was placed on evaluating erosion near structures (roads, utility crossings, buildings, etc.) to identify the need for remedial actions.
Watershed Description	Farmers Branch is a first order stream that is classified as perennial by the National Hydrography Dataset (NHD). Flow in Farmers Branch has been significantly modified from its natural state by low water dams, grade control structures, and channelization in many portions of the stream. The geology of the study area consists of Eagleford Shale overlain by Austin Chalk with clay to sandy clay soils such as Houston Black and Lewisville-Urban complexes, respectively.
Existing Conditions	In the study area, 36% of Farmers Branch Creek is lined with some sort of retaining wall improvement. About 11% of stream length contained ponded water and about 1% was impacted by construction. The remaining banks exhibited about 10% high, 13% moderate, and 29% low erosion potential. Most structures along Farmers Branch Creek appear to be in good condition. There are exceptions, including damaged drop structures and dams. Other structures such as outfalls, bag walls and gabions are undercut or somewhat degraded. Several exposed pipelines and utilities were observed and may be threatened by future erosion. Other concerns include unprotected, bare, near-vertical banks with high erosion potential.

EXECUTIVE SUMMARY (CONTINUED)

Critical Shear Stress of Channel Bed and Bank Material	Nearly all the modeled applied shear stresses exceed the critical shear stress value of soil, suggesting that channel banks composed of bare soil will be susceptible to erosion at all flows greater than the modeled existing 2-year peak discharge. Gabions, concrete, and other bank protection measures, however, should be resistant to erosion in all flow events.
Bed Material Evaluation and Incipient Motion Analysis	The bed material had a D_{50} ranging from 0.02 - 0.06 inches and a D_{90} ranging from 0.4 - 0.6 inches. The bed sediment originates from the Eagleford Shale and Austin Chalk in the channel bed and banks, as well as from concrete rubble. The incipient motion analysis suggests that modeled existing 2-year peak discharges are capable of mobilizing particle sizes larger than the D_{90} in most of the study reach. This is consistent with field observations of minimal aggradation along the study reach; aside from a few stable in-channel sediment bars and point bars, the only visible deposition occurs on the downstream side of bridge crossings where stream velocity decreases.
Equilibrium Slope	The equilibrium slope was calculated using the modeled existing 2-year discharge and minimum channel elevations from the FNI H&H model. The equilibrium slope was calculated at each cross section in the study reach that was not affected by a hard point (bridge, culvert or drop structure), resulting in an average equilibrium slope of 0.0009 ft/ft for existing 2-year flows.
Preliminary Considerations	Much of Farmers Branch Creek exhibits low erosion or has already been modified by bank protection and other in-channel structures; therefore, only maintenance or monitoring is recommended in most locations. However, there are exceptions, and in some areas a more involved improvement project may be appropriate. Three possible conceptual alternatives to consider include gravity walls, vegetated geomats and vegetated turf reinforcement mats.

1.0 INTRODUCTION

Fluvial geomorphology is the study of river related landforms. It investigates how the complex behaviors of streams respond to land use change and other stressors in a watershed. This dynamic relationship determines the shape of a stream channel. Fluvial geomorphologists are trained to identify how a stream will adjust its physical characteristics in response to land use changes, and consequently, how these adjustments will affect the physical stream system, habitat availability/function, and relevant infrastructure.

On January 31 and February 1, 2017, FNI conducted a condition assessment along approximately 20,500 feet of Farmers Branch Creek in the City of Farmers Branch from the upstream city limits to the confluence with Rawhide Creek. An attached memorandum detailing this site visit is referenced throughout this report and includes a location map as well as photo documentation of the areas of interest (Appendix A).

The City selected Farmers Branch Creek to evaluate stream geomorphic processes and document the condition of the stream including locations where stream erosion is threatening, or could threaten, public and/or private property and infrastructure. The specific objectives of the stream geomorphic assessment were to:

1. Assess channel morphology and identify erosion and unstable areas.
2. Document local geology and how it is influencing the channel morphology and evolution (i.e., downcutting, widening, mass wasting, etc.).
3. Identify threats to infrastructure and develop technically feasible alternatives (concept level).

2.0 STREAM ASSESSMENT METHODOLOGY

The stream assessment covered approximately 20,500 feet of Farmers Branch Creek. All observations were made describing the left and right bank when looking in the downstream direction. The stream assessment references the cross-sections from the H&H modeling analysis. All locations were photographed with a GPS-enabled digital camera and include the image direction (Appendix A). Field notes contained a visual summary of stream conditions and identification of definitive characteristics of stream erosion, lateral and/or vertical stability, and potential threats to property and infrastructure (Appendix B). Bank stability, degree of erosion, and geomorphic processes were noted using the methodologies developed by Thorne (1998), Montgomery and Buffington (1998), Henshaw and Booth (2000), and Rosgen and Silvey (1995). Streambank stability and bank erosion were evaluated qualitatively using the characteristics shown in Appendix C and quantitatively using bank erosion hazard index (BEHI) methodology developed by Rosgen (2006). Emphasis was placed on evaluating erosion near structures (roads, utility crossings, buildings, etc.) to identify the need for remedial actions owing to stream instability. These data can also be used in the future to assess changes over time in the stream geometry, bank slopes, substrate vegetation, flow conditions, and to assess maintenance needs.

The areas of concern identified as experiencing stream erosion, lateral and/or vertical stability, and potential threats to property or infrastructure were given a rating based on stream geomorphology, BEHI, and on the perceived threat to life and/or property. The ratings are as follows:

- **Emergency** – Erosion affecting a structure; requires immediate attention and is potentially life threatening.
- **High** – Erosion affecting or threatening a structure; requires attention but is not considered life threatening.
- **Moderate** – Erosion affecting retaining walls, fences, trees, and/or loss of land.
- **Low** – Minor erosion; no structures affected or threatened.

3.0 WATERSHED DESCRIPTION

The following section describes the existing conditions of Farmers Branch Creek including the geographic setting, topography, geology and soils, and channel morphology. The information was developed from a desktop analysis of available data including topographic maps, aerial photographs, soil survey reports, and geologic maps and reports. Additional information was obtained from the field investigation, where visual observations, photographs, and field measurements were collected.

Drainage Area: 6.1 square miles.

Local Stream Name: Farmers Branch Creek

Evaluated Stream Length: ~20,500 linear feet

Flow Regime: Perennial

Elevation Difference: Starting elevation of Farmers Branch Creek at the upstream city limits: 544 feet above mean sea level
Ending elevation of Farmers Branch Creek at the confluence with Rawhide Creek: 444 feet above mean sea level
100 feet of total relief

Average Streambed Slope: 0.0048 foot/foot

Geology: Eagleford Shale, overlain by Austin Chalk (both dip to the SE)

Soils: *Houston Black-Urban land complex*, 0 to 4 percent slopes – deep, moderately well drained, very low to moderately low permeability soils formed by residuum weathered from calcareous shale of the Taylor Marl and Eagleford Shale; high erodibility.

Lewisville-Urban land complex, 4 to 8 percent slopes – deep, well drained, moderately high to high permeability soils formed by alluvium of Quaternary age derived from mixed sources.

Frio silty clay, 0 to 1 percent slopes – deep, well drained, moderately high permeability soils formed by calcareous clayey and/or loamy alluvium derived from mudstone.

Watershed Development and Significant Features: Development of the Farmers Branch watershed began with a switch from agriculture to residential housing in the mid-1950's that branched out to the east from Interstate 35. By 1968, most of the watershed adjacent to Farmers Branch Creek was residential housing. Between 1970 and 1982, land use upstream of the study reach changed from primarily agriculture to commercial. Land use has remained relatively consistent since the 1980's with some continued development in the remaining green space. The National Land Cover Dataset provides the following land use distribution in the watershed: Low Intensity Residential - 12.6%, Commercial - 22.9%, Deciduous Forest - 1.3%, Other - 63.1%; where the category 'Other' appears to be residential or maintained grass.

Development Timeline from Aerial Photographs:

- 1958 – Development of the watershed begins; HOA pond dams in place
- 1968 – Residential housing covers most of the land adjacent to Farmers Branch Creek
- 1970-1982 – Land use upstream of the study reach changes from agriculture to commercial
- 1979 – Brookhaven College has been built
- 1980's – Land use remains constant, with some development of the remaining green space.
- 2001 – Bagwall check dams in place downstream of HOA pond

Watershed Geomorphology and Past Channel Alteration: Farmers Branch Creek is a first order stream that is classified as perennial by the National Hydrography Dataset (NHD). Flow in Farmers Branch has been significantly modified from its natural state by low water dams, grade control structures, and channelization along many portions of the stream. Much of Farmers Branch Creek has also been modified by bank protection methods including bag walls and gabion mattresses.

4.0 RESULTS

4.1 EXISTING CONDITIONS: OBSERVATIONS BY REACH

Observations of stream morphology, erosion mechanisms, and instability indicators were made during the site visit to Farmers Branch Creek and provide insight into the existing and likely future physical state of the stream. Table 1 provides a summary of average channel dimensions and morphology parameters estimated in the field and from photographs. The memorandum in Appendix A provides photo documentation and a summary of the site visit. Areas of concern are documented and photographed with field notes to support each observation. The locations of these concerns are shown on the maps in Appendix D. Additional geomorphologic information is called out on the maps that could be a concern or useful for future investigations. To organize the results, the areas of concern are called out and described from upstream to downstream in reference to stream stationing (H&H model cross-sections). Each location was given a rating of low, moderate, high, or emergency erosion potential based on the conditions observed.

In the study area, 36% of Farmers Branch Creek was lined with some sort of retaining wall improvement. About 11% of stream length contained ponded water and about 1% was impacted by construction. The remaining banks exhibited about 10% high, 13% moderate, and 29% low erosion potential. Most areas observed were rated as having low erosion potential because Farmers Branch Creek has already been heavily altered from its natural state by dams, grade control structures and various bank stabilization methods. Most of these structures appear to be in good condition. There are exceptions, including the broken concrete aprons at locations 13, 14, and 31, the damaged sheetpile wall at location 21, and most notably the damaged grade control structure at location 48. Many other structures such as outfalls, bag walls and gabion mattresses are undercut or somewhat degraded. Several exposed pipelines and utilities were observed at locations 24-26, 32, 38, 40 and 49; future erosion may threaten these areas. Other concerns include unprotected, bare, near-vertical banks which have high erosion potential.

4.1.1 Reach 1: City Limits to Marsh Lane

Reach 1 extends from the Farmers Branch City limits to the bridge crossing of Marsh Lane. The reach consists largely of banks with low to moderate erosion potential, depending on the degree of vegetation density; banks with lower vegetation density are more susceptible to erosion. Severe erosion and gully

formation is occurring along the left banks at the beginning of the reach near Brookhaven College; bank stabilization alternatives are recommended for this area.

4.1.2 Reach 2: Marsh Lane to Valley View Lane West

Reach 2 extends from Marsh Lane to westbound Valley View Lane and includes the section of the creek that flows around the Valley View Estates Homeowners Association pond (HOA pond). Construction access and a coffer dam were in place at Marsh Lane during the site visit; note that observed conditions may not be representative of normal conditions in this reach due to the coffer dam. Most of this reach exhibits low erosion potential or already has channel improvements in place. Observed bank erosion along the channel adjacent to the HOA pond was low due to vegetation and short banks. Downstream of the HOA pond dams, both banks are protected by various stabilization methods for about 1000 feet. Most of these structures appear to be in good condition, though some show signs of degradation and may require maintenance. There are also several bagwall check dams along this section of the creek. At cross section 15156, the creek turns west as it reaches Valley View Lane. More severe erosion is present downstream of the limits of the bank protection, where steep, bare banks with lower vegetation density were observed.

4.1.3 Reach 3: Valley View Lane West to Valley View Lane East

Reach 3 is the roughly 750-foot stretch of the creek that flows between the westbound and eastbound Valley View Lane crossings. Most of this reach is protected by gabion walls. Issues to maintain and/or monitor include a gully undercutting the trail crossing underneath Valley View Lane at the beginning of the reach and a degraded timber crib wall near the end of the reach.

4.1.4 Reach 4: Valley View Lane East to Webb Chapel Road

Reach 4 stretches from eastbound Valley View Lane to Webb Chapel Road. The first ~1,750 feet of this reach consist of banks altered by gabion walls, sheet pile walls, and rip rap. Downstream of the bank protection, there is a manhole in the channel at a junction of three pipelines. The right bank adjacent to the manhole is severely eroded, as evidenced by the pipes hanging ~12 feet out from the bank. The rest of the reach has low to moderate erosion potential. On the upstream side of the Webb Chapel Road crossing, there is a utility line that has snagged debris.

4.1.5 Reach 5: Webb Chapel Road to Veronica Road

The reach between Webb Chapel Road and Veronica Road exhibits moderate erosion throughout. The concrete protection under Webb Chapel Road is severely undercut and has collapsed in places. There is a concrete-encased pipeline just downstream of Webb Chapel Road acting as a grade control. Severe erosion is occurring along ~250 feet of right bank on the downstream side of Webb Chapel Road. At the end of the reach near Veronica Road, both banks are protected by retaining walls. Water has begun to flow behind a drop structure in this location, possibly threatening its structural integrity.

4.1.6 Reach 6: Veronica Road to Josey Lane

Downstream of Veronica Road, high erosion has nearly exposed a manhole and pipeline on the right bank. Extension of the nearby gabion walls may be necessary to prevent collapse. There is also high erosion along the banks adjacent to Stark Elementary.

4.1.7 Reach 7: Josey Lane to Ford Road

For the first ~2,400 feet of Reach 7, the creek is impounded. Mallon Park extends for ~500 feet downstream of Josey Lane. Sediment deposition is occurring just downstream of the Josey Lane bridge crossing and may need to be dredged to maintain the park pond. Beyond Mallon Park, bank protection continues along most of the private residences up to cross section 3620. There are three grade control structures located at cross sections 5510, 5017, and 4216, respectively. Maintenance may be recommended for some of these bank protection and grade control structures, which are undercut in some locations. At cross section 3620, a heavily degraded dam structure is collapsing and has been breached on the left side; an engineer should assess the condition of this structure. The breach may have been the result of flow deflection caused by excessive buildup of sediment on the right bank just upstream of the dam. Exposed utilities were observed downstream of the dam.

4.1.8 Reach 8: Ford Road to Rawhide Creek

The final reach includes a few areas with high erosion but relatively low threat to infrastructure. The concrete apron downstream of Ford Road is degraded and undercut. High erosion and concentration of debris were observed for ~400 feet downstream of Ford Road; however, this area is not adjacent to residences or infrastructure. Additionally, a portion of the left bank of this reach falls within Dallas city limits. Of note is an outfall structure on the left bank with wing walls that have been completely exposed; this structure may be within Dallas city limits. The channel bed and banks are fully lined in concrete from cross section 821 to the confluence with Rawhide Creek at the end of the reach.

Table 1. Summary of averaged channel dimensions for Farmers Branch Creek estimated in the field and from photographs.

Parameter	Reach							
	1	2	3	4	5	6	7	8
Stream Stationing (ft downstream):	20,500 – 18,500	18,500 – 14,000	14,000 – 13,250	13,250 – 9,250	9,250 – 7,500	7,500 – 6,000	6,000 – 2,500	2,500 – 0
Top of Bank Width (ft)	57	55	60	48	42	58	60	56
Top of Bank Depth (ft)	12	12	12	11	9	9	7	10
Bank Slope (Degrees)	40	45	32	48	41	53	60	56
Channel Slope (ft/ft)	0.0198	0.0056	0.0050	0.0045	0.0045	0.0033	0.0034	0.0020
Channel Length (ft)	2,000	4,500	750	4,000	1,750	1,500	3,500	2,500
Valley Length (ft)	1,750	3,600	650	3,100	1,500	1,500	3,000	1,900
Sinuosity	1.14	1.25	1.15	1.29	1.17	1.00	1.17	1.31

4.2 CRITICAL SHEAR STRESS OF CHANNEL BED AND BANK MATERIAL

Channel stability along the study reach was evaluated by investigating the shear stresses of stream flow in the channel and the critical shear stress of the channel boundary material. Erosion of stream channel bed and bank material occurs when the hydraulic forces exerted by the water flowing in the channel exceed the resisting forces of the materials. The hydraulic force of the water applied to the channel bed and banks is called the applied shear stress. The resisting force of the channel boundary material is called the critical shear stress. The critical shear stress is the maximum shear stress that the channel bed or bank material can resist before it starts to erode. The critical shear stress is a property of the channel bed or bank material and is influenced by many factors, including cohesion (the bonds between individual particles) and vegetative cover. The critical shear stress of a material generally increases with increasing cohesion and vegetative cover (Fischenich, 2001). Erosion will occur along a channel bed or bank when the applied shear stress is greater than the critical shear stress.

The U.S. Army Corp of Engineers provides permissible (critical) shear stress values for different types of channel bed and bank materials (Fischenich, 2001). The banks of Farmers Branch Creek in the study area, where not vegetated or altered by protective structures, consist of soil and alluvial deposits. The bed is composed of gravel and fine alluvium.

The permissible shear stress values of the bed and bank materials in the study reach of Farmers Branch Creek were (Fischenich, 2001):

- Soil shear stress – 0.26 pounds per square foot
- Vegetation shear stress – 0.95 pounds per square foot
- Gabions shear stress – 10 pounds per square foot
- Concrete shear stress – 12.5 pounds per square foot
- D_{50} shear stress – 0.006 - 0.01 pounds per square foot
- D_{90} shear stress – 0.12 pounds per square foot

These representative values were determined using flume experiments under controlled flow conditions on materials that had not been weakened by weathering processes (Fischenich, 2001). Shear stress thresholds for weathered channel bed and bank materials should be expected to be lower than those of un-weathered material; weathered materials will erode more easily than un-weathered materials.

The shear stress plot in Figure 1 shows the hydraulic shear stresses in the channels of Farmers Branch Creek in relation to the critical shear stresses of the exposed channel bed and bank material. The critical shear stress of the D_{90} (potential armoring grain size) in the channel was plotted to illustrate the potential

for natural armoring of the stream bed by existing gravels. Erosion and scour of exposed bed and bank material can be expected at locations where the points lie above the critical shear stress lines shown on the plots. The plot shows that the shear stress exerted by the flowing water in the channel (from the FNI H&H model) is generally higher than the critical shear stress of the bed and bank materials.

Nearly all the modeled applied shear stresses exceed the critical shear stress value of soil, suggesting that channel banks composed of bare soil will be susceptible to erosion at all flows greater than the modeled existing 2-year peak discharge. Note, however, that the permissible shear stresses of gabions and concrete are well above the modeled applied shear stresses throughout the reach; this suggests that areas along Farmers Branch Creek with channel improvements or bank protection are resistant to erosion. In addition, in areas where meanders or bends are present, applied shear stresses will be higher on the outside of the bends than the inside. Thus, not all areas of exposed banks will susceptible to the same amounts of erosion. This was confirmed by observations of several point bar formations on the inside of meanders.

This discussion of applied and critical shear stresses applies only to bed and bank material eroded by flowing water and does not consider loss of material due to local scour or bank failure. These results and implications should be considered when designing any future erosion control and/or stream protection features.

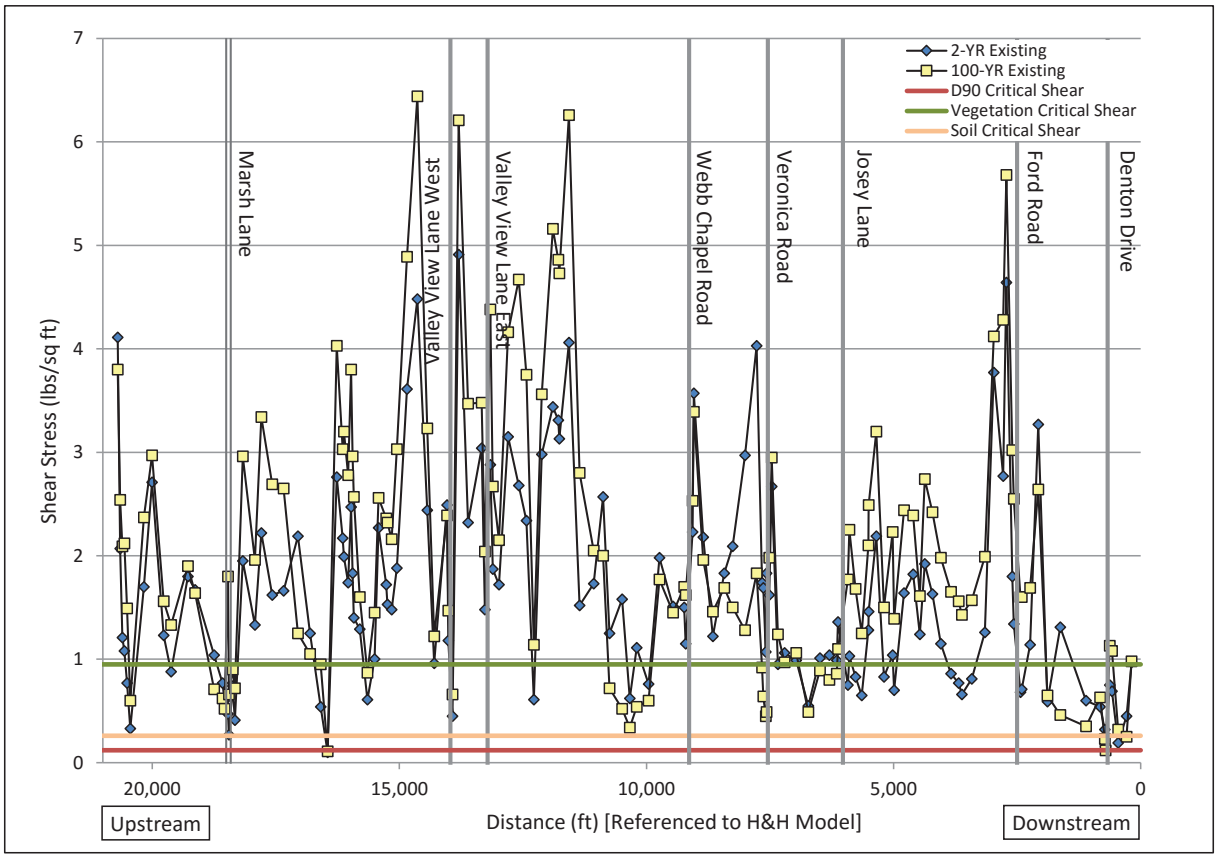

Figure 1. Results of the critical shear stress analysis. Permissible shear stresses for the sediment load and bare banks are exceeded by applied shear stresses exerted by the modeled flow events; however, the permissible shear stresses of gabions and concrete (10 and 12 pounds per square foot, respectively) are resistant to erosion in all flow events.

4.3 BED MATERIAL EVALUATION AND INCIPIENT MOTION ANALYSIS

The distribution of sediment particle grain sizes of the streambed material of Farmers Branch was quantified by conducting a particle size analysis (ASTM C-136) on three representative sediment samples (Table 2; Appendix E). These samples were collected at cross section 13800 (downstream of Valley View Lane West), cross section 5923 (in Mallon Park, downstream of Josey Lane) and cross section 2407 (downstream of Ford Road).

Table 2. Results of bed material grain size analysis for Farmers Branch Creek.

	Station	D_{50} (in)	D_{90} (in)
Valley View Lane West	13800	0.06	0.45
Josey Lane	5923	0.07	0.59
Ford Road	2407	0.02	0.39

An incipient motion analysis was performed to evaluate the probability of bed material movement and potential for natural bed material armoring. This analysis involves bed material transport equations that use the variables of grain size (D_{50} and D_{90}), depth, channel slope, flow velocity, and discharge. The depth and velocity variables were obtained from the modeled existing 2-year peak discharge and the existing 100-year peak discharge. Channel slope was obtained from H&H model cross sections. Three sets of equations – Competent Bottom Velocity, Shields, and Yang's Incipient Motion – were used to assess bed material movement as recommended by Pemberton and Lara (1984). The results from these equations were averaged to produce the incipient motion of the bed material for each cross section. The equations used are for sand and gravel bed streams.

The results of the incipient motion analysis for Farmers Branch Creek suggest that the existing 2-year discharge is capable of mobilizing particle sizes larger than the D_{90} in most of the study reach (Figure 2). The existing 100-year peak discharge is capable of mobilizing particle sizes larger than the D_{90} through the entire study reach. This is consistent with field observations of minimal aggradation along the study reach; aside from a few stable in-channel sediment bars and point bars, the only visible deposition occurs on the downstream sides of bridge crossings where stream velocity decreases. The D_{90} is typically assumed to be the potential non-mobile grain size in alluvial channels. If enough grains of this size build up over time, they will armor smaller underlying particles on the stream bed from future erosion. Sites that plot above the red line in Figure 2 have no potential for natural armoring under modeled peak discharges.

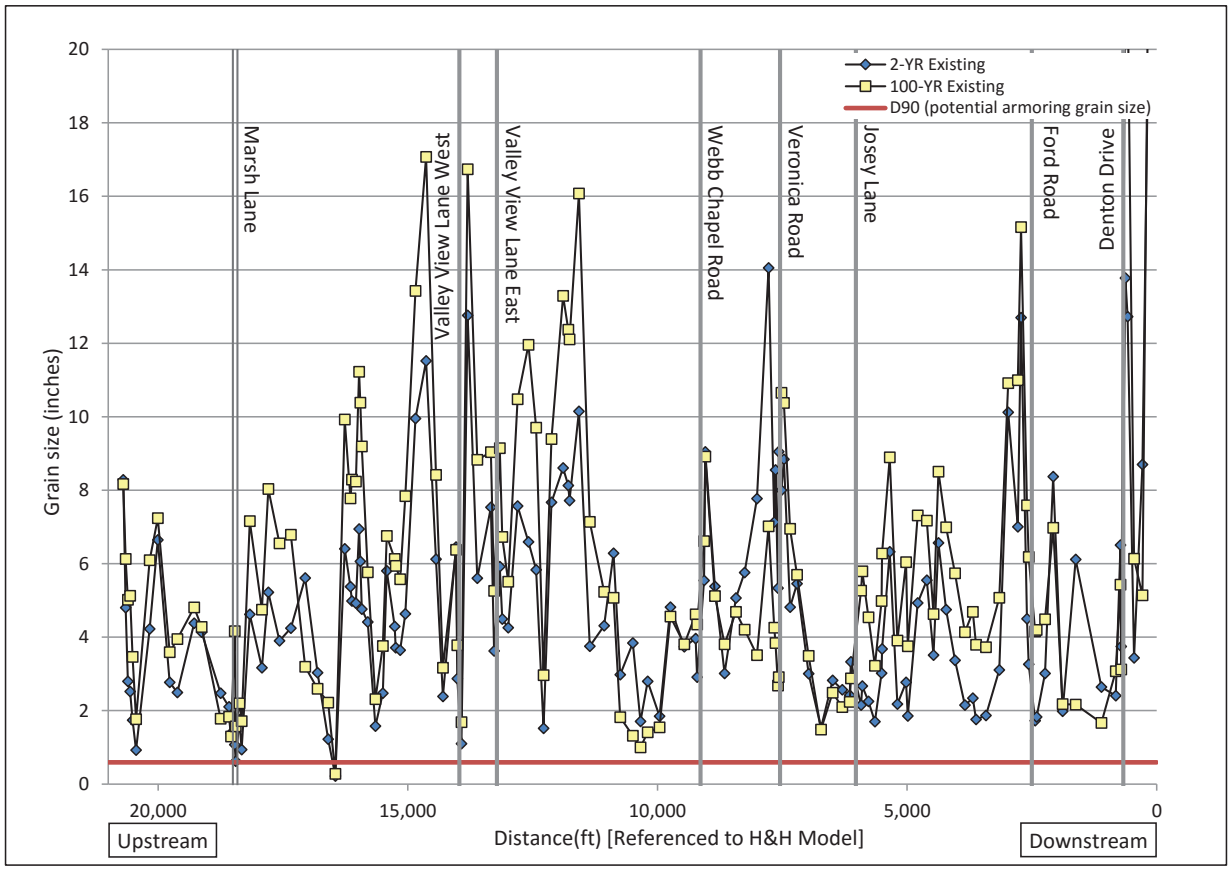

Figure 2. Results of the incipient motion analysis. The existing 2-year discharge is capable of mobilizing particle sizes larger than the D_{90} (shown by the red line) in most of the study reach. The existing 100-year peak discharge is capable of mobilizing particle sizes larger than the D_{90} through the entire study reach.

4.4 EQUILIBRIUM SLOPE

Channel equilibrium (stable slope) occurs when sediment discharge, sediment particle size, stream flow, and stream slope are in balance (Lane, 1955). Two equilibrium slope methods – Meyer-Peter Mueller and Blackland Prairie regional regression (Pemberton and Lara, 1984) – were used to estimate stable channel slopes for Farmers Branch Creek. Blackland Prairie regressions are based on slopes derived from USGS gauge sites.

The equilibrium or design slope, derived from the slope equations, will typically be lower than the existing channel slope because urban streams are still adjusting their slope to accommodate increased flows. Because of the confined nature of many urban streams (transportation, crossings, houses, commercial structures, alleys), there is typically little room to decrease the channel slope by increasing channel length through meander enlargement. Therefore, many urban channels may require the addition of drop structures or grade control to achieve equilibrium channel slopes. Placement of the structures depends on the amount of predicted degradation, the expected time rate of degradation, channel sinuosity, and local structural constraints such as utility crossings, storm sewers, and bridge and culvert locations and configurations. If spaced close enough and if protected from local scour and undercutting, drop structures can decrease the headward migration of knickpoints.

The equilibrium slope was calculated using the modeled existing 2-year discharge and minimum channel elevations from the FNI H&H model. The equilibrium slope was calculated at each cross section in the study reach that was not affected by a hard point (bridge, culvert, or drop structure) resulting in an average equilibrium slope of 0.0009 ft/ft for the existing 2-year flow. The study reach was divided into segments between hard points that are expected to decrease the headward migration of knickpoints. The amount of downcutting expected between the hard points was calculated by comparing the existing slope with the calculated equilibrium slope over the segment length (Table 3).

Table 3. Results of equilibrium slope analysis for Farmers Branch Creek.

Reach		Slope		Approximate Downcut (ft)	Comment
Start	End	Actual	Stable		
20699	20563	0.0390	0.0012	5.15	
20538	-	-	-	-	Inline Structure
20512	18539	0.0007	0.0009	-0.36	
18504	18412	-	-	-	Marsh Lane
18375	17794	0.0020	0.0013	0.43	
17683	-	-	-	-	Lateral Structure
17573	16594	0.0036	0.0012	2.34	
16522	16440	-	-	-	Inline & Lateral Structures
16265	16147	0.0182	0.0008	2.06	
16134	-	-		-	Inline Structure
16120	15949	0.0053	0.0007	0.79	
15936	-	-	-	-	Inline Structure
15922	15265	0.0005	0.0008	-0.22	
15254	-	-	-	-	Inline Structure
15243	14008	0.0043	0.0009	4.18	
13967	-	-	-	-	Valley View Lane
13926	13271	0.0050	0.0008	2.77	
13215	-	-	-	-	Valley View Lane
13158	11786	0.0050	0.0009	5.62	
11778	-	-	-	-	Inline Structure
11763	9207	0.0041	0.0010	7.98	
9137	-	-	-	-	Webb Chapel Road
9066	7661	0.0045	0.0008	5.19	
7655	-	-	-	-	Inline Structure
7637	7569	-0.0062	0.0005	-0.46	
7544	-	-	-	-	Veronica Road
7518	6127	0.0033	0.0008	3.46	
6025	-	-	-	-	Josey Lane
5923	5511	0.0020	0.0010	0.41	
5507	-	-	-	-	Inline Structure
5503	3681	0.0022	0.0013	1.69	
3651	-	-	-	-	Inline Structure
3620	2566	0.0061	0.0009	5.50	
2501	-	-	-	-	Ford Road
2435	821	0.0004	0.0009	-0.80	
775	669	-	-	-	DART Rail Line to Denton Drive
626	184	0.0036	0.0005	1.38	

5.0 PRELIMINARY CONSIDERATIONS

Much of Farmers Branch Creek exhibits low erosion or has already been modified by bank protection and other in-channel structures; therefore, only maintenance or monitoring is recommended in most locations. However, there are exceptions, and in some areas a more involved improvement project may be appropriate. The following sections outline possible bank protection alternatives to be implemented at such sites and provide a comprehensive overview of recommendations based on observations made during the stream assessment.

5.1 CONCEPTUAL ALTERNATIVES

This section presents several conceptual alternatives that may be considered for specific site improvements along Farmers Branch Creek. Note that these alternatives are presented here as general concepts; detailed design and cost-benefit analysis of possible alternatives should take place on a per-project basis. The alternatives ('Alt.') column in Table 4 lists which of these alternatives, if any, may be appropriate for a given site. Successful completion of these projects would require geotechnical engineering and possible 404 permitting.

Alternative 1 is a gravity wall with drain tiles and a wall base (Figure 3). The gravity wall provides protection for steep eroding banks and is well suited to sections of stream that experience high velocities and erosive flow. Because it requires a relatively small amount of planform area, this design is ideal for sites where space along the channel banks is limited (i.e., by property lines or structures adjacent to the stream).

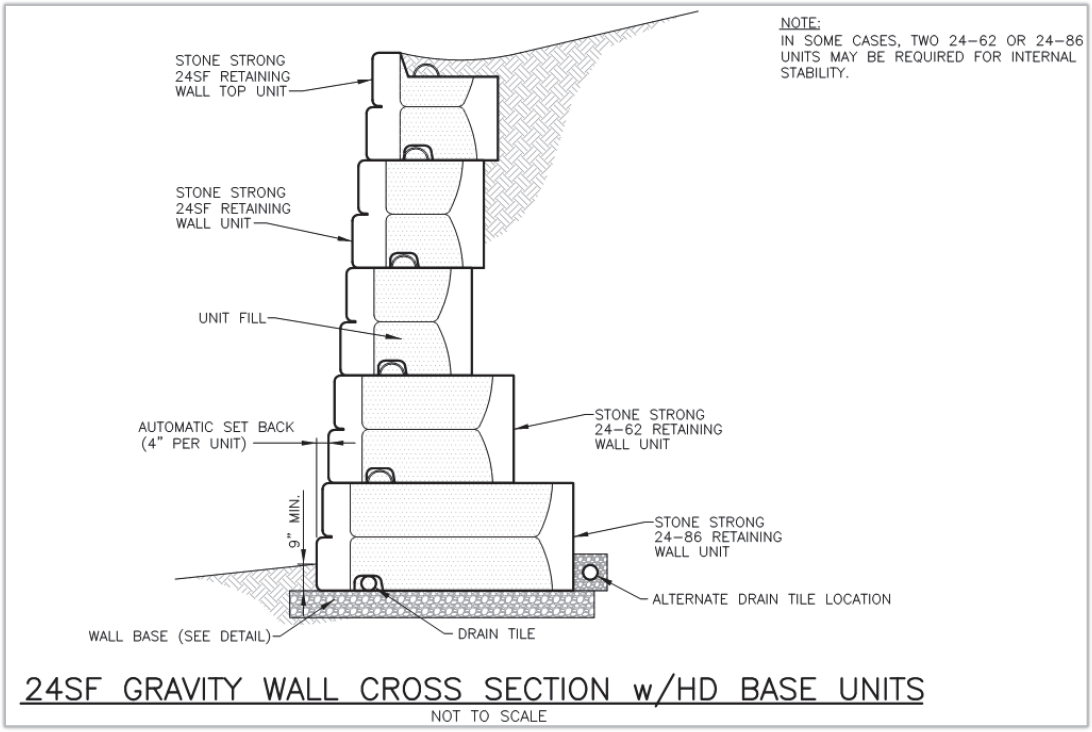

Figure 3. Conceptual alternative 1: Gravity wall with drain tile and wall base.

Alternative 2 is a vegetated geomat with earth anchors and a hard toe (Figure 4). This option is meant for spacious sites in which stable slopes can be restored. The vegetation provides a natural look while the geomat, anchors and hard toe work to withstand high flow velocities.

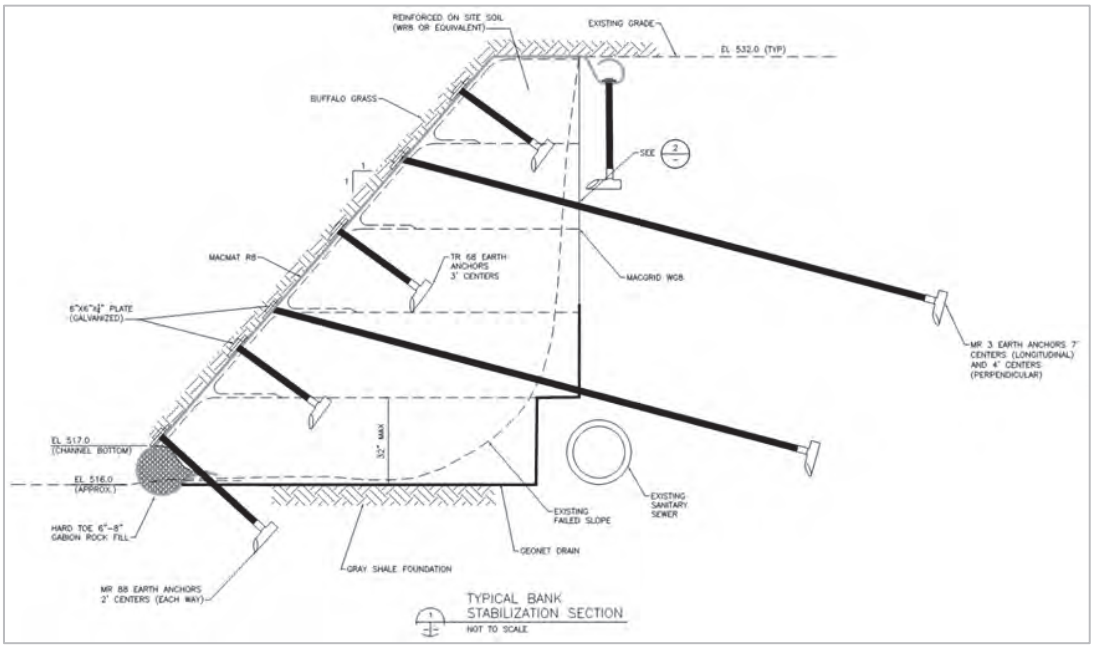

Figure 4. Conceptual alternative 2: Vegetated geomat with earth anchors and hard toe.

Alternative 3 is a vegetated slope with turf reinforcement matting (TRM) and a stabilized rock toe (Figure 5). In this design (also intended for more spacious sites), the bank slope is laid back from the current toe. This increases the cross-sectional area of the channel to decrease flow velocity and to establish vegetated benches along the bank. Armoring the toe may be optional depending on site conditions. Generally, it is recommended that the slope be protected up to the 10-year flow event. Like Alternative 2, this option also provides a more natural look while resisting high energy flows.

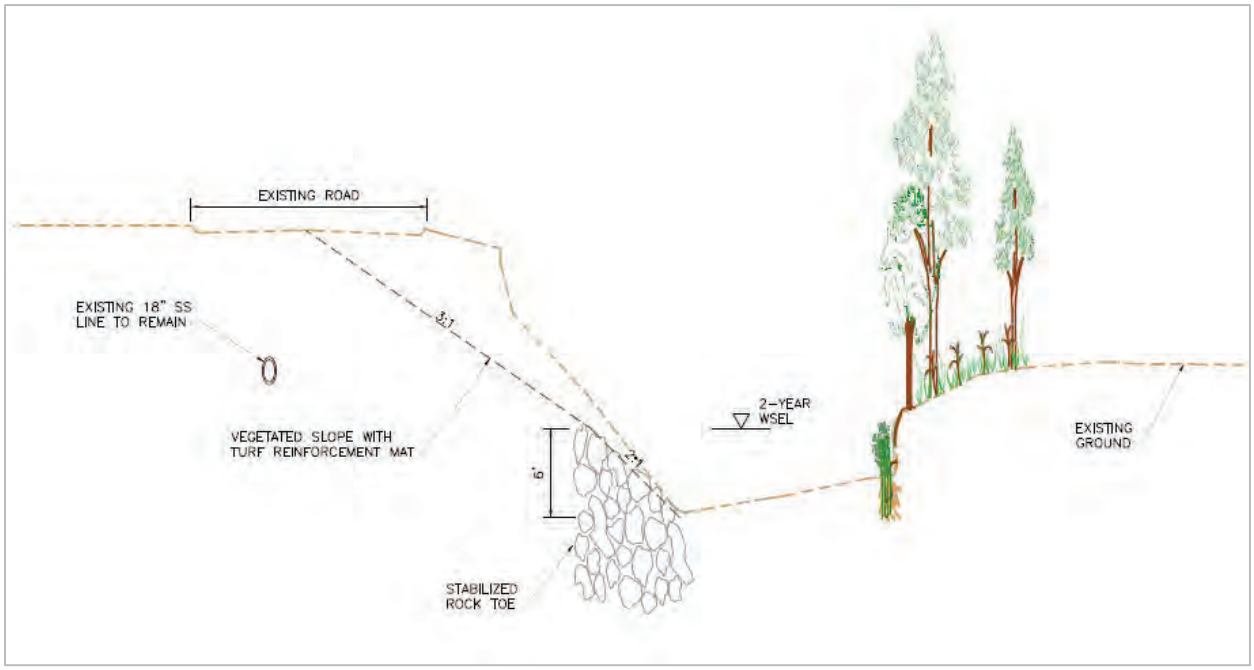

Figure 5. Conceptual alternative 3: Vegetated slope with TRM and stabilized rock toe.

5.2 SITE-SPECIFIC RECOMMENDATIONS

Based on the stream geomorphologic assessment and assigned erosion potential ratings (described in Section 4.1), the areas of concern have been divided into three categories as follows:

- **Alternative (Alt.)** – sites that should be considered for improvement via the construction of an appropriate conceptual alternative (presented in Section 5.1). Successful completion of these projects would require geotechnical engineering and possible 404 permitting. Includes erosion potential ratings High and Moderate.
- **Maintenance** – sites that should be considered for repair but do not pose an immediate threat to life or property. A qualified professional should determine appropriate repairs. It is possible that some repairs could be made with in-house City resources. Includes erosion potential ratings High, Moderate and Low.
- **Monitoring** – sites where erosion has the potential to threaten a structure in the future or is providing a sediment source. Monitoring should be conducted following high-magnitude flow events, or, at a minimum, annually. Monitoring methods could include comparisons of repeated photographs and streambank surveys. Includes erosion potential ratings Moderate and Low.

Note that maintenance and monitoring may coincide. It is often appropriate to monitor a site before a maintenance project is undertaken to assess the extent and urgency of the project; similarly, completed maintenance projects should continue to be monitored to evaluate the effectiveness of the project and to determine if additional maintenance is required.

Farmers Branch Creek has low overall erosion concerns. Roughly 36% of the total stream bank length is already protected by improvements. Only 10% of the remaining bank length has high erosion concerns. Table 4 summarizes the recommended action for each area.

Table 4. Summary of potential Alternative, Maintenance, and Monitoring Projects.

Reach	Photos	Description	Alt.	Maintenance	Monitoring
Reach 1 City limits to Marsh Ln	Photos 1 & 2	Gully headcutting toward culvert under walking trail; high erosion of 15-ft bank near Brookhaven College	1, 2, 3		
	Photo 3	Degraded bagwall structure in channel			✓
	Photos 4 & 5	Fill placed on left bank at outfall; erosion of fill could lead to damaged gabions		✓	✓
	Photo 6	Streambank erosion near fence	1, 2		✓
	Photo 7	Stormwater outfall undercut 2ft		✓	✓
Reach 2 Marsh Lane to Valley View Ln W	Photo 8	Construction access and coffer dam for new bridge at Marsh Ln			✓
	Photo 9	Collapsing bagwall		✓	
	Photo 10	Collapsing bagwall; leaning trees		✓	✓
	Photo 11	Low bank bench slumping toward plunge pool at base of dam			✓
	Photo 12	Eroded left bank along Valley View Lane			✓
	Photos 13 & 14	Cracked concrete channel lining, acting as grade control			✓
	Photo 15	Eroded right bank with leaning trees and undercut banks		✓	✓
	Photo 16	Manhole next to creek, protected with rock riprap			✓
Reach 3 Valley View Ln W to Valley View Ln E	Photo 17	Minor erosion to sidewalk under Valley View Lane West		✓	✓
	Photo 18	Gully undercutting trail crossing near Valley View Lane; shale on bed of gully		✓	✓
	Photo 19	Minor damage to gabion mattress downstream of outfall		✓	
	Photo 20	Timber crib wall leaning toward channel; protects Valley View Lane East; might need replacing		✓	✓

Table 4. Summary of potential Alternative, Maintenance, and Monitoring Projects (continued).

Reach	Photos	Description	Alt.	Maintenance	Monitoring
Reach 4 Valley View Ln E to Webb Chapel Rd	Photo 21	Damaged sheet pile check dam; acts as grade control and protects sewer line		✓	
	Photo 22	Leaning Bald Cypress tree, evidence of erosion			✓
	Photo 23	Concrete drop grade control with broken concrete and deep pool on downstream side		✓	
	Photo 24	Manhole in center of channel at a junction of three lines		✓	
	Photo 25	Pipe exposed downstream of manhole; pipe exposed on bed		✓	
	Photo 26	Eroded right bank next to manhole; exposed pipes show >12 feet of erosion	1, 2, 3		
	Photo 27	Deck at top of unprotected bank appears to be leaning toward stream	1, 2		✓
	Photo 28	Collapsed headwall and section of pipe, evidence of widening		✓	
	Photo 29	Gabion mattress toe undercut on upstream and downstream ends		✓	✓
	Photo 30	Debris jam, beneficial grade control			✓
Reach 5 Webb Chapel Rd to Veronica Rd	Photo 31	Upstream right bridge protection collapsed		✓	
	Photo 32	Exposed utility (gray pipe, potentially fiber cable line) has caused debris jam		✓	
	Photo 33	2-ft vertical undercutting and 5.5-ft horizontal undercutting of Webb Chapel Road		✓	
	Photo 34	Concrete encased sewer line acting as grade control; 4-ft hole downstream			✓
	Photo 35	10-ft tall, south-facing, unvegetated bank; tension cracks, high erosion	1, 2, 3		
	Photo 36	Collapsed bag wall and damaged fence from rotational failure		✓	✓
	Photo 37	Erosion of right retaining wall (flow through wall)		✓	
	Photo 38	Erosion of left bank above retaining wall, exposing manhole at d/s end		✓	✓
	Photo 39	Erosion of right bank concrete grade control; water flowing around		✓	

Table 4. Summary of potential Alternative, Maintenance, and Monitoring Projects (continued).

Reach	Photos	Description	Alt.	Maintenance	Monitoring
Reach 6 Veronica Rd to Josey Ln	Photo 40	Manhole threatened by high bank erosion	1		
	Photos 41 & 42	High erosion of vertical banks near Stark Elementary; leaning and falling trees, grass mowed to top of bank	1, 2, 3		
Reach 7 Josey Ln to Ford Rd	Photo 43	Sediment accumulation in Mallon Park Pond (upstream erosion is the sediment source)		✓	
	Photo 44	Private dam; downstream left abutment undercut 2-3ft		✓	
	Photo 45	Sediment accumulation in pond		✓	
	Photo 46	Degraded check dam; water flows underneath		✓	
	Photo 47	Sediment accumulation on right bank upstream of largest dam, likely cause of flanking of downstream dam		✓	
	Photo 48	Degraded dam structure; left abutment breached and repaired in 2016, water flowing under left abutment patch		✓	
	Photo 49	Damaged concrete cap on sewer line; 2-ft plunge pool downstream		✓	
Reach 8 Ford Rd to Rawhide Creek	Photo 50	Undercut apron downstream of Ford Rd		✓	
	Photo 51	Undercut stormwater outfall structure behind industrial facility in City of Dallas		✓	

6.0 REFERENCES

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APPENDIX A
STREAM ASSESSMENT MEMORANDUM WITH LOCATION MAP AND PHOTOS

TECHNICAL MEMORANDUM

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TO: City of Farmers Branch

CC: David Rivera, Ph.D., P.E., CFM; Stephanie Coffman, P.G.

FROM: S. Connor Kee, G.I.T.

SUBJECT: Farmers Branch Creek Site Visit

PROJECT: Farmers Branch Stream Assessment (FBR16407)

DATE: February 20, 2017

INTRODUCTION

Freese and Nichols, Inc. conducted a site visit to Farmers Branch Creek on January 31 and February 1, 2017. The purpose of this site visit was to document existing stream conditions and to identify possible threats to infrastructure. Approximately 20,500 linear feet of Farmers Branch Creek, from the upstream city limits to the confluence with Rawhide Creek, was walked and photo-documented (Attachment A). Note that an artificial increase in water surface elevation caused by the construction at Marsh Lane may have led to non-representative stream conditions during the site visit.

FIELD OBSERVATIONS

Farmers Branch Creek has been heavily altered from its natural state by dams, grade control structures, and various bank stabilization methods. Most of these structures appear to be in good condition. There are exceptions, including the broken concrete aprons at locations 13, 14, and 31, the damaged sheetpile wall at location 21, and most notably the damaged dam at location 48. Many other structures such as outfalls, bag walls and gabion mattresses are undercut or somewhat degraded. Several exposed pipelines and utilities were observed at locations 24-26, 32, 38, 40 and 49; these areas may be threatened by future erosion. Other concerns include unprotected, bare, near-vertical banks which have high erosion potential.

END OF MEMORANDUM

ATTACHMENT A

Photo Documentation and Exhibit 1.0

CITY OF FARMERS BRANCH

Farmers Branch Creek Site Visit

Photo Locations

FB Project No: FBR16607
Date Created: 6/16/2017
Datum & Coordinate System: NAD83 State Plane (feet) Texas North Central
File Name: Photo_Site_v10_2
Prepared By: MK

FREESE NICHOLS
4500 International Plaza Suite 300
Fort Worth, Texas 76109-4895
(817) 735-7300

EXHIBIT

1.0

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Areas of Interest Photos – See associated map (Exhibit 1.0) for photo locations

Photo 1. Eroding left bank near the upstream city limits. A headcutting gully has formed by a stormwater outfall 50 feet from the top of bank (photo taken looking at the left bank).

Photo 2. Bare, near-vertical, 15-feet tall left banks near Brookhaven College have high erosion potential (photo taken looking at the left bank).

Photo 3. A degraded bag wall structure in the channel. No undercutting was observed, but there is a deep pool (3 feet) on the downstream side (photo taken looking downstream).

Photo 4. Fill placed on the left bank at an outfall. This is acting as a flow constriction (photo taken looking downstream).

Photo 5. Gabions surround an outfall structure. Erosion of fill could lead to damaged gabions. Consider maintenance to remove excess fill (photo taken looking at the left bank).

Photo 6. An eroding bank near a fence. The erosion is not threatening the structure (photo taken looking at the right bank).

Photo 7. A stormwater headwall on the right bank has been undercut by 2 feet. The pipe is 18 inches in diameter, and there is a 1-foot deep pool at the base of the outfall (photo taken looking at the right bank).

Photo 8. Construction access and a coffer dam were built for the new bridge. The observed conditions during the site visit may not be representative of normal conditions. FNI recommends monitoring upstream conditions after coffer dam removal (photo taken looking upstream).

Photo 9. A bag wall on the left bank is cracked and leaning. No undercutting was observed (photo taken looking at the left bank).

Photo 10. A bag wall on the right bank is collapsing; trees are leaning over the creek. Monitoring or maintenance is recommended (photo taken looking at the right bank).

Photo 11. Downstream of the large dam, there is slumping on the left bank. No undercutting was observed (photo taken looking at the left bank).

Photo 12. Erosion of the left bank is encroaching on Valley View Lane, located at the top of the bank (photo taken looking downstream along the left bank).

Photo 13. This broken concrete channel lining acts as a grade control (photo taken looking at the left bank).

Photo 14. Undercutting (2 feet) of the broken concrete channel lining (photo taken looking at the left bank just downstream of photo 8).

Photo 15. This section of the right bank (15 feet tall) has leaning trees and undercut banks, which indicate high erosion potential. There is private property 10 feet from the top of the bank (photo taken looking at the right bank).

Photo 16. A manhole next to the creek protected with riprap (photo taken looking into the channel from the top of the right bank). This is no immediate threat, but it should be monitored.

Photo 17. Minor erosion of sidewalk under Valley View Lane (photo taken looking downstream along the left bank). This should be monitored.

Photo 18. A deep gully is undercutting a trail crossing near Valley View Lane in Mustang Trails Park. The gully meets Farmers Branch Creek at the right edge of the photo, which continues flowing to the right (photo taken looking at the left bank). Valley View Lane runs above the tunnel shown in the photo as well as over a bridge just behind the cameraman.

Photo 19. Minor damage to gabion mattress downstream of outfall (photo taken looking at the right bank). Maintenance is recommended.

Photo 20. A degrading timber and concrete wall on the left bank may be protecting a Valley View Lane or a sewer line (photo taken looking at the left bank).

Photo 21. A damaged sheetpile check dam with a broken, PVC-capped pipe on the downstream edge (photo taken from the right bank; the creek flows to the right).

Photo 22. This leaning bald cypress tree is evidence of erosion (photo taken looking downstream). This reach should be monitored.

Photo 23. A degrading concrete drop with a deep pool on the downstream side (photo taken looking at the right bank). It is recommended that an engineer assess the condition of this structure.

Photo 24. Manhole in center of channel at a junction of three pipelines (photo taken looking upstream).

Photo 25. A sewer pipeline is exposed on the bed (photo taken looking downstream).

Photo 26. Exposed metal pipes are hanging over 12 feet out of a highly eroded right bank (15 feet tall), indicating the extent of erosion (photo taken looking downstream along the right bank).

Photo 27. A deck at the top of a steep section of the left bank is overhanging the creek (photo taken looking downstream along the left bank).

Photo 28. A headwall and outfall pipe on the left bank have collapsed due to channel widening (photo taken looking at the left bank).

Photo 29. A low gabion basket wall with a mattress toe on the left bank has been undercut ~2ft; the mattress toe is sagging and is missing some rock (photo taken looking downstream along the left bank).

Photo 30. A knickpoint formed by a log jam; there is a 4-foot drop on the downstream side (photo taken looking downstream). There is potential for the knickpoint to propagate upstream when the debris is dislodged.

Photo 31. Concrete apron collapsed on the right bank upstream of Webb Chapel Road due to scour (photo taken looking at the right bank).

Photo 32. An exposed utility has snagged a large amount of woody debris (photo taken looking upstream from the crossing at Webb Chapel Road). It is recommended that a utility engineer review the condition of the pipeline.

Photo 33. Severe (5.5ft) undercutting of the right bank concrete apron under Webb Chapel Road due to scour (photo taken looking upstream along the right bank).

Photo 34. This concrete encased sewer line is acting as a grade control (photo taken looking downstream). There is a 4-foot hole downstream.

Photo 35. This south-facing, bare right bank (10 feet tall) has high erosion potential. Tension cracks were observed within 6 inches of the top of the bank (photo taken looking upstream along the right bank).

Photo 36. An old slump with a collapsed bag wall on the left bank. A chainlink fence at the top of the bank was damaged (photo taken looking at the left bank).

Photo 37. Throughflow behind this training wall is causing erosion and undermining of the structure (photo taken looking at the right bank).

Photo 38. A manhole riser is exposed on a scoured left bank above a retaining wall (photo taken looking at the left bank). No undercutting was observed along the retaining wall.

Photo 39. Water is beginning to flow around this grade control structure where the concrete protection ends, eroding the left bank (photo taken looking at the left bank).

Photo 40. A manhole riser is less than 5 feet from being exposed on the right bank (photo taken looking at the right bank). It is recommended that a utility engineer check the alignment and consider bank protection.

Photo 41. These vertical right banks with leaning trees and slumps have high erosion potential (photo taken looking at the right bank).

Photo 42. High erosion at Stark Elementary (photo taken looking upstream). The grass is mowed to the top of the banks.

Photo 43. Sediment deposition extends into the pond at Mallon Park (photo taken looking upstream at Josey Lane [upstream end of the pond]).

Photo 44. This dam is undercut 2-3 feet. At high flows, water flows quickly over this structure and into the far bank, causing erosion (photo taken looking at the left bank).

Photo 45. Sediment accumulation along the right bank (photo taken looking upstream along the right bank).

Photo 46. This structure is no longer straight; according to a homeowner, water flows under the dam (photo taken looking towards the left bank).

Photo 47. Sediment has accumulated on the right bank and is likely the cause of the breach in the downstream dam (photo taken looking downstream along the right bank).

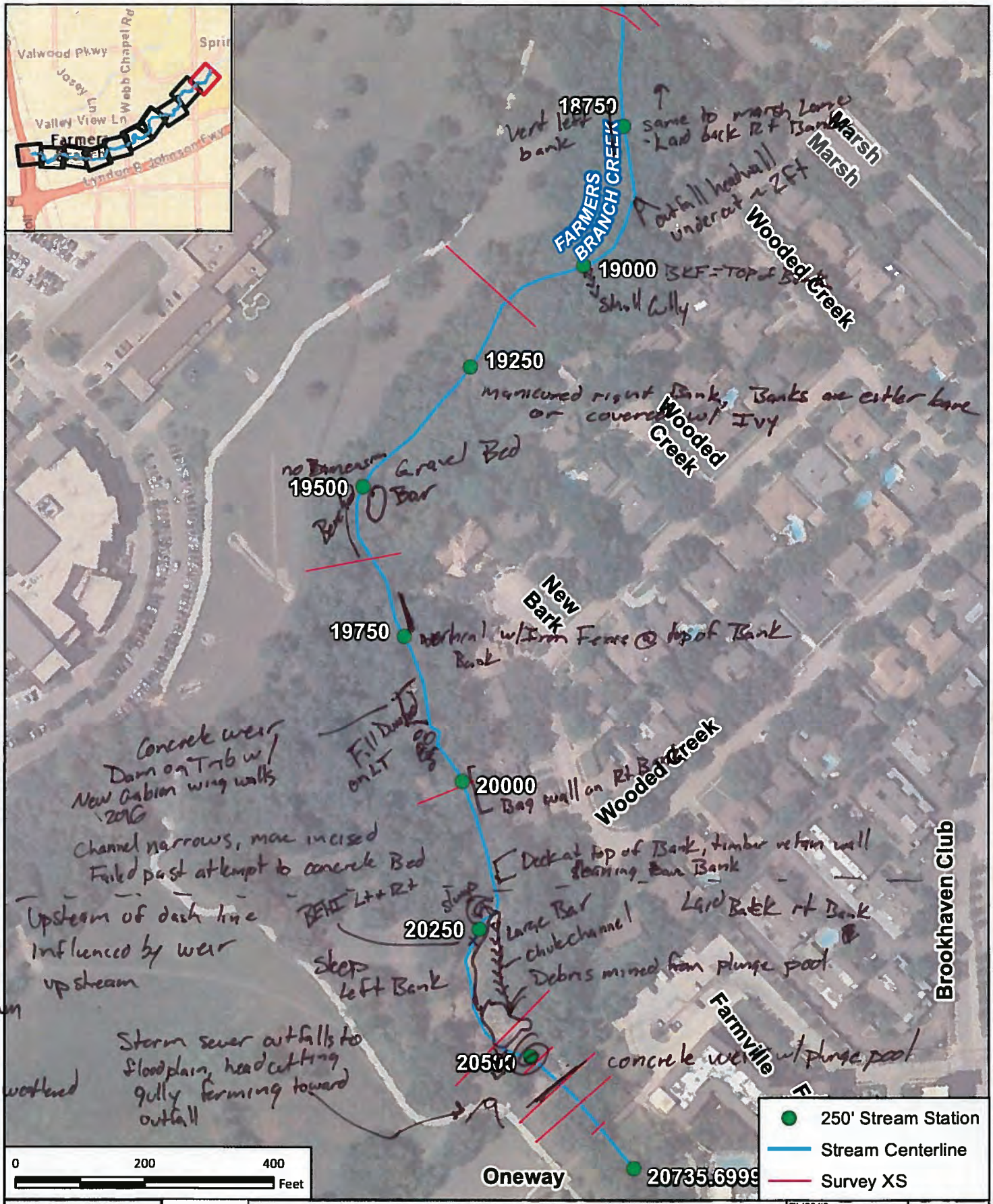
Photo 48. This dam is cracked and collapsing (photo taken looking in the upstream direction). A homeowner repaired it in April 2016. There is also an exposed pipeline underneath the dam. It is recommended that an engineer assess the condition of the dam.

Photo 49. An exposed sewer line with a 2-foot scour hole on the downstream side (photo taken looking towards the right bank).

Photo 50. An undercut concrete apron downstream of Ford Road (photo taken looking upstream at the Ford Road bridge crossing).

Photo 51. Undercut outfall wingwalls (by 2-3 feet) on the left bank due to scour (photo taken looking at the left bank). It is recommended that an engineer evaluate the condition of this structure.

APPENDIX B
FIELD NOTES



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Geomorphic Assessment Site Visit

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DRAFTED	HHM

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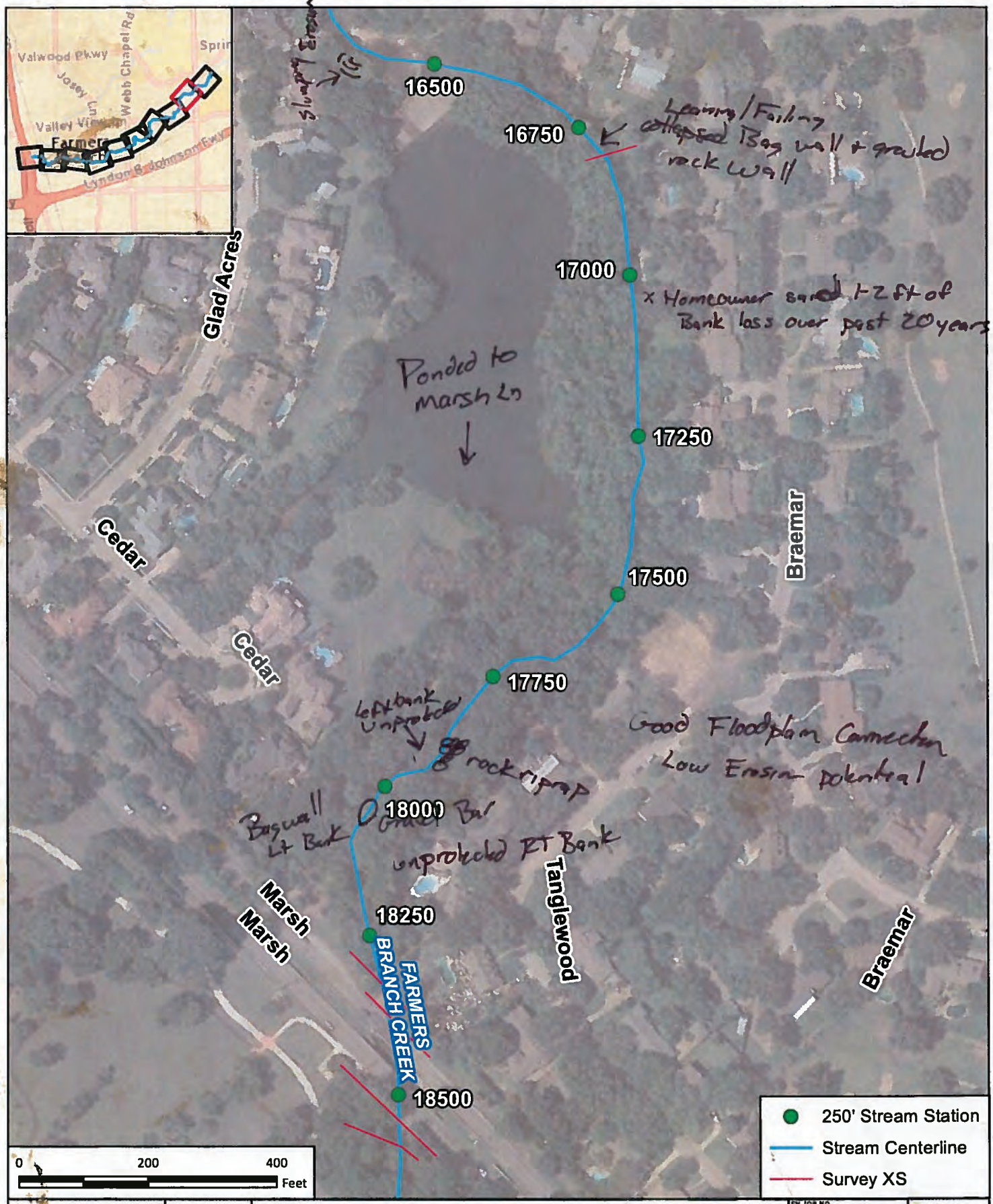

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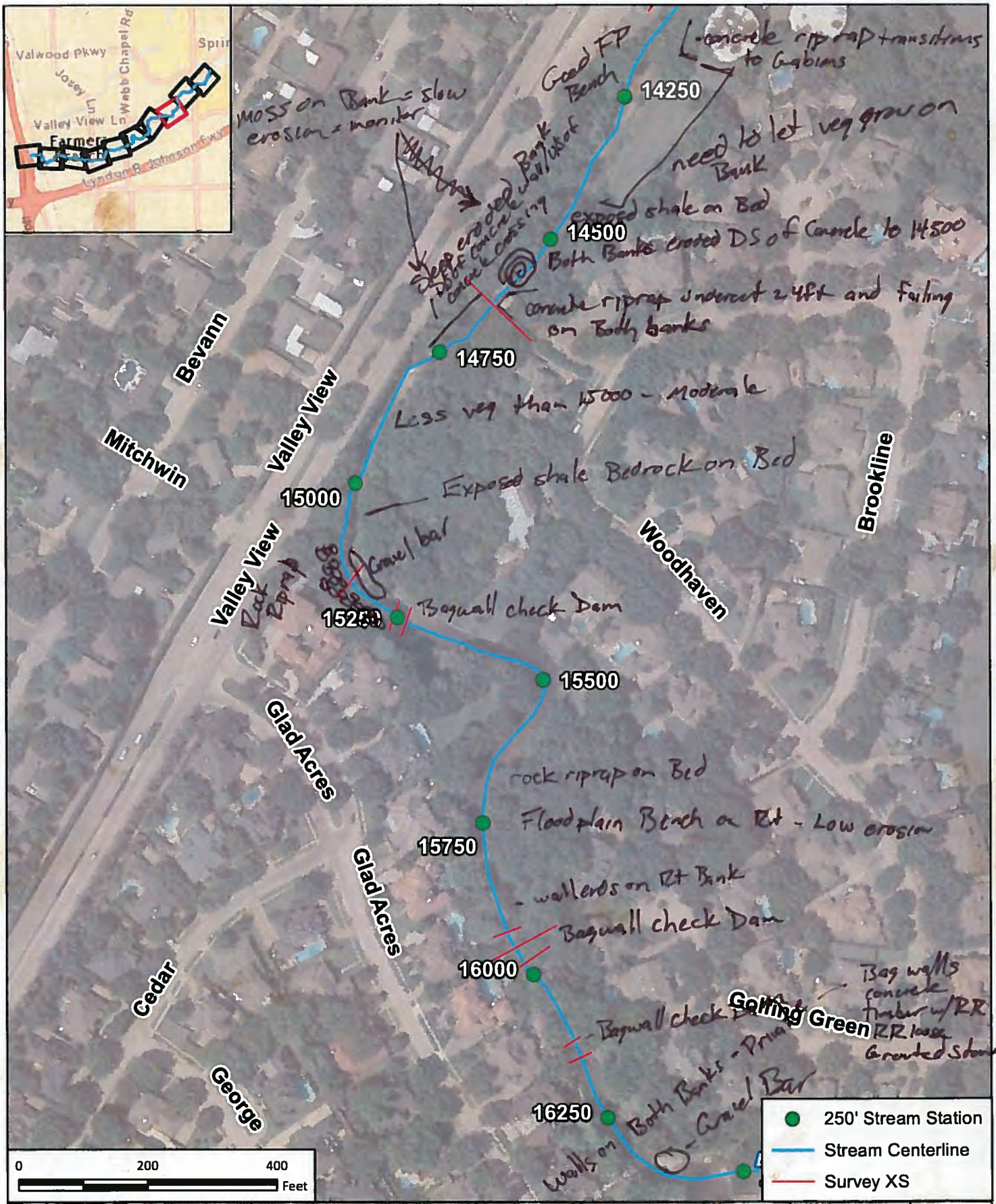

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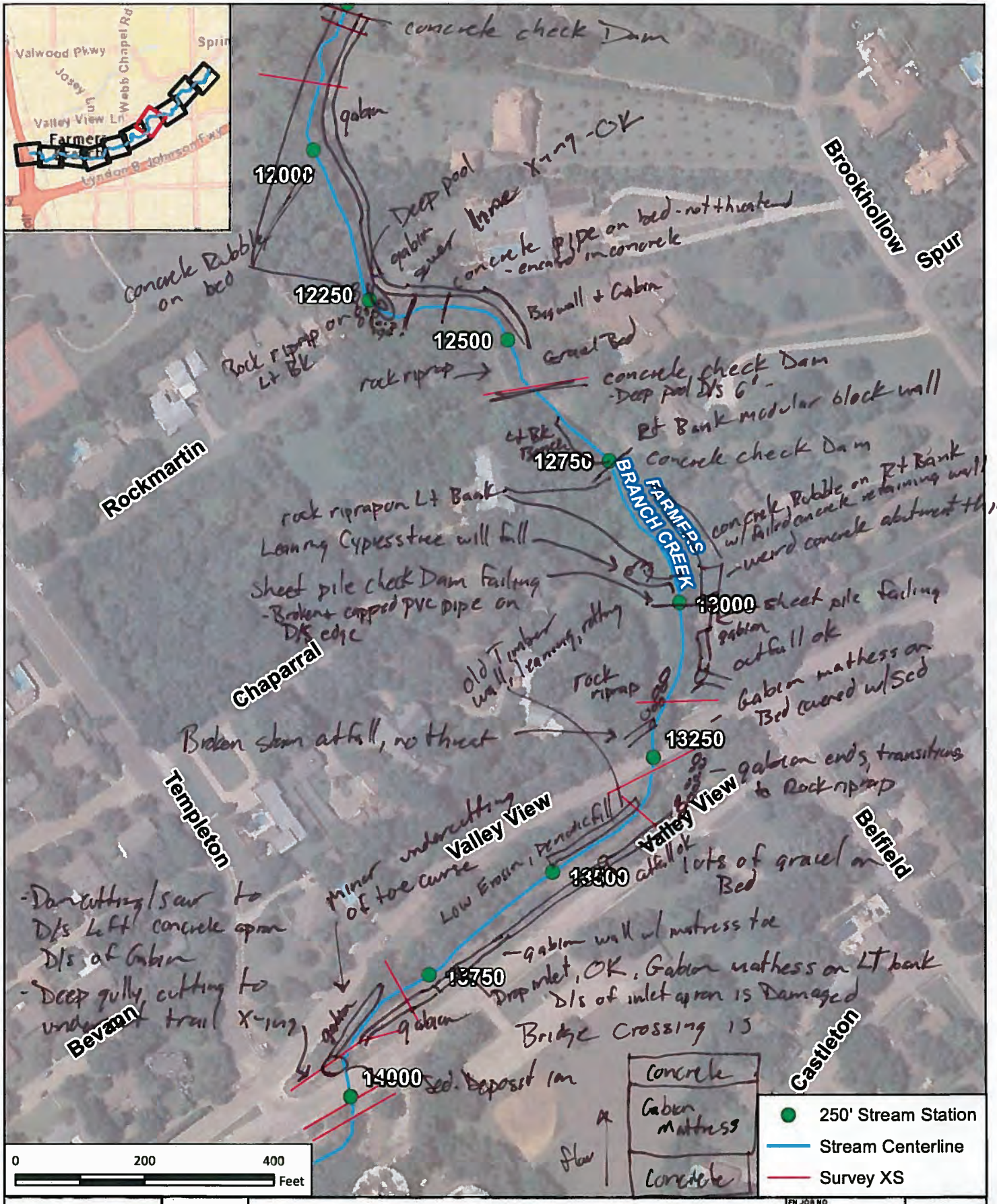

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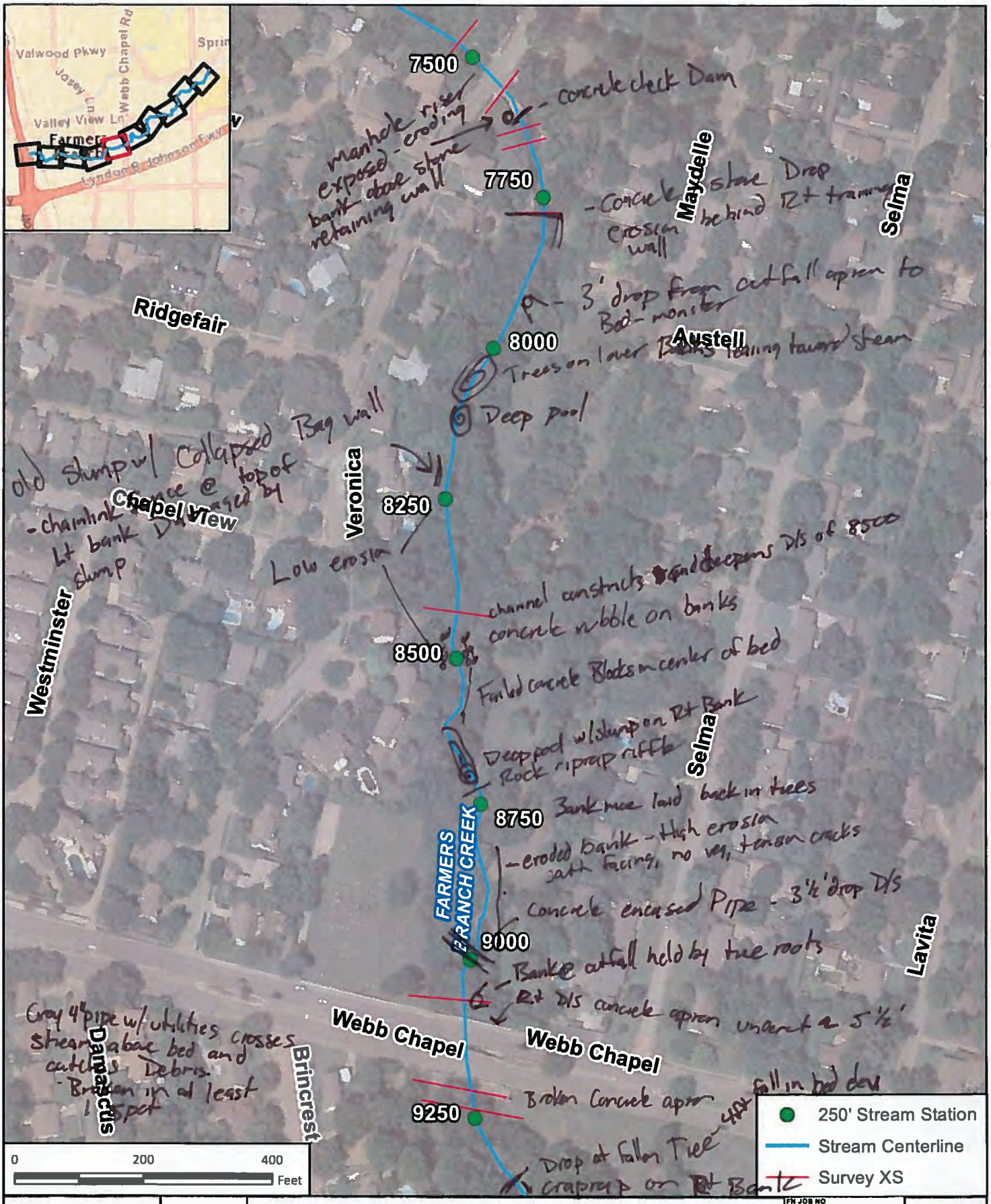

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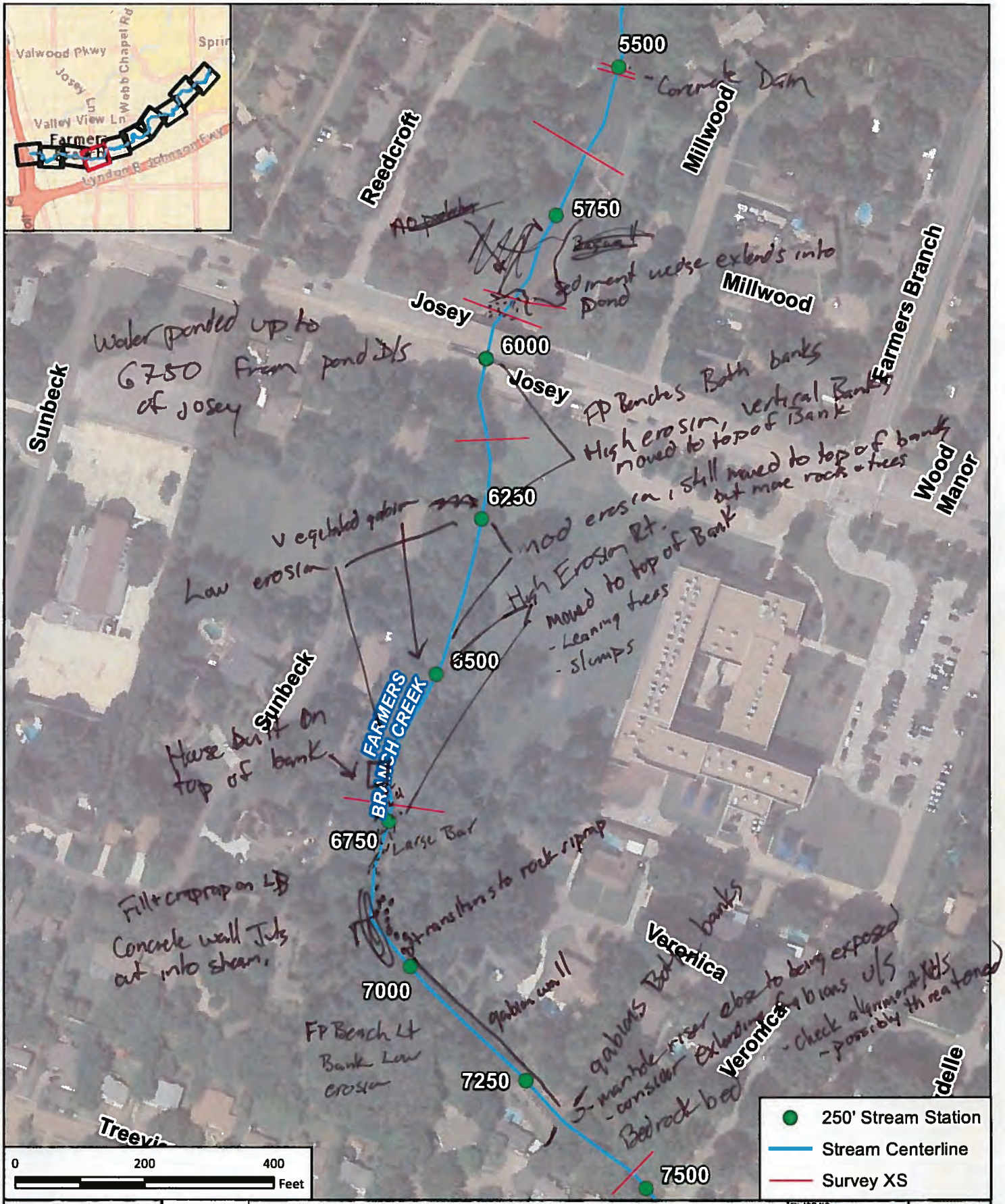

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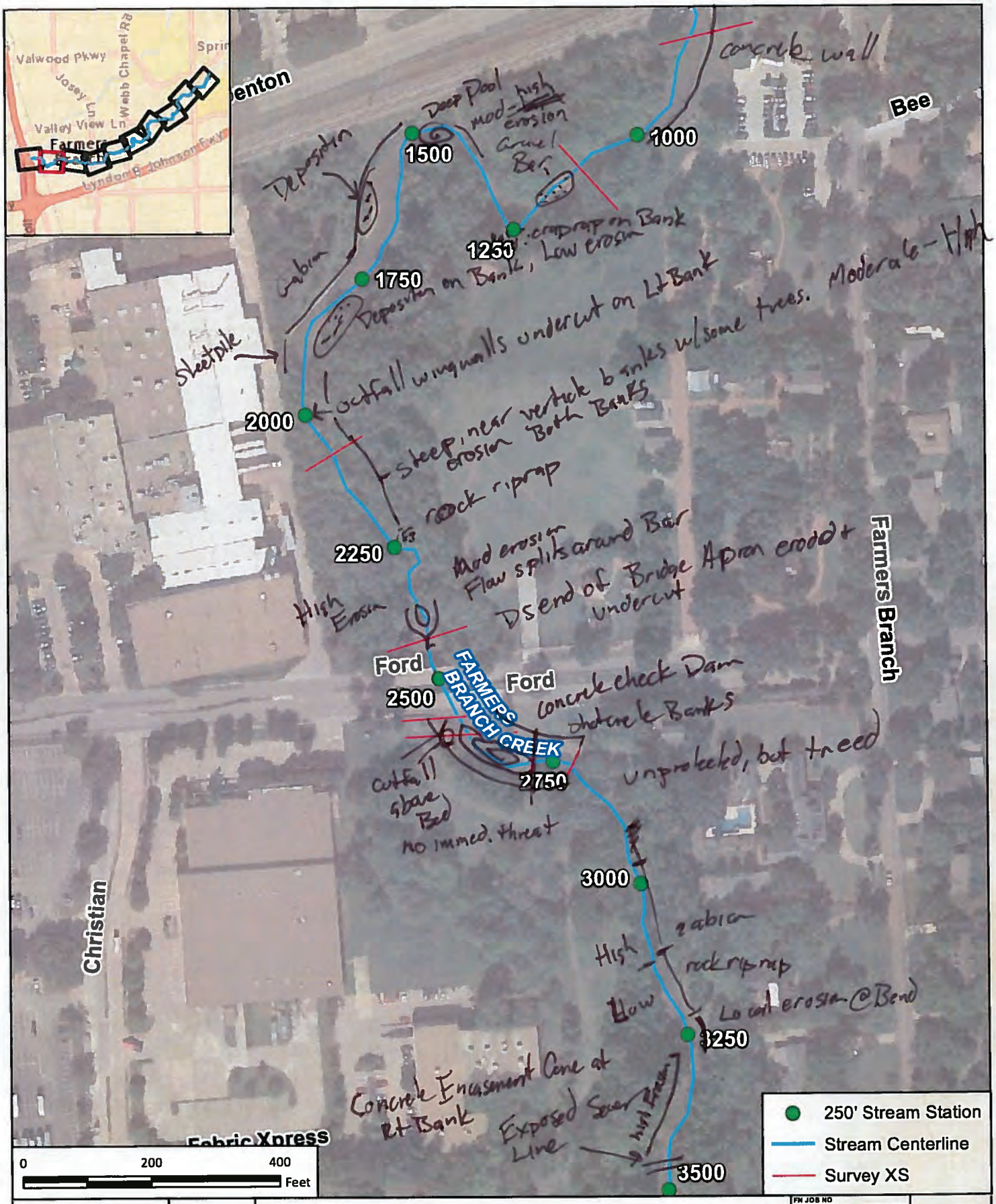

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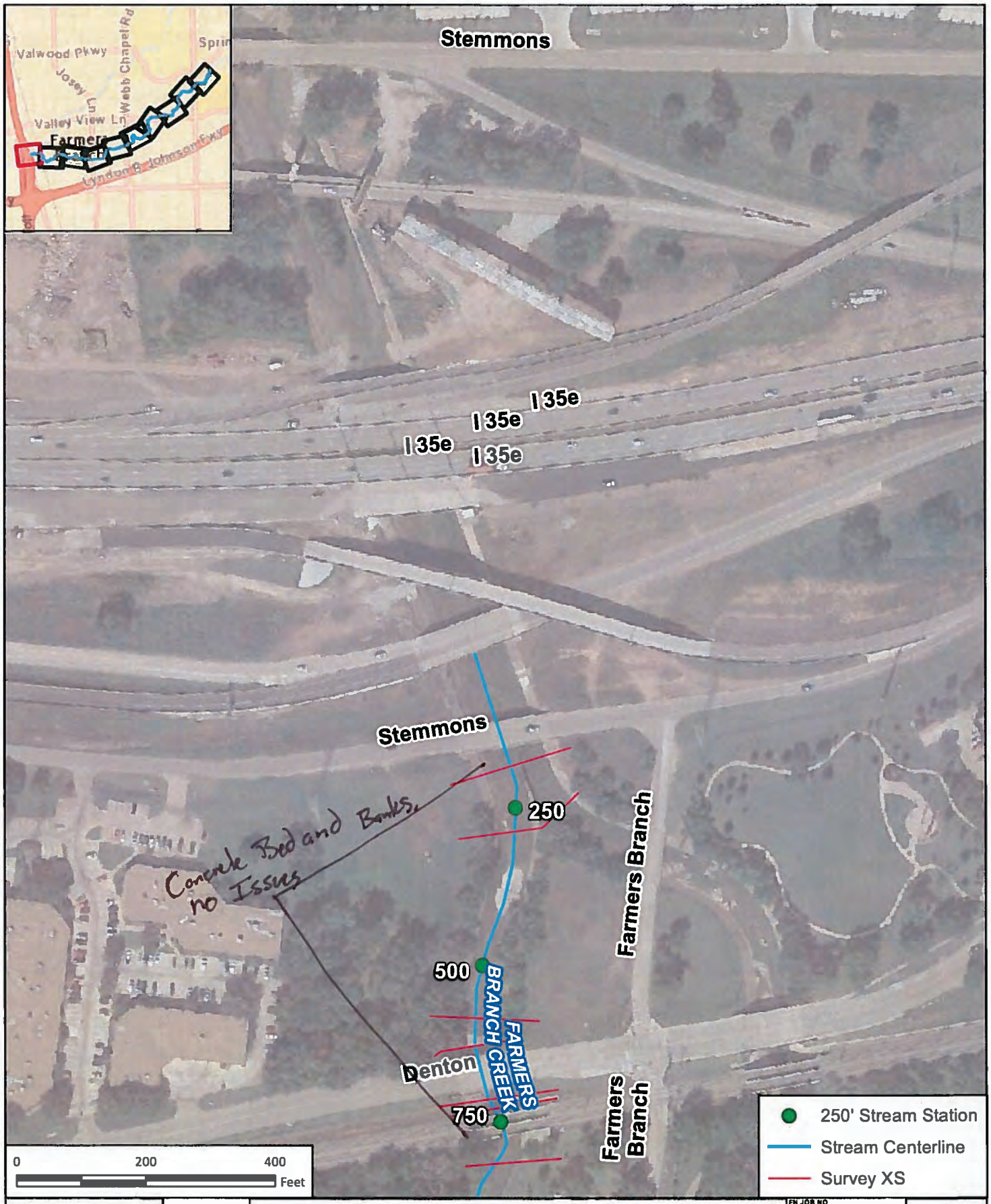

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Stream Station Mapbook

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FILE NAME	1_Station_MB_8x11.mxd
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NAD 1983 StatePlane Texas North Central FIPS 4202 Feet

APPENDIX C
STREAMBANK STABILITY CHARACTERISTICS

VARIABLES

- Top width, bottom width, active channel depth and width.
- Bed material, bedload size, and depositional features.
- Knickpoints and log jams (drops in elevation).
- Gullies and tributaries.
- Pools, runs, riffles, and glides.
- Channel type (alluvium or rock) and height of soil or rock.

STABLE

- Perennial vegetation to waterline.
- No raw or undercut banks (some erosion on outside of meander bends OK).
- No recently exposed roots.
- No recent tree falls.

SLIGHTLY UNSTABLE

- Perennial vegetation to waterline in most places.
- Some scalloping of banks.
- Minor erosion and/or bank undercutting.
- Recently exposed tree roots rare but present.
- Minimal scour less than 50 percent of the bank.

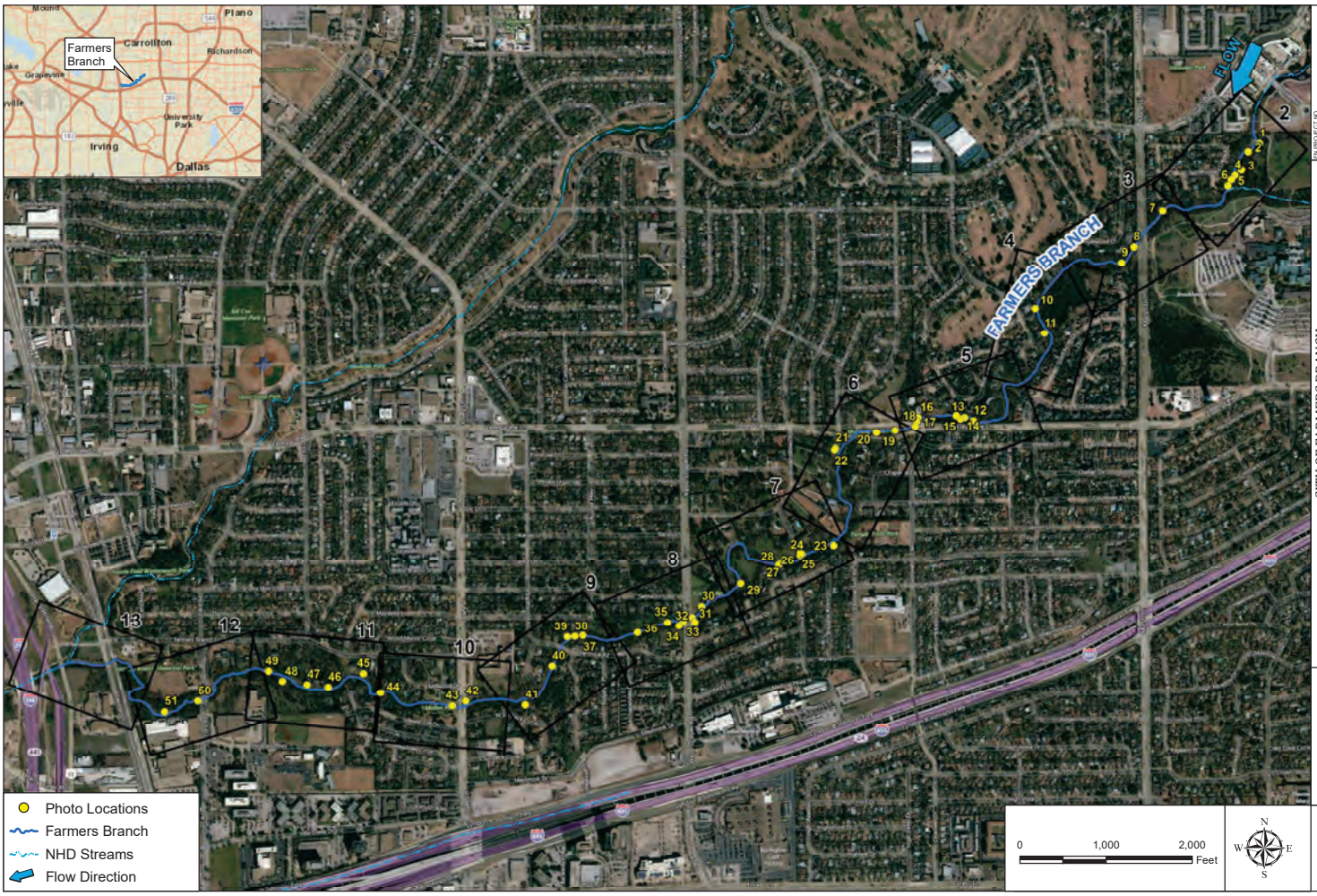
MODERATELY UNSTABLE

- Perennial vegetation to waterline sparse (mainly scoured or stripped by lateral erosion).
- Bank held by hard points (trees, boulders) and eroded back elsewhere.
- Extensive erosion and bank undercutting.
- Recently exposed tree roots and fine root hairs common.
- Moderate erosion scour from 50 to 75 percent of the bank.

SEVERELY UNSTABLE

- No perennial vegetation at waterline.
- Banks held by hard points.
- Banks are near vertical.
- Recently exposed tree roots common.
- Tree falls and/or severely undercut banks common.
- High erosion greater than 75 percent of the active channel is scoured.

APPENDIX D
AREAS OF CONCERN MAPS



CITY OF FARMERS BRANCH

Farmers Branch Erosion Study

Stream Erosion Index

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DATE CREATED	6/24/2017
DATUM & COORDINATE SYSTEM	NAD83 State Plane (feet) Texas North Central
FILE NAME	Stream_Erosion_Ind_11x17_v102
PREPARED BY	MK

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1

FIGURE

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CITY OF FARMERS BRANCH

Farmers Branch Erosion Study

Stream Erosion Mapbook

FB16607
17/02/2016
NAD83 State Plane (feet) Texas North Central
Stream_Erosion_MB_11x17_v102
MC

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FIGURE

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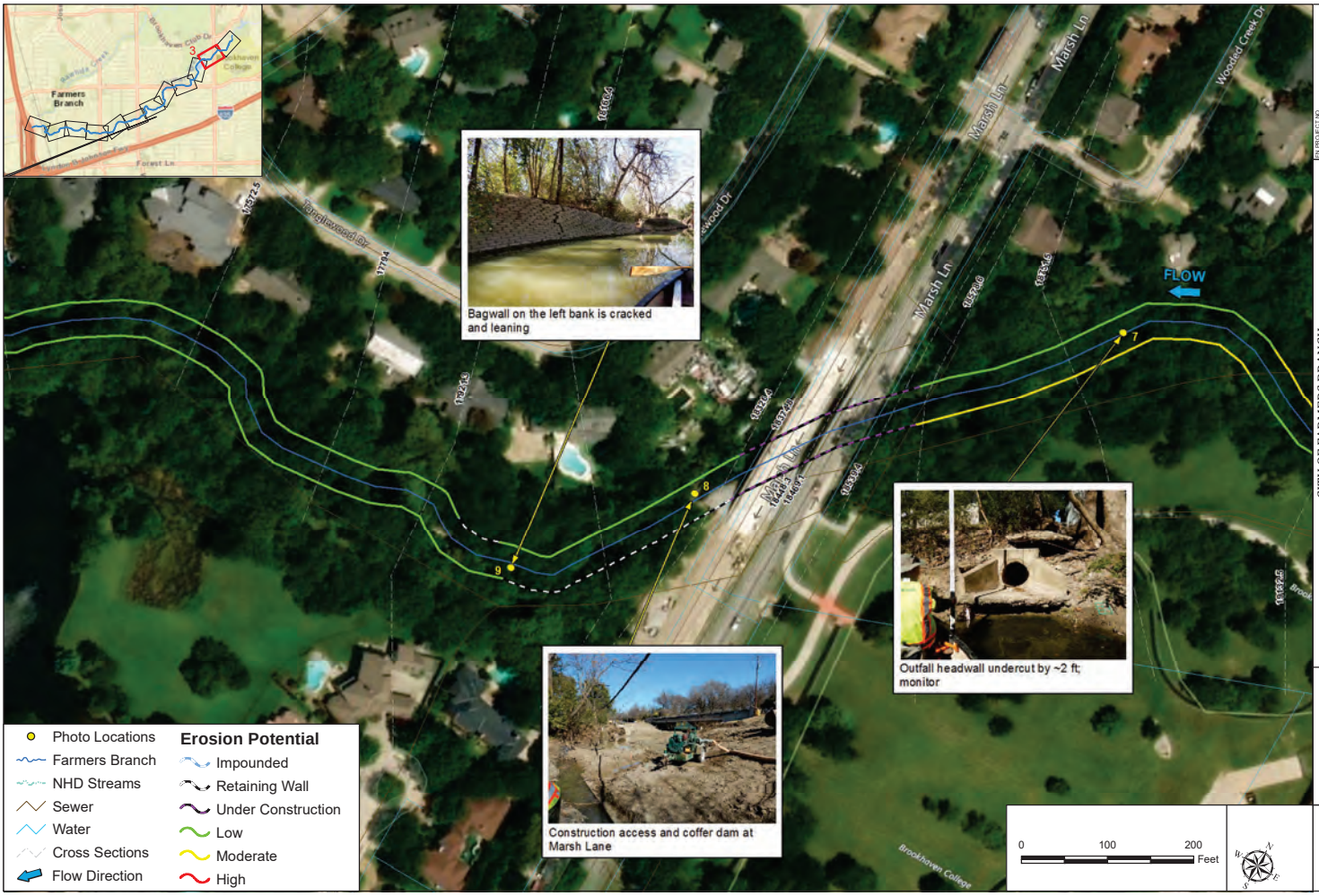

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Farmers Branch Erosion Study

Stream Erosion Mapbook

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FIGURE

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DATE CREATED: 1/10/2018
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PREPARED BY: MK

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CITY OF FARMERS BRANCH

Farmers Branch Erosion Study

Stream Erosion Mapbook

FB PROJECT NO: FBR16607
DATE CREATED: 1/10/2018
DATUM & COORDINATE SYSTEM: NAD83 State Plane (feet) Texas North Central
FILE NAME: Stream_Erosion_MB_11x17_v102
PREPARED BY: MK

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4

FIGURE

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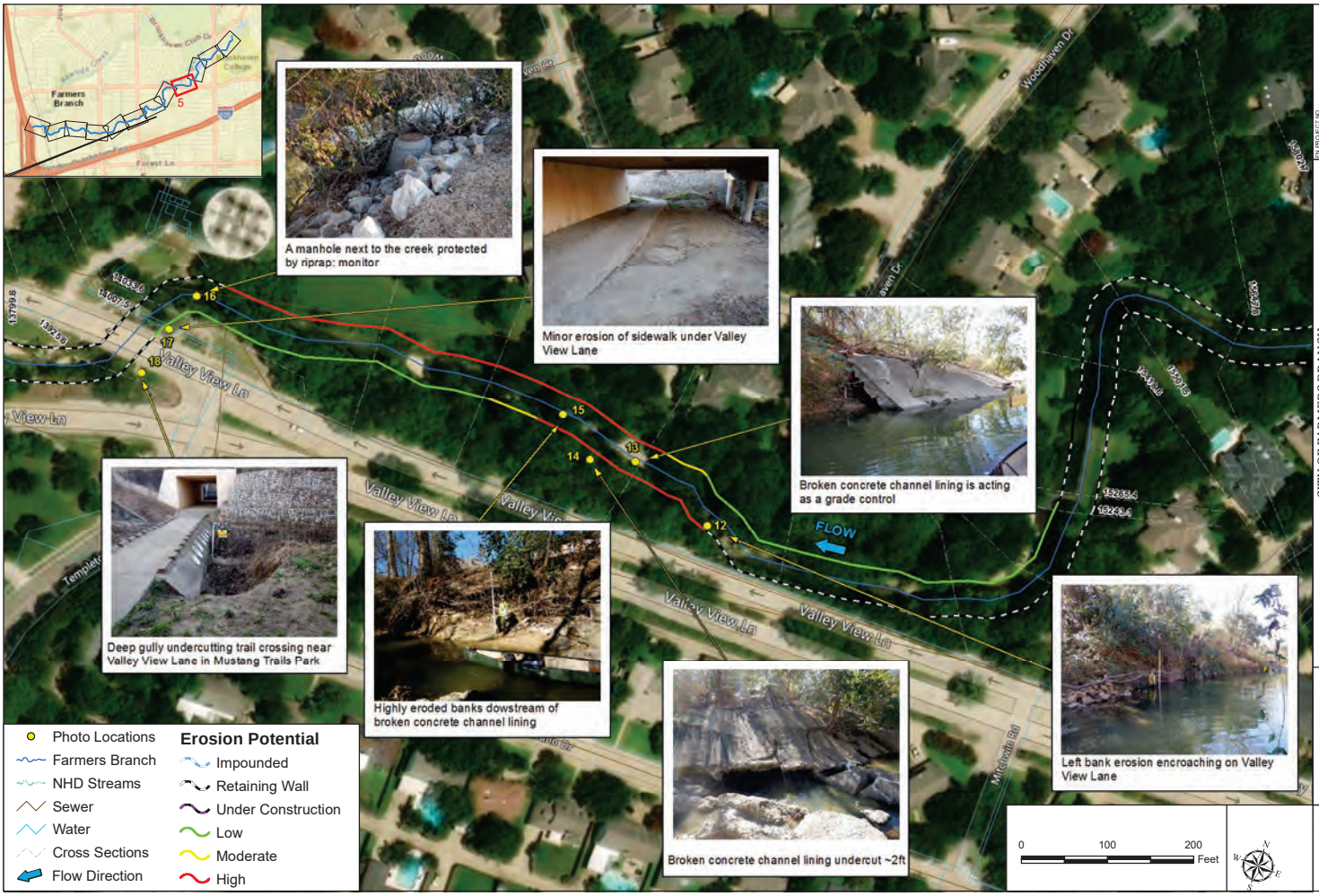

CITY OF FARMERS BRANCH

Farmers Branch Erosion Study

Stream Erosion Mapbook

FB16607

17/02/2016

NAD83 State Plane (feet) Texas North Central

Stream_Erosion_MB_11x17_v102

MB

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FIGURE

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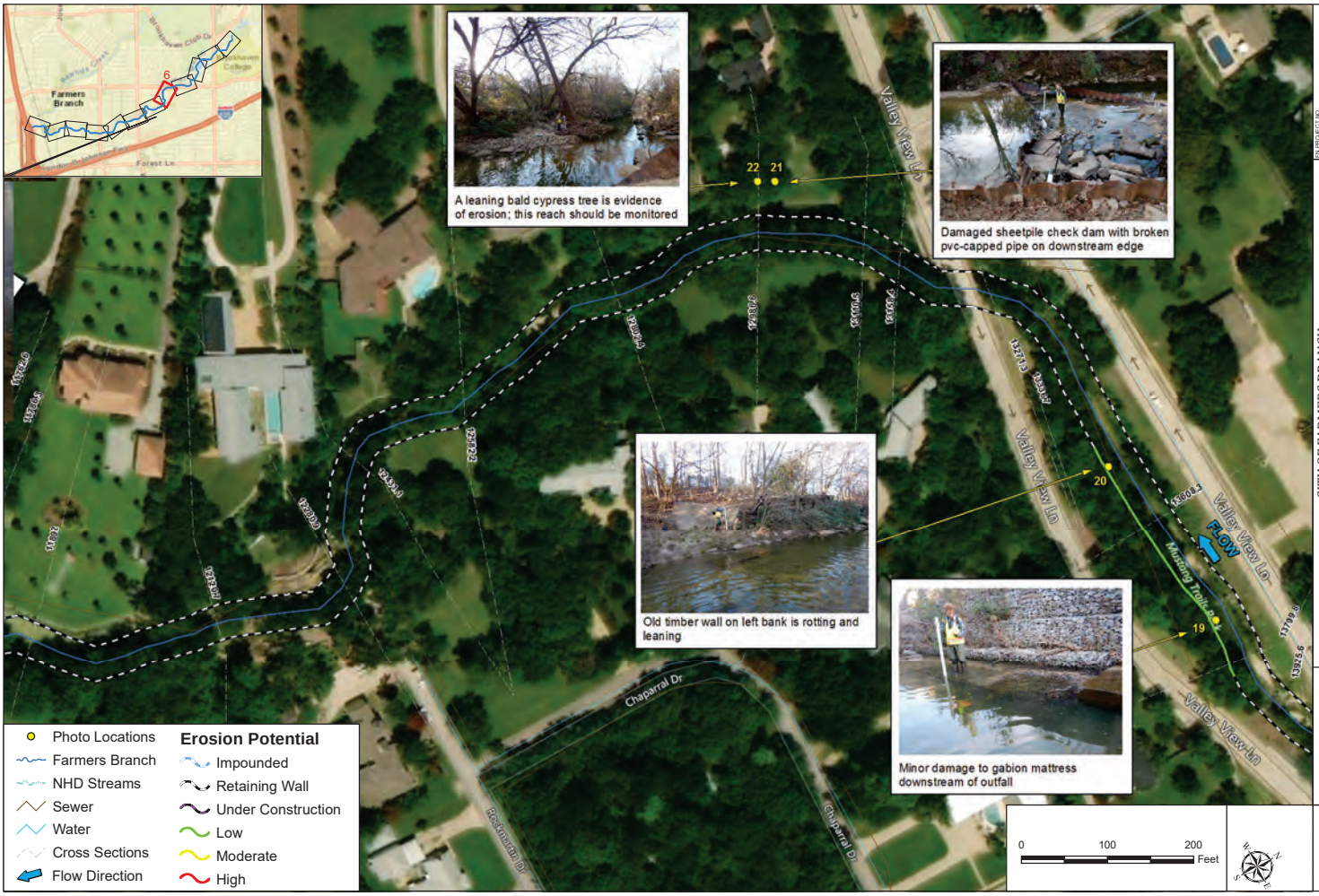

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Farmers Branch Erosion Study

Stream Erosion Mapbook

FN PROJECT NO: FBR16607
DATE CREATED: 1/10/2018
DATUM & COORDINATE SYSTEM: NAD83 State Plane (feet) Texas North Central
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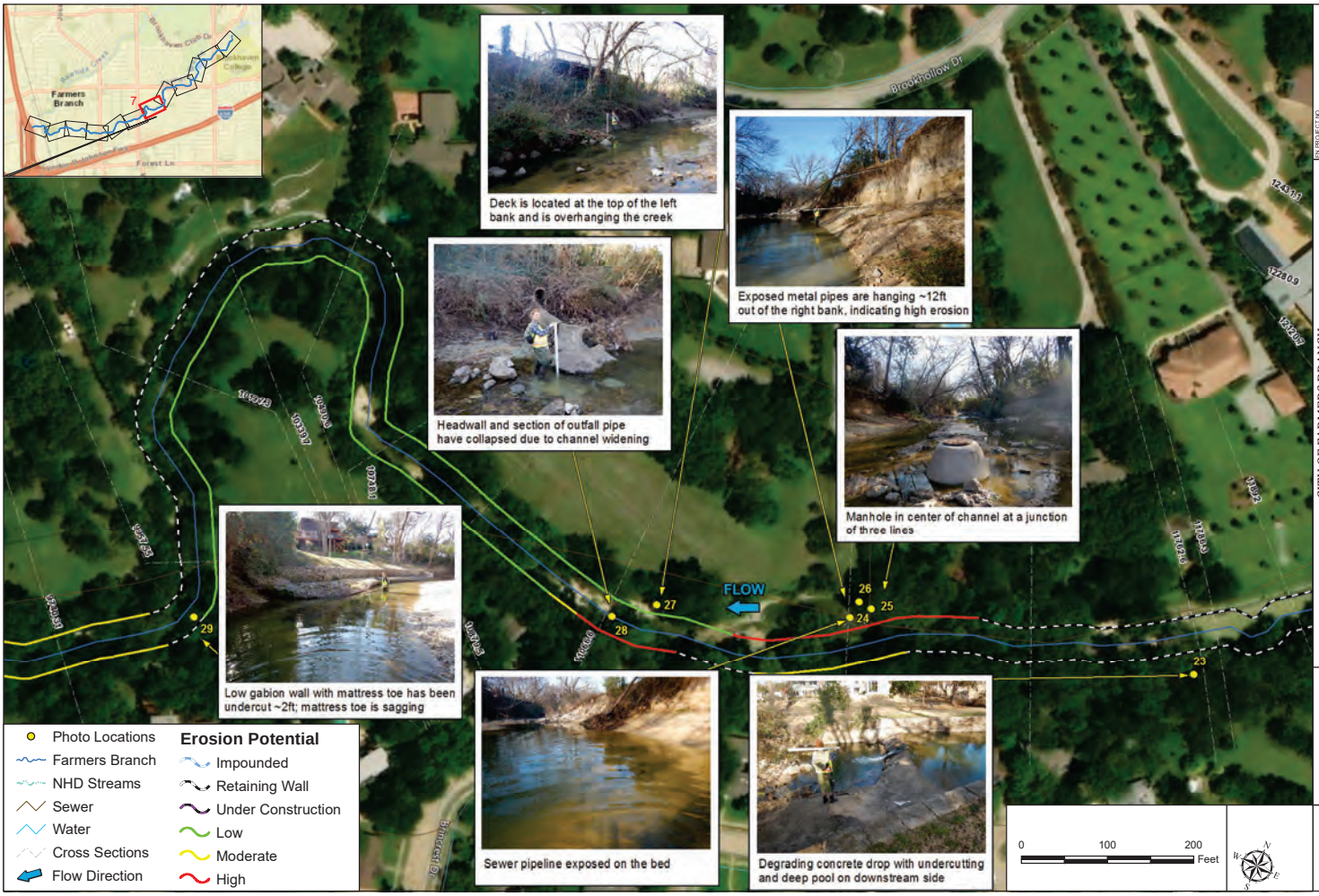

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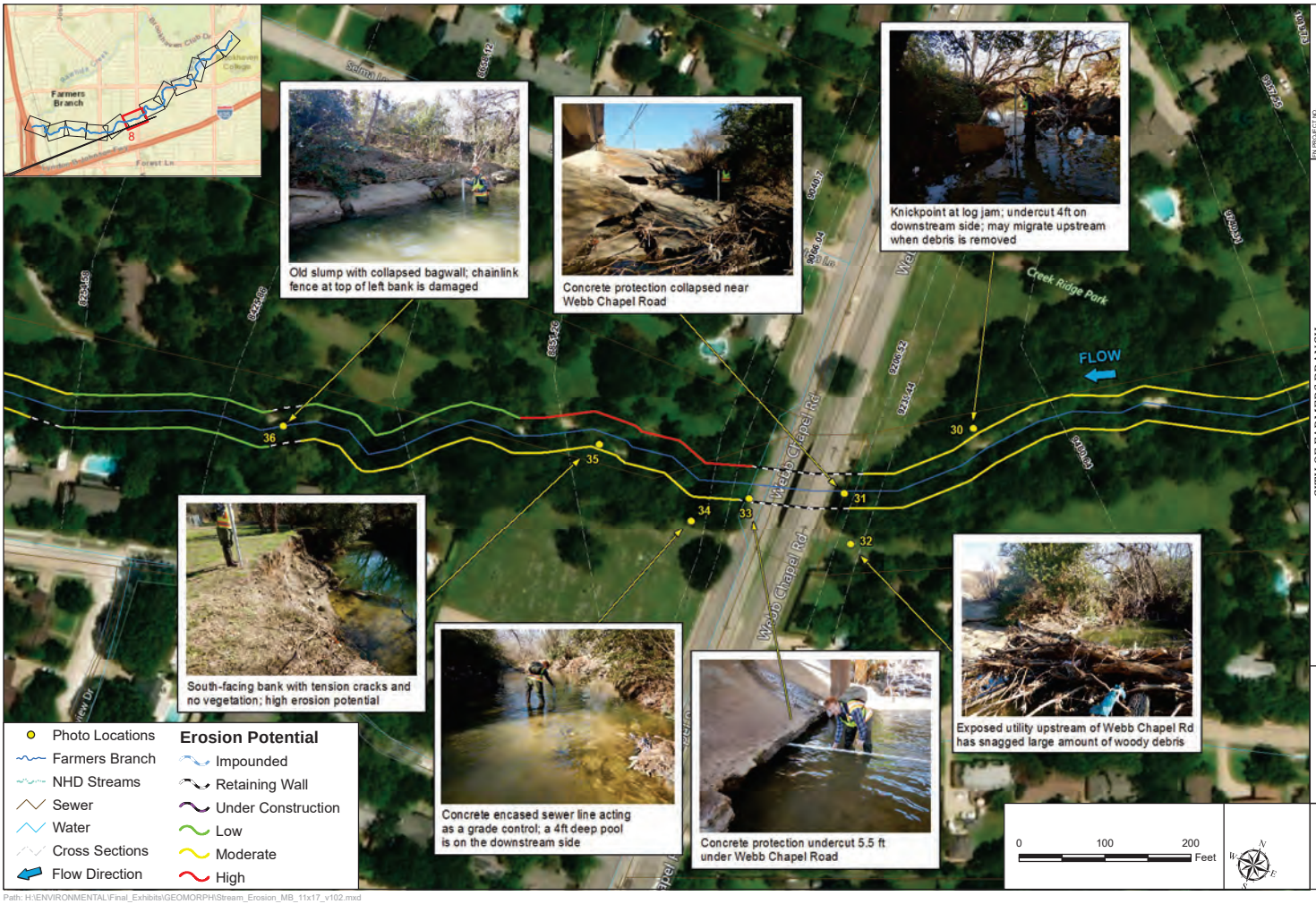

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FIGURE

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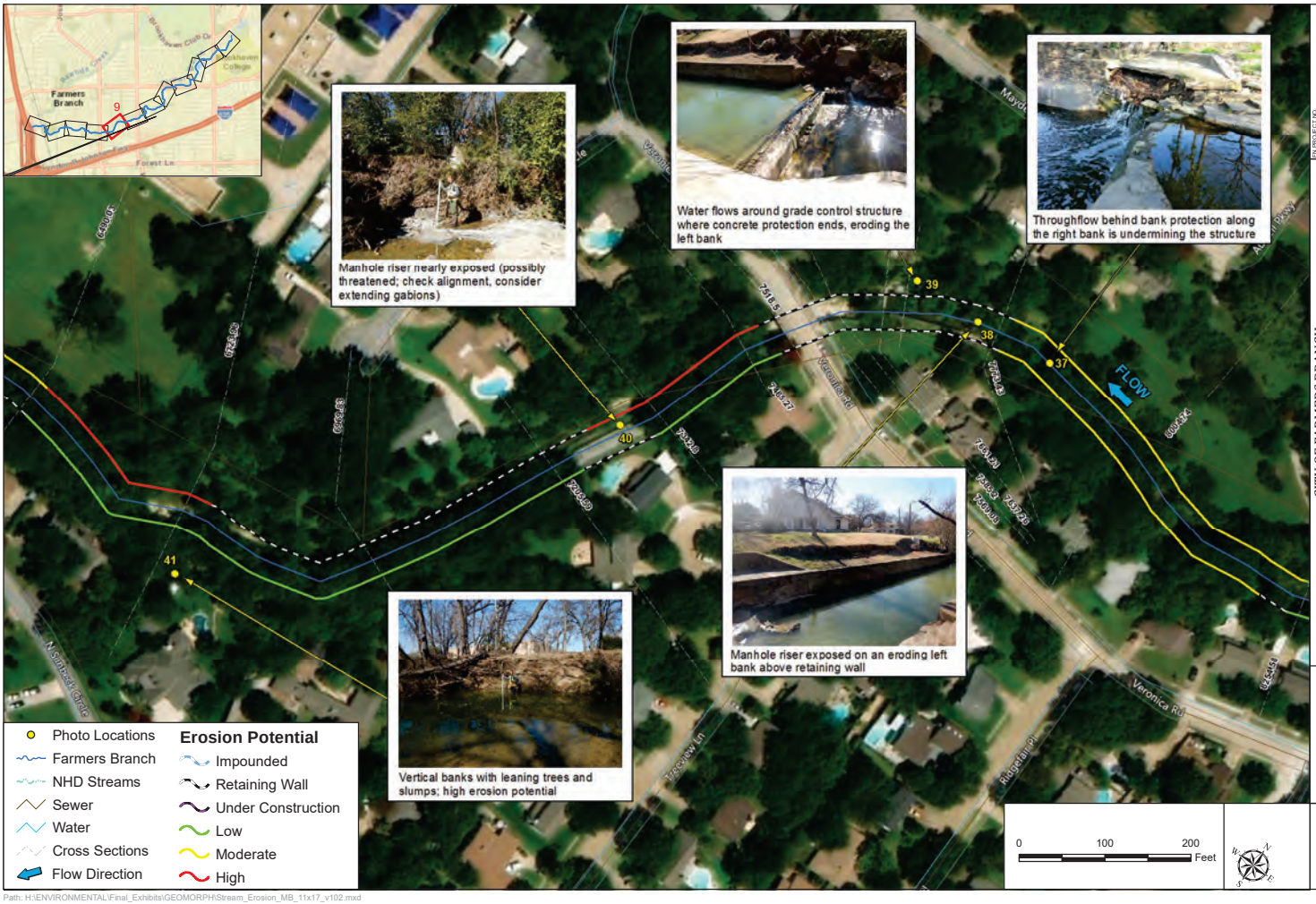

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Farmers Branch Erosion Study

Stream Erosion Mapbook

FNI PROJECT NO: FBR16607
DATE CREATED: 1/10/2018
DATUM & COORDINATE SYSTEM: NAD83 State Plane (feet) Texas North Central
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FIGURE

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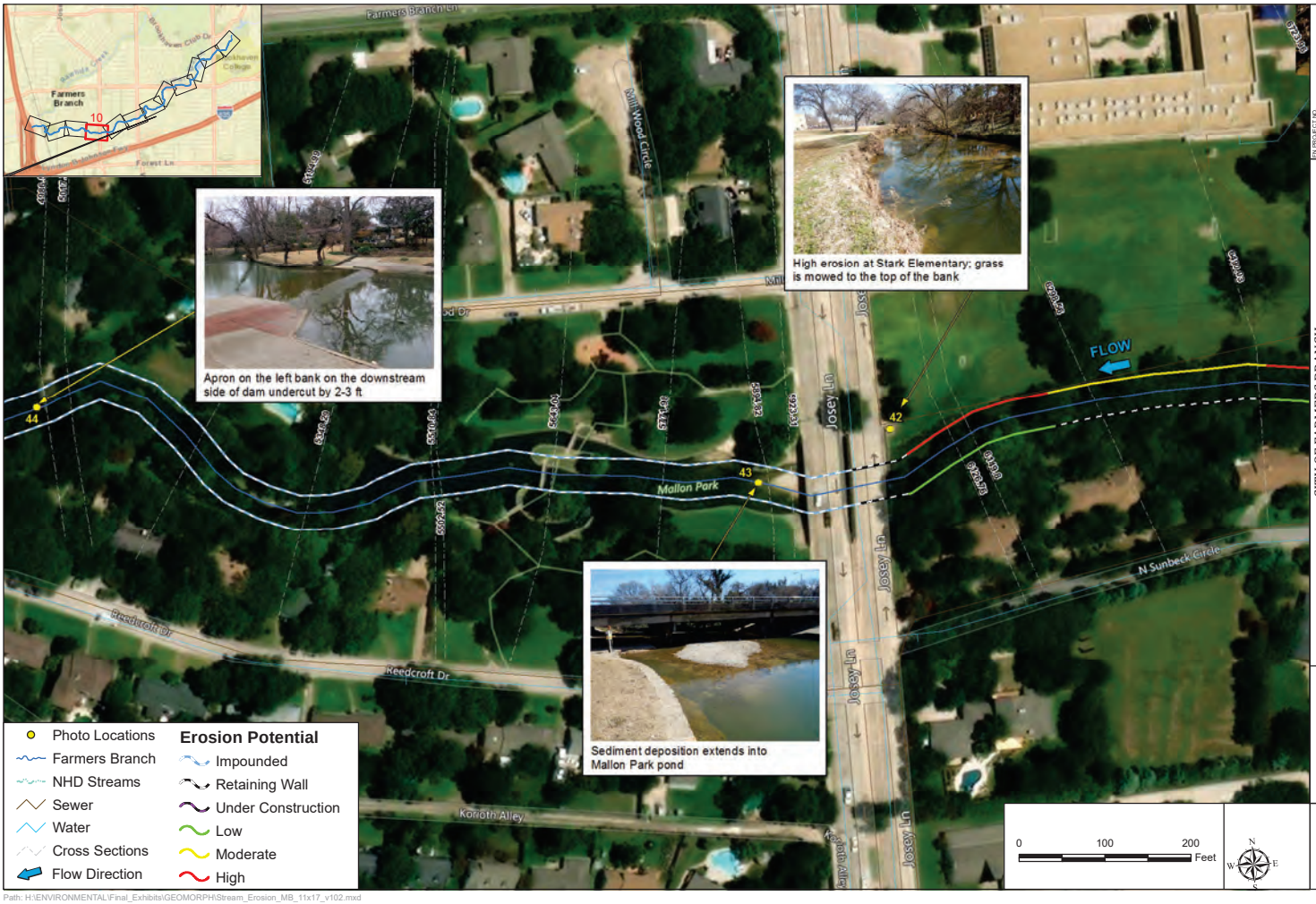

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Farmers Branch Erosion Study

Stream Erosion Mapbook

FB PROJECT NO: FBR16607
DATE CREATED: 7/12/2016
DATUM & COORDINATE SYSTEM: NAD83 State Plane (feet) Texas North Central
FILE NAME: Stream_Erosion_MB_11x17_v102
PREPARED BY: MK

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FIGURE

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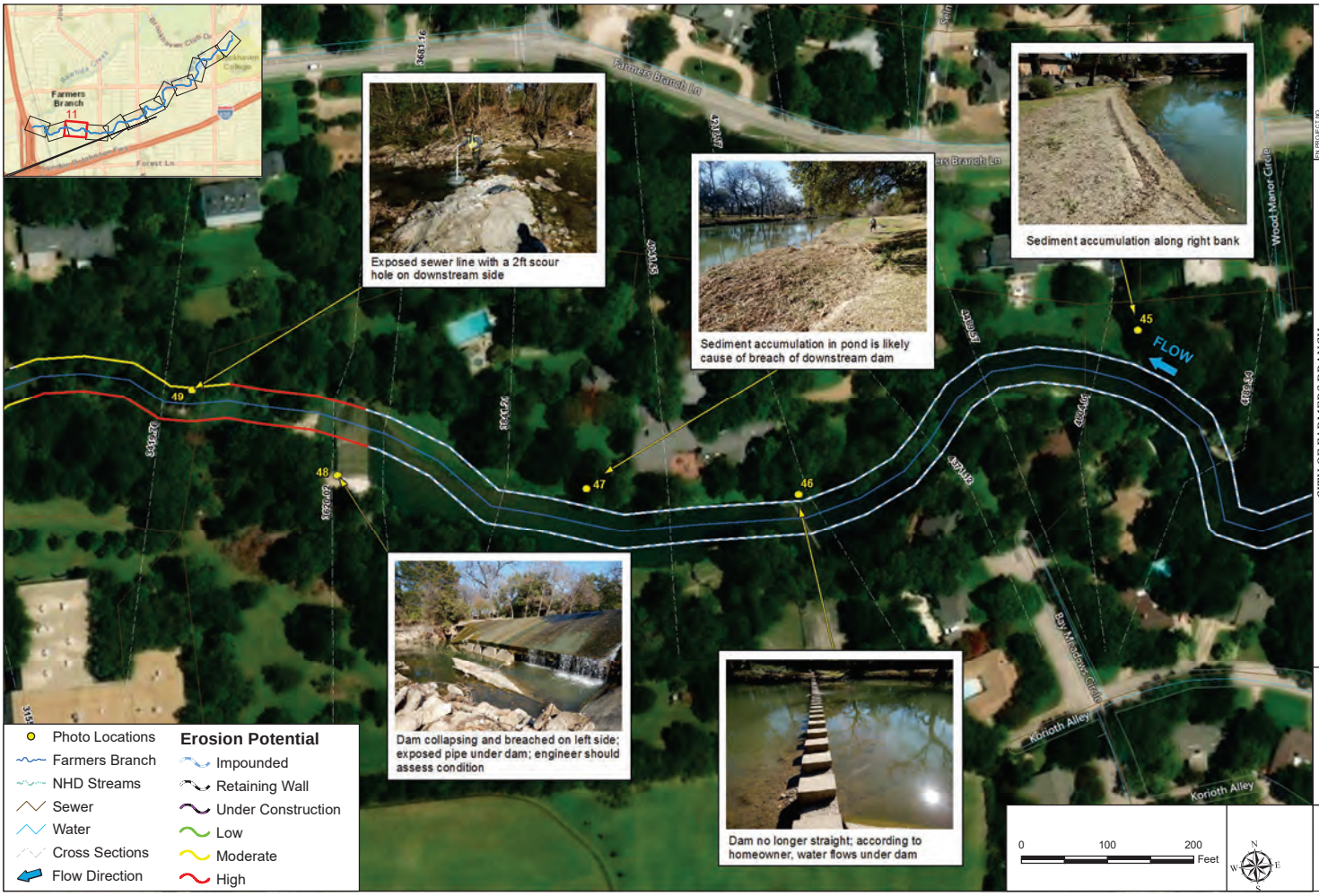

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Farmers Branch Erosion Study

Stream Erosion Mapbook

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11

FIGURE

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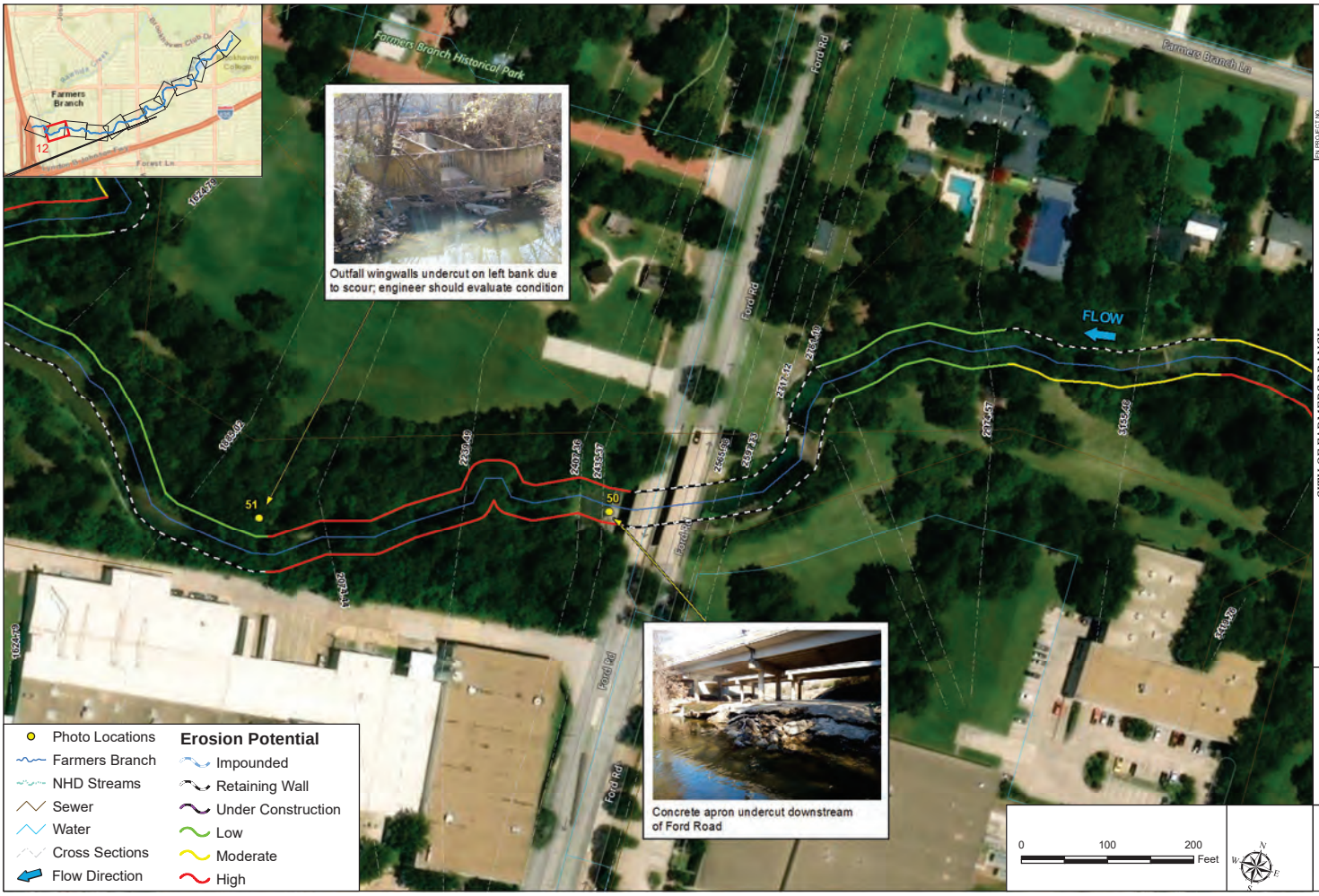

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Farmers Branch Erosion Study

Stream Erosion Mapbook

FB1 PROJECT NO: FBR16607
DATE CREATED: 1/10/2018
DATUM & COORDINATE SYSTEM: NAD83 State Plane (feet) Texas North Central
FILE NAME: Stream_Erosion_MB_11x17_v102
PREPARED BY: MK

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12

FIGURE

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FN PROJECT NO.	FBR16407
DATE CREATED	7/12/2018
DATUM & COORDINATE SYSTEM	NAD83 State Plane (feet) Texas North Central
FILE NAME	Stream_Erosion_MB_11x17_v102
PREPARED BY	MK

CITY OF FARMERS BRANCH

Farmers Branch Erosion Study

Stream Erosion Mapbook

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FIGURE

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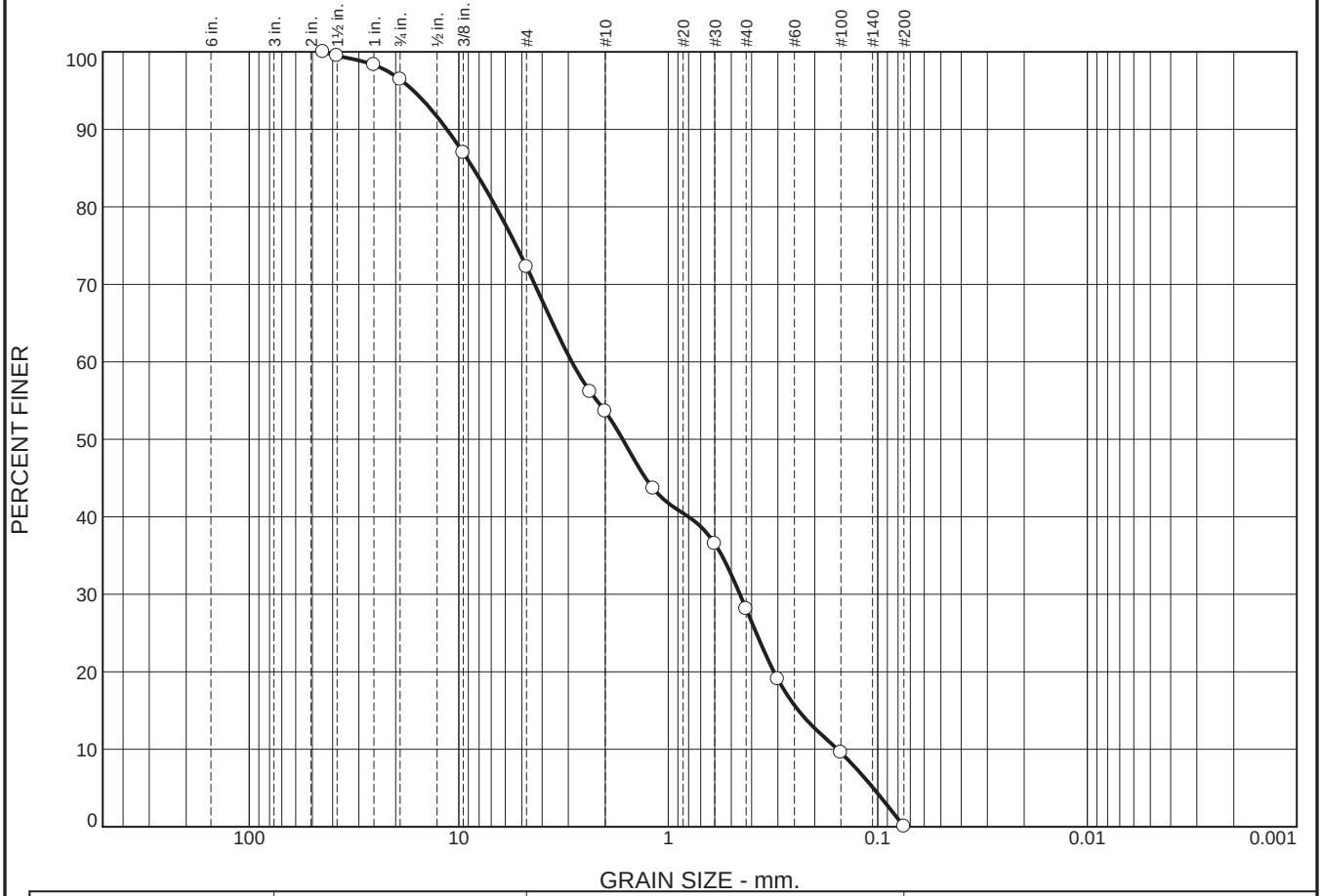
APPENDIX E
SEDIMENT GRADATION ANALYSIS RESULTS

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	3.6	24.1	18.7	25.5	28.0	0.1	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_C	C_u
○			8.5420	2.8869	1.6513	0.4548	0.2389	0.1558	0.46	18.53

	Material Description	USCS	AASHTO
○		SP	

Project No. FBR16407 **Client:** Freese and Nichols, Inc.
Project: FBR16407/****/0AA4

○ **Location:** FBC1 - Valley View Lane **Depth:** Grab **Sample Number:** 2

Remarks:

Gorrondona & Associates, Inc.

Houston, Texas

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

3/15/2017

Client: Freese and Nichols, Inc.
Project: FBR16407/****/0AA4
Project Number: FBR16407
Location: FBC1 - Valley View Lane
Depth: Grab **Sample Number:** 2
USCS Classification: SP

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
25007.80	0.00	0.00	1.75	0.00	100.0
			1.5	123.70	99.5
			1	419.70	98.3
			0.75	891.00	96.4
			0.375	3253.90	87.0
			#4	6937.90	72.3
			#8	10970.80	56.1
			#10	11600.10	53.6
			#16	14089.60	43.7
			#30	15871.80	36.5
			#40	17975.90	28.1
			#50	20245.70	19.0
			#100	22613.00	9.6
			#200	24995.10	0.1

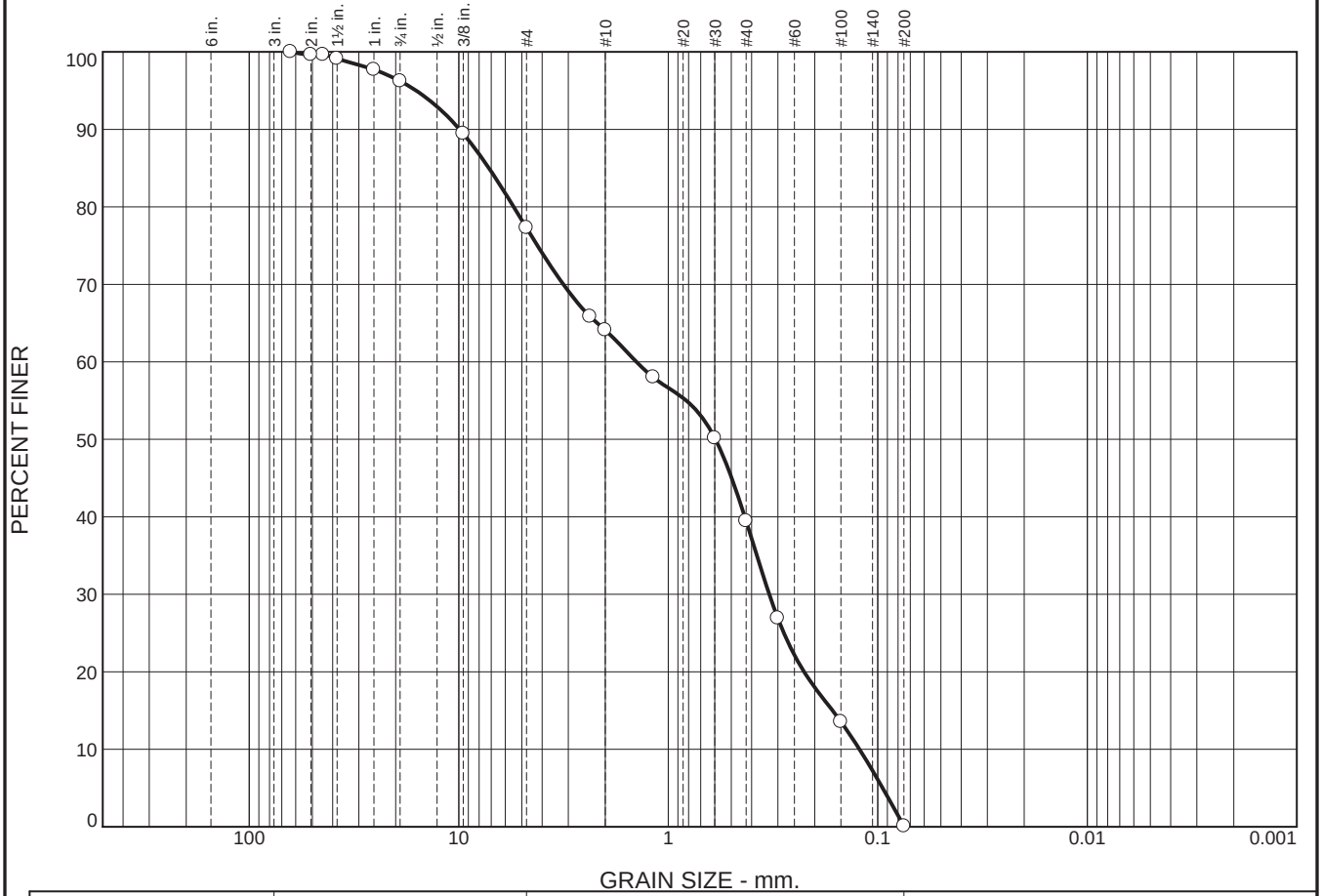
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	3.6	24.1	27.7	18.7	25.5	28.0	72.2			0.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1052	0.1558	0.2389	0.3131	0.4548	0.8003	1.6513	2.8869	6.6539	8.5420	11.3936	16.4815

Fineness Modulus	C_u	C_c
3.80	18.53	0.46

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	3.8	18.9	13.2	24.6	39.4	0.1	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_C	C_u
○			7.1891	1.4192	0.5957	0.3294	0.1646	0.1223	0.63	11.61

	Material Description	USCS	AASHTO
○		SP	

Project No. FBR16407 **Client:** Freese and Nichols, Inc.
Project: FBR16407/****/0AA4

○ **Location:** FBC3 - Ford Road **Depth:** Grab **Sample Number:** 4

Remarks:

Gorrondona & Associates, Inc.

Houston, Texas

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

3/15/2017

Client: Freese and Nichols, Inc.
Project: FBR16407/****/0AA4
Project Number: FBR16407
Location: FBC3 - Ford Road
Depth: Grab **Sample Number:** 4
USCS Classification: SP

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
34656.40	0.00	0.00	2.5	0.00	100.0
			2	123.10	99.6
			1.75	123.10	99.6
			1.5	298.10	99.1
			1	796.40	97.7
			0.75	1308.20	96.2
			0.375	3649.50	89.5
			#4	7863.10	77.3
			#8	11841.20	65.8
			#10	12441.60	64.1
			#16	14553.70	58.0
			#30	17270.30	50.2
			#40	20980.60	39.5
			#50	25328.40	26.9
			#100	29957.40	13.6
			#200	34623.80	0.1

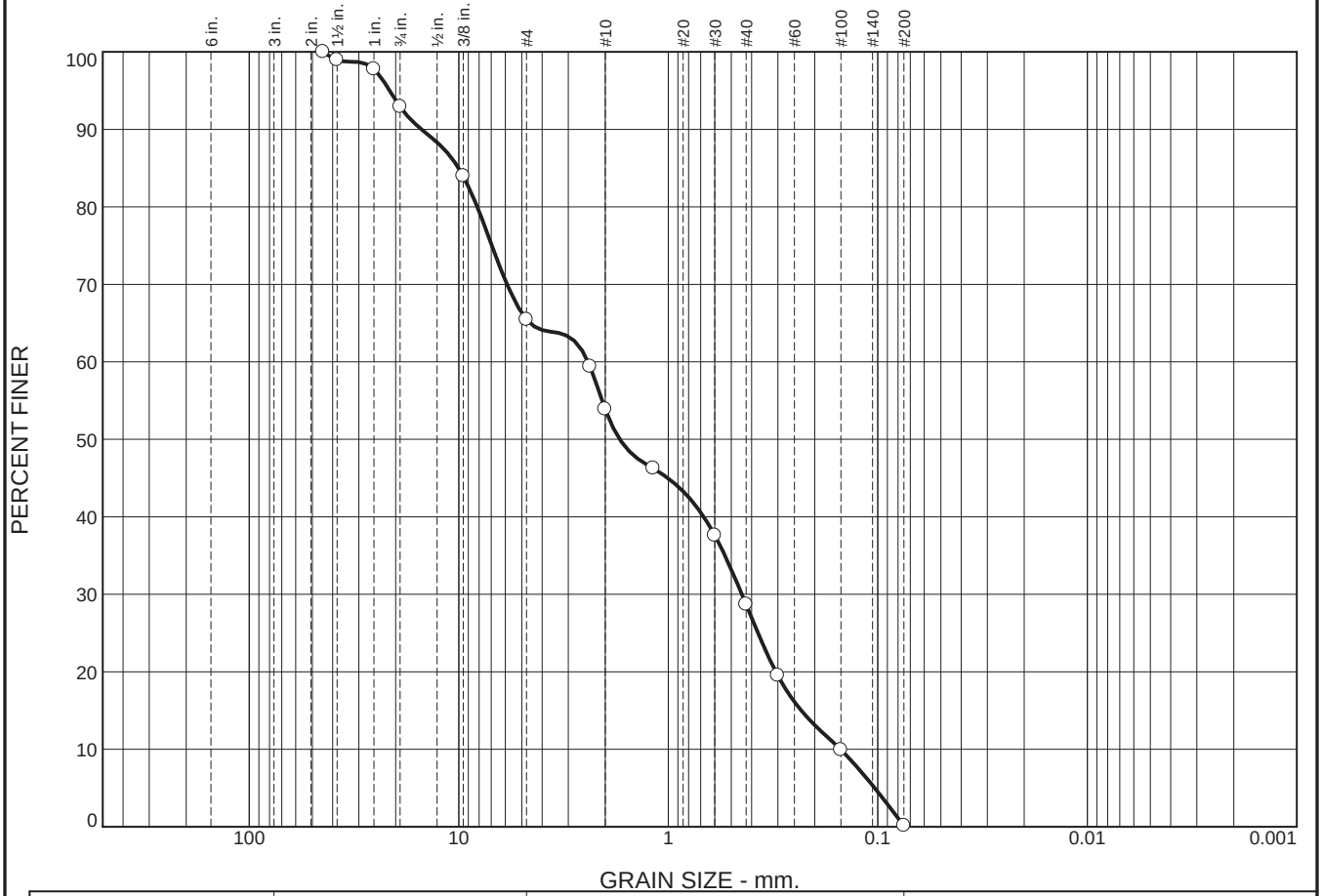
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	3.8	18.9	22.7	13.2	24.6	39.4	77.2			0.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.0948	0.1223	0.1646	0.2247	0.3294	0.4313	0.5957	1.4192	5.4704	7.1891	9.8983	15.9773

Fineness Modulus	C_u	C_c
3.23	11.61	0.63

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	7.1	27.4	11.6	25.2	28.6	0.1	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_C	C_u
○			10.0162	2.4136	1.7042	0.4453	0.2317	0.1508	0.54	16.00

	Material Description	USCS	AASHTO
○		SP	

Project No. FBR16407 **Client:** Freese and Nichols, Inc.
Project: FBR16407/****/0AA4

○ **Location:** FBC2 - Josey Lane **Depth:** Grab **Sample Number:** 5

Remarks:

Gorrondona & Associates, Inc.

Houston, Texas

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

3/15/2017

Client: Freese and Nichols, Inc.
Project: FBR16407/****/0AA4
Project Number: FBR16407
Location: FBC2 - Josey Lane
Depth: Grab **Sample Number:** 5
USCS Classification: SP

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
37334.10	0.00	0.00	1.75	0.00	100.0
			1.5	389.70	99.0
			1	832.50	97.8
			0.75	2645.00	92.9
			0.375	5985.70	84.0
			#4	12897.70	65.5
			#8	15163.80	59.4
			#10	17220.20	53.9
			#16	20065.90	46.3
			#30	23293.90	37.6
			#40	26625.40	28.7
			#50	30048.20	19.5
			#100	33625.20	9.9
			#200	37283.60	0.1

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	7.1	27.4	34.5	11.6	25.2	28.6	65.4			0.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1035	0.1508	0.2317	0.3066	0.4453	0.6780	1.7042	2.4136	8.1785	10.0162	15.0623	21.3692

Fineness Modulus	C_u	C_c
3.86	16.00	0.54

Appendix C

Check Dam Inspection Summary

MEMORANDUM

FREESE AND NICHOLS
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Practical results
Outstanding service

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TO: David Rivera, P.E.

CC: Katie Hogan, P.E.; Stephanie Coffman, P.G.; Project File FBR16407

FROM: Marc T. Miller, P.E.

SUBJECT: Farmers Branch Creek Watershed Study, Check Dam Visual Inspection Summary

DATE: May 5, 2017

PROJECT: FBR16407

DRAFT

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY O MARC T. MILLER, P.E., TEXAS NO. 87824 ON MAY 5, 2017. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING
FIRM F- 2144

INTRODUCTION

This summary memorandum is provided to document field inspection activities performed on March 27th, 2017 for a variety of low-head dam structures (check dams) along Farmers Branch Creek. These dams are all privately owned, and are not inventoried by the Texas Commission on Environmental Quality (TCEQ) or the City of Farmers Branch. Although no study, design or construction data was available, these dams appear to provide erosion control along the creek.

Since these dams are not formally named, they have been arbitrarily numbered from upstream to downstream for the purposes of this memorandum. Table 1 provides a summary for each of the eleven (11) dams inspected, and these locations are shown on the attached Exhibit 1.

Table 1 – Dam Identification

Dam Identification	Location Description
1	At the southern end of Vitruvian Park
2	Valley View Estates Home Owner's Association (HOA) Pond
3	Channel dam on the right (west) side of Dam "2"
4	Approx. 400' downstream of Valley View Estates HOA Pond
5	Approx. 700' downstream of Valley View Estates HOA Pond
6	At entrance to Valley View Estates from Valley View Lane
7	Just downstream of Temple Trails Park
8	Approx. 250' upstream of the Veronica Road bridge crossing
9	Downstream end of Mallon Park
10	Approx. 450' downstream of Mallon Park
11	Approx. 900' upstream of the Ford Road bridge crossing

VISUAL INSPECTION ACTIVITIES

The visual inspection was performed on March 27, 2017 from areas accessible by foot. These areas were accessed through public right-of-way, or through private property where the owner had previously provided right-of-entry. No underwater or structural inspection was performed. Each dam was graded based on a qualitative rating of "good", "fair" or "poor", as follows:

> "Good": This rating corresponds to check dam structures that visually appear serviceable with little to no damage that would compromise the ability of the structure to safely impound water.
>
> "Fair": This rating corresponds to check dam structures that visually appear serviceable but have some damage, impending damage, or other issues that, in the long-term, could potentially compromise the ability of the structure to safely impound water.
>
> "Poor": This rating corresponds to check dam structures that may still be serviceable but have considerable damage that currently compromises the ability of the structure to safely impound water, or will compromise the structure in the short-term.

Table 2provides the qualitative ratings for each of the eleven (11) dams inspected, and a brief summary sheet of the inspection findings for each dam is presented on the attached summary sheets. Note that all references to left/right and upstream/downstream are from the perspective of a viewer standing on the dam centerline and looking downstream in the direction of the creek flow.

Table 2 – Summary of Qualitative Dam Ratings

Dam Identification	Qualitative Dam Rating
1	Fair
2	Good
3	Fair*
4	Good
5	Good
6	Good
7	Fair-to-Poor
8	Fair*
9	Good
10	Good
11	Poor
* Ratings for these structures attributed to erosion of abutment or nearby channel reaches	

Dams 7 and 11 are identified as structures in an undesirable condition, with Dam 11 being the least desirable.

DAM NO. 11 - OPIONION OF PROBABLE CONSTRUCTION COST

Although the dam is privately owned, the City desires an indication of the probable costs associated with the repair or replacement of Dam No. 11 based on the known poor condition prior to this study. As-built

geometry and record data is not available for this dam, and the type, limits and foundation of the structure are unknown. As such, a detailed analysis of costs associated with the study, design and construction of this dam was not performed. Instead, a planning-level opinion of probable construction cost (OPCC) was developed based on experience with similar structures of a comparable size, and is summarized as follows:

Item	Amount
Construction	$ 1,500,000
Study and Design (20% of construction)	$ 300,000
Planning-Level Contingency (40% of above)	$ 720,000
Total OPCC	**$ 2,520,000**

The contingency reflects the uncertainty associated with a planning-level estimate when combined with the various project unknowns. The OPCC assumes that new construction is required (no rehabilitation), that construction could occur under an existing nationwide permit, and that some type of gravity structure could be successfully implemented.

FBR16407 - Farmers Branch Creek Watershed Study
Check Dam Visual Inspection Summary Sheets

Farmers Branch Creek Dam No. 1

Location:

At the southern end of Vitruvian Park

March 27, 2017 Visual Inspection Comments:

Dam is a concrete structure that appears sound and in serviceable condition with normal flows passing through a weir structure. No evidence of underseepage. There is considerable erosion downstream of the dam. There is also some minor erosion of the left abutment of the dam. Continued erosion in both areas could compromise the stability of the dam, but neither appears imminent.

Qualitative Rating:

Fair (rating based on erosion, not dam condition).

Representative Photo:

Viewing downstream from pedestrian bridge crossing.

FBR16407 - Farmers Branch Creek Watershed Study
Check Dam Visual Inspection Summary Sheets

Farmers Branch Creek Dam No. 2

Location:

Valley View Estates Home Owner's Association (HOA) Pond

March 27, 2017 Visual Inspection Comments:

Dam is a concrete structure that appears sound and in serviceable condition with normal flows passing over an uncontrolled spillway. Concrete appears sound. No evidence of underseepage. There is minor erosion downstream of the dam, but is more pronounced at Dam No. 3.

Qualitative Rating:

Good

Representative Photo:

Viewing from the right side of the dam on the downstream end. Note that downstream apron for Dam No. 3 is in the foreground.

FBR16407 - Farmers Branch Creek Watershed Study
Check Dam Visual Inspection Summary Sheets

Farmers Branch Creek Dam No. 3

Location:

Channel dam on the right (west) side of Dam "2"

March 27, 2017 Visual Inspection Comments:

Dam is an aged concrete structure that appears sound and in serviceable condition with normal flows passing through notched weirs in a short parapet wall. No evidence of underseepage. Unable to view left abutment. There is some erosion downstream of the dam, that is coincident with Dam No. 2, but does not appear to impact serviceability.

Qualitative Rating:

Fair (rating based primarily on obscured condition of abutment.

Representative Photo:

Viewing from the right side of the dam, just downstream of the crest. Note that Dam No. 3 is visible in the background.

FBR16407 - Farmers Branch Creek Watershed Study
Check Dam Visual Inspection Summary Sheets

Farmers Branch Creek Dam No. 4

Location:

Approx. 400’ downstream of Valley View Estates HOA Pond

March 27, 2017 Visual Inspection Comments:

Location was not accessible on foot from properties that provided right-of-entry, and was only viewed from a distance. Dam is a concrete bag wall structure with a wide weir across the crest for passing normal flows. The wall and abutments appeared to be in suitable condition with no obvious signs of instability or loose bags. Right abutment was obscured by vegetation but the left abutment appears sound.

Qualitative Rating:

Good.

Representative Photo:

Viewing upstream toward dam from the right bank.

FBR16407 - Farmers Branch Creek Watershed Study
Check Dam Visual Inspection Summary Sheets

Farmers Branch Creek Dam No. 5

Location:

Approx. 700’ downstream of Valley View Estates HOA Pond

March 27, 2017 Visual Inspection Comments:

Dam is a concrete bag wall structure with a wide weir across the crest for passing normal flows. The wall and abutments are a combination of concrete bag walls and grouted rip rap, and appeared to be in suitable condition with no obvious signs of instability or loose bags. No signs of erosion or underseepage.

Qualitative Rating:

Good.

Representative Photo:

Viewing dam from the right upstream on the upstream side of the dam.

FBR16407 - Farmers Branch Creek Watershed Study
Check Dam Visual Inspection Summary Sheets

Farmers Branch Creek Dam No. 6

Location:

At entrance to Valley View Estates from Valley View Lane

March 27, 2017 Visual Inspection Comments:

Dam is a concrete bag wall structure with short weirs (created with concrete bags) across the crest for passing normal flows. The wall and abutments are also concrete bag walls, and appeared to be in suitable condition with no obvious signs of instability or loose bags. Vegetation was noted in both abutments, but did not appear to compromise stability. No signs of erosion or underseepage noted, with deposition of limestone gravel on the downstream side of the right abutment.

Qualitative Rating:

Good.

Representative Photo:

View of the downstream side of the dam from the downstream, right bank.

FBR16407 - Farmers Branch Creek Watershed Study
Check Dam Visual Inspection Summary Sheets

Farmers Branch Creek Dam No. 7

Location:

Just downstream of Temple Trails Park

March 27, 2017 Visual Inspection Comments:

Dam construction is not clear, but appears to be a mixture of various debris that has been covered with concrete. There is no obvious weir or spillway, but normal flows are centralized near the center of the dam. The right abutment is a short, stone-filled gabion wall while the left abutment is concrete debris and stone rip rap. The dam appears to have been repeatedly repaired, and considerable construction debris has accumulated just downstream of the dam. The dam is distressed and has some undercutting on the downstream side.

Qualitative Rating:

Fair-to-poor.

Representative Photo:

View along the centerline of the dam from the left abutment.

FBR16407 - Farmers Branch Creek Watershed Study
Check Dam Visual Inspection Summary Sheets

Farmers Branch Creek Dam No. 8

Location:

Approx. 250’ upstream of the Veronica Road bridge crossing

March 27, 2017 Visual Inspection Comments:

Dam appears to be a short concrete gravity structure that acts as a broad-crested weir for the passage of normal flows. The right abutment is a concrete rip rap that transitions into a cast-in-place headwall for the Veronica Road bridge. The dam appears sound and serviceable with no obvious undercutting or underseepage. The left abutment is an earthen slope with a short stone masonry wall, and the downstream side is considerably eroded with some exposure of a sanitary sewer manhole. Trees on both abutments obscure observations and could compromise the abutments if they fall. Another check dam is present upstream of this dam (but is not inventoried) and is in poor condition.

Qualitative Rating:

Fair (rating based primarily on abutment erosion).

Representative Photo:

View of channel upstream of dam on left bank. Dam is in background on right side of photograph.

FBR16407 - Farmers Branch Creek Watershed Study
Check Dam Visual Inspection Summary Sheets

Farmers Branch Creek Dam No. 9

Location:

Downstream end of Mallon Park

March 27, 2017 Visual Inspection Comments:

Dam is a concrete bag wall structure with short weirs (created with concrete bags) across the crest for passing normal flows. The wall and abutments are also concrete bag walls, and appeared to be in suitable condition with no obvious signs of instability or loose bags. No signs of erosion or underseepage noted.

Qualitative Rating:

Good.

Representative Photo:

View of pond upstream of the dam from a pedestrian bridge in the park. Dam is in center-background of photograph.

FBR16407 - Farmers Branch Creek Watershed Study
Check Dam Visual Inspection Summary Sheets

Farmers Branch Creek Dam No. 10

Location:

Approx. 450’ downstream of Mallon Park

March 27, 2017 Visual Inspection Comments:

Dam appears to be a short concrete gravity structure that acts as a broad-crested weir for the passage of normal flows. Both abutments are sloped concrete rip rap. The dam appears sound and serviceable with no obvious undercutting or underseepage. Trees on both abutments could compromise the abutments if they fall. Some minor upstream bank erosion was observed.

Qualitative Rating:

Good.

Representative Photo:

View of downstream side of dam from the left abutment on the downstream side.

FBR16407 - Farmers Branch Creek Watershed Study
Check Dam Visual Inspection Summary Sheets

Farmers Branch Creek Dam No. 11

Location:

Approx. 900’ upstream of the Ford Road bridge crossing

March 27, 2017 Visual Inspection Comments:

Dam appears to be a concrete gravity structure that has undergone numerous repairs. There is no obvious weir or spillway. Both abutments are sloped earth that has been covered with various materials in an attempt to limit erosion. Considerable construction debris has accumulated just downstream of the dam. The dam is severely distressed and has significant undercutting on the downstream side. Seepage through the structure was noted on the right side.

Qualitative Rating:

Poor.

Representative Photo:

View from downstream side of dam on the left channel.

Appendix D

Committee Presentations

FREESE AND NICHOLS

FARMERS BRANCH

Farmers Branch Creek Watershed Study

Municipal Drainage System Advisory Committee

May 2, 2018

Introductions

City Staff

- Mark Bentley
  Director of Public Works
- Natalia Davis
  Public Works Coordinator

Municipal Drainage System Advisory Committee

- Pat Canuteson, Chair
- Amy Rogers
- Mike Sheaffer
- Berry Grubbs
- Todd Womble
- Dan Heard (alternate)
- John Norwood – Councilmember (City Official)

Consultants

- Freese & Nichols, Inc.
  - Trey Shanks
  - David Rivera
  - Wylie Gorup

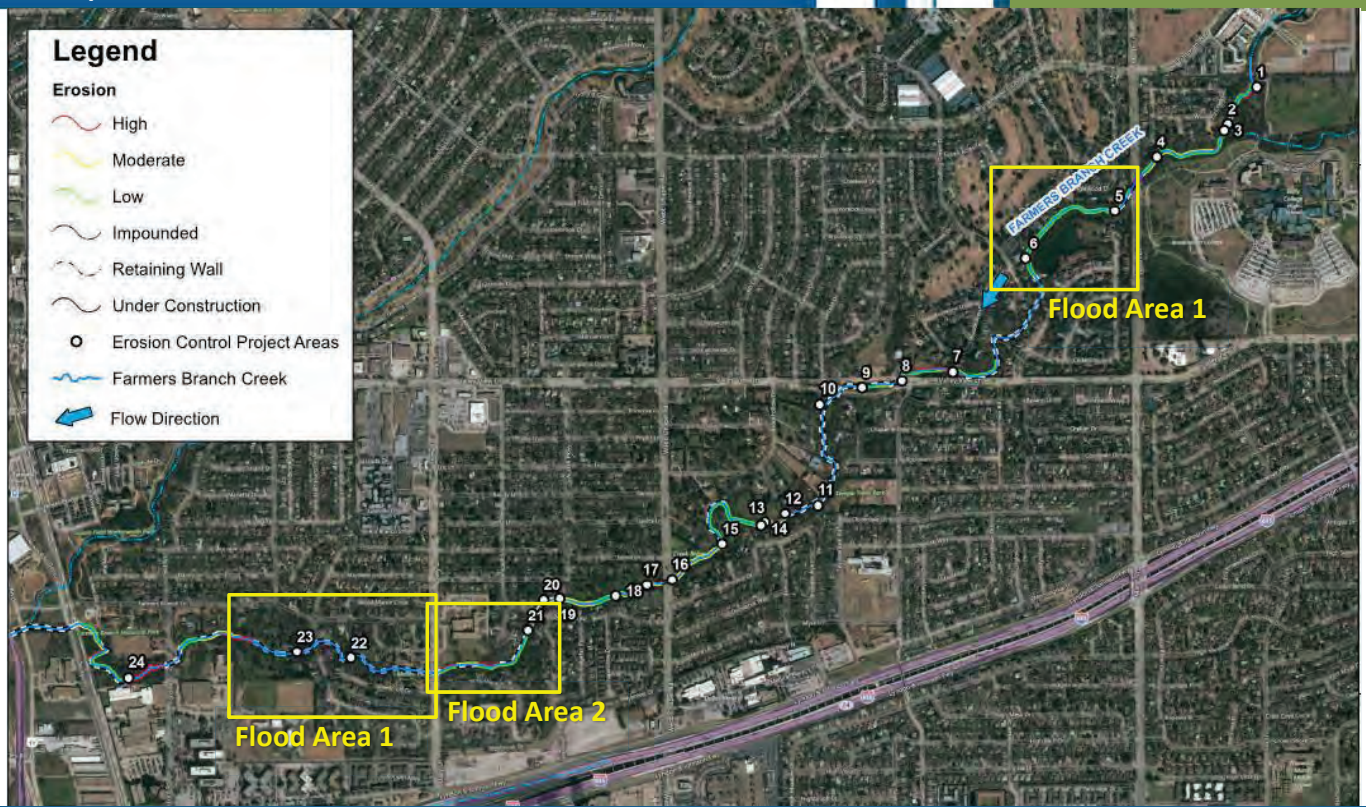
Agenda

- Project Update
- Project Prioritization Methodology

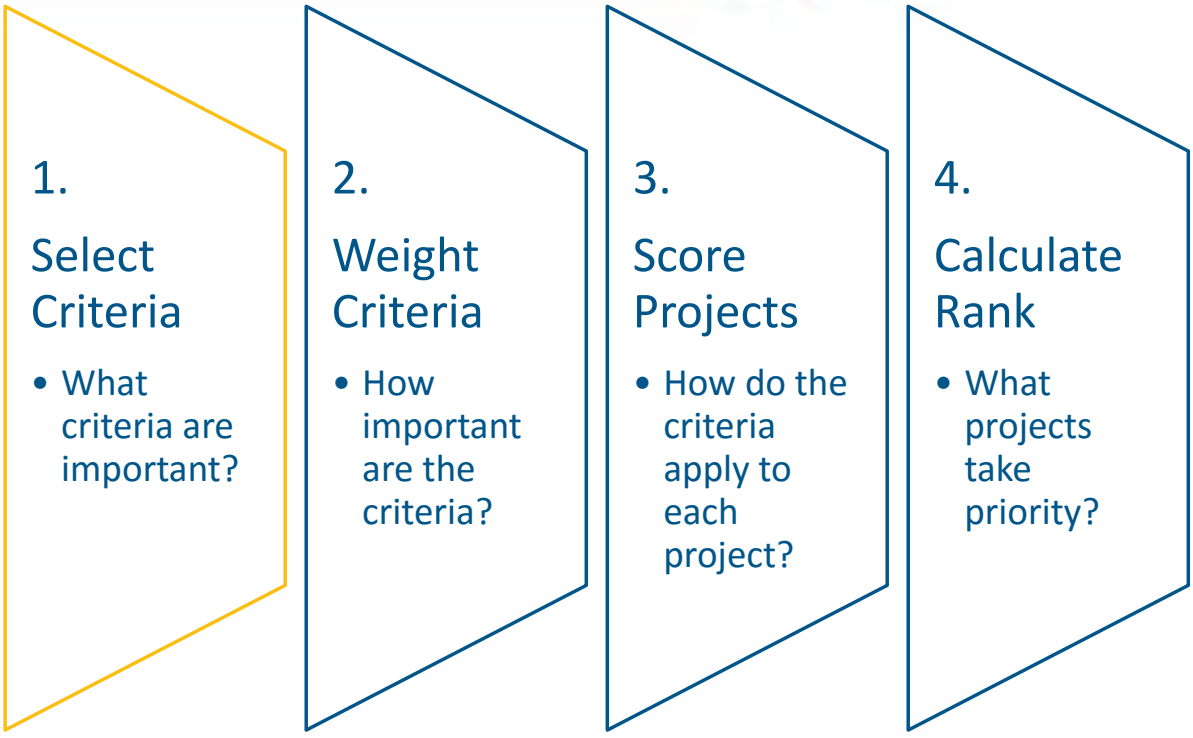
Selecting Criteria for Project Ranking	By what parameters are we comparing projects?
Weight Project Criteria	Are some parameters more important than others in the comparison?
Scoring Projects by Criteria	What score does each project have for each criterion?
Calculating Project Prioritization/Rank	What projects are highest priority?
	What change in criteria is needed to change project prioritization?

- Next Steps

Project Update



Pairwise
Project Ranking Methodology

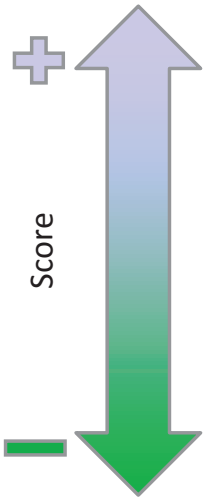


Erosion Control – Example Project

Flood Control – Example Project

Construction Cost

- Less expensive projects receive higher scores. More expensive projects receive lower scores.

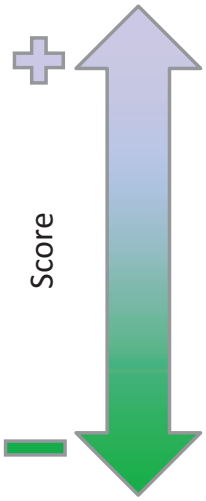


Low Construction Cost

High Construction Cost

Maintenance

- Projects with less anticipated maintenance effort receive higher scores. Projects with more anticipated maintenance effort receive lower scores.

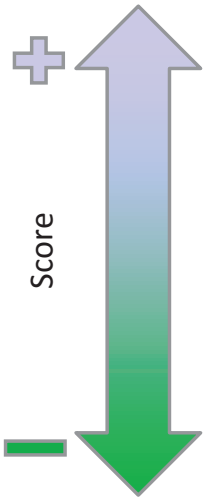


Low Maintenance

High Maintenance

Availability of Easements

- Projects proposed within existing City easements receive higher scores. Projects proposed outside of existing City easements receive lower scores.

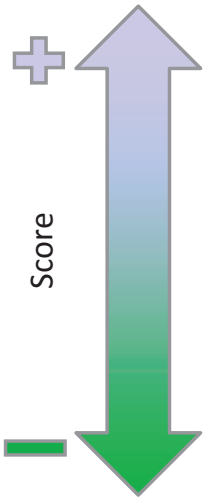


Within Existing City Easements

Outside Existing City Easements

Schedule

- Projects which can be completed in a relatively short time frame receive high scores. Projects which require extensive pre-construction agency coordination, public involvement, grant applications, or long construction schedules receive low scores.

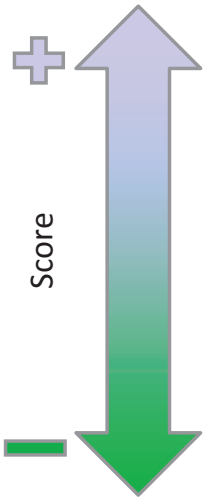


Completion in Short Time Frame

Completion in Long Time Frame

Life Safety and Infrastructure Benefits

- Projects which protect existing City infrastructure and promote life safety receive high scores. Projects which do not protect structures and have no impact on life safety receive low scores.

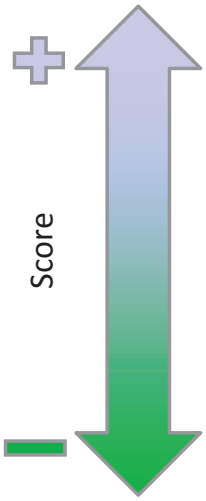


Promote Existing Infrastructure & Safety

Demote Existing Infrastructure & Safety

Flood Risk Reduction

- Projects with a greater level of flood risk reduction receive higher scores. Projects with a lesser level of flood risk reduction receive lower scores.

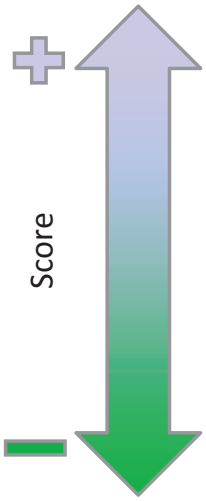


Significant Flood Risk Reduction

Small Flood Risk Reduction

Erosion Classification

- Projects which are classified as "high" erosion areas receive high scores. Projects which are classified as “moderate" erosion areas receive low scores.

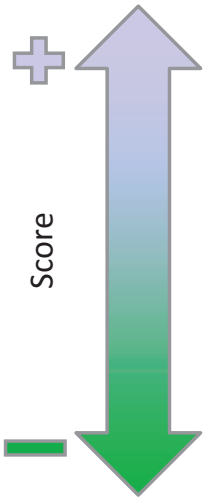


High Erosion Hazard

Moderate Erosion Hazard

Environmental Impacts

- Projects with positive environmental impacts will receive high scores. Projects with potential negative environmental impacts will receive low scores.

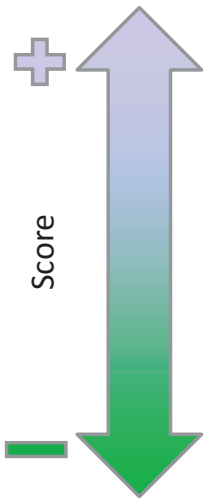


Positive Environment Impact

Adverse Environment Impact

Aesthetics/Usability

- Projects which will preserve the intended use or aesthetic of existing facilities receive high scores. Projects which require major changes to creek geometry or reduce creek aesthetics will receive lower scores.

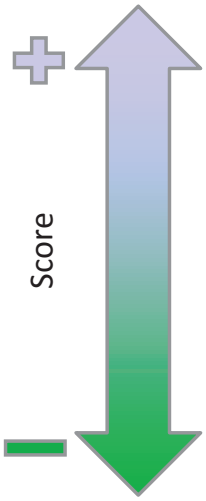


High Aesthetics Preservation

Low Aesthetics Preservation

Area of Impact

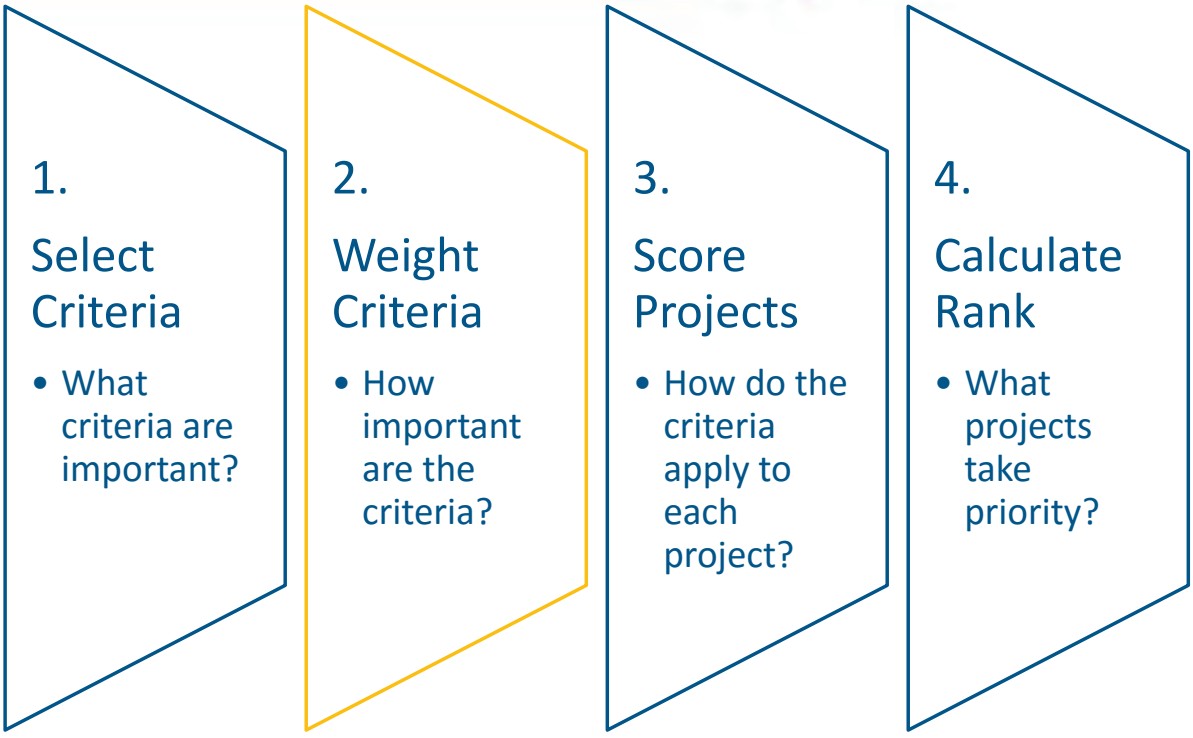
- Projects which result in local erosion or flood risk reduction receive lower scores. Projects with broader system impacts receive a higher score.



Benefits Overall Community

Benefits Single Property

Pairwise
Project Ranking Methodology

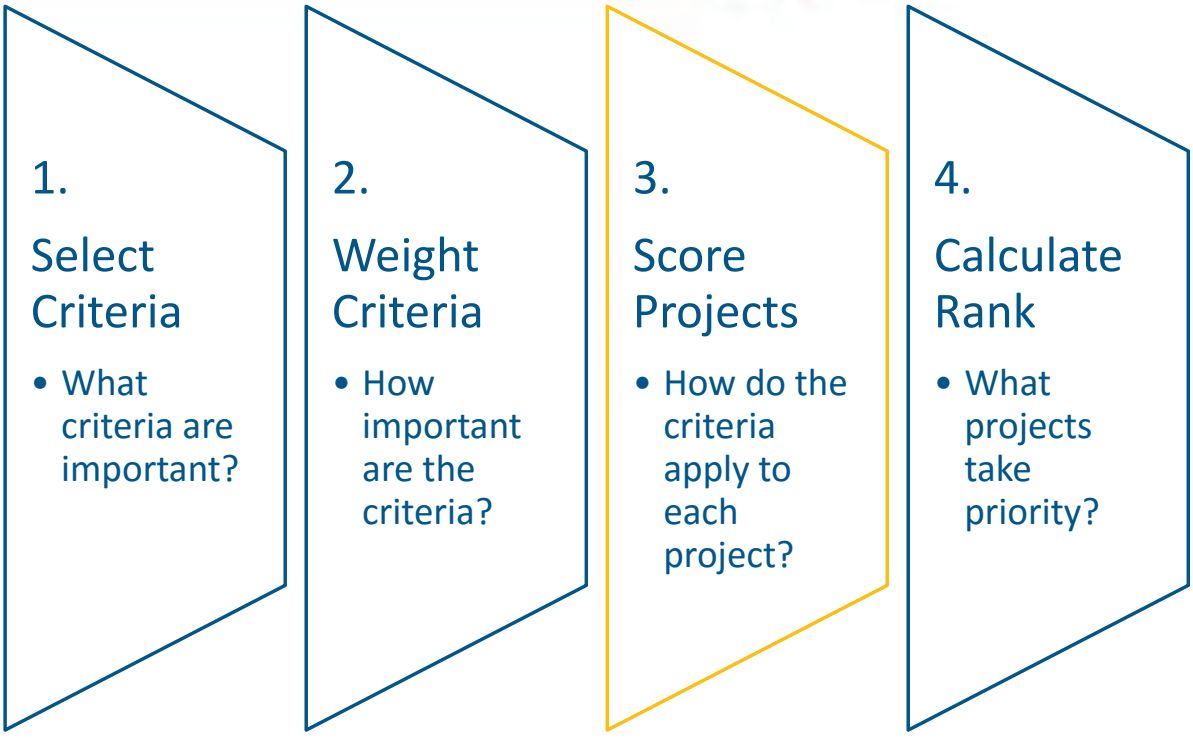


Criteria Summary

- Construction Cost
- Maintenance
- Availability of Easements
- Schedule
- Life Safety and Infrastructure Benefits
- Flood Risk Reduction
- Erosion Classification
- Environmental Impacts
- Aesthetics/Usability
- Areas of Impact

Criteria Weighting Exercise

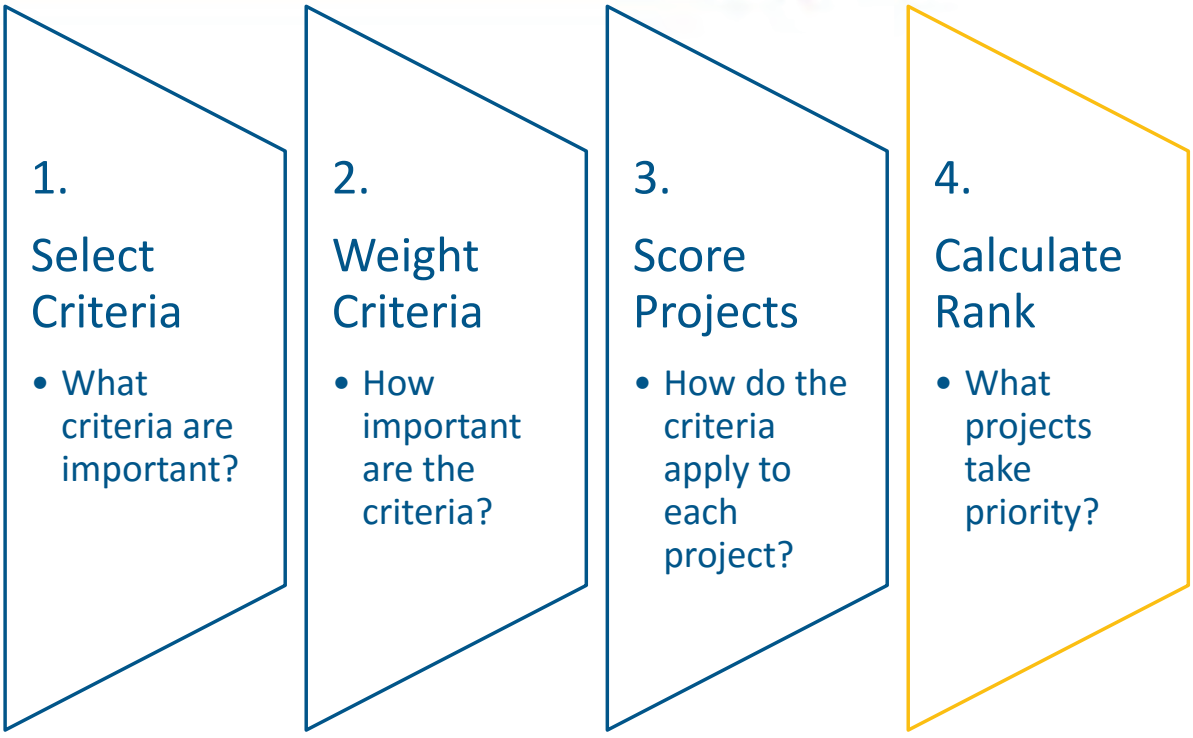
Pairwise
Project Ranking Methodology



Project Scoring

Criteria	Scoring	Ranking	Score
Construction Cost	Less expensive projects receive higher scores. More expensive projects receive lower scores.	$0 - $50,000	10
		$50,000 - $125,000	8
		$125,000 - $500,000	5
		$500,000-$1,000,000	3
		$1,000,000-$2,000,000	2
		>$2,000,000	1

Pairwise
Project Ranking Methodology



Next Steps

- CIP Ranking – FNI
- City Council Meeting June 5th
- Final Report – July

FREESE AND NICHOLS

FARMERS BRANCH

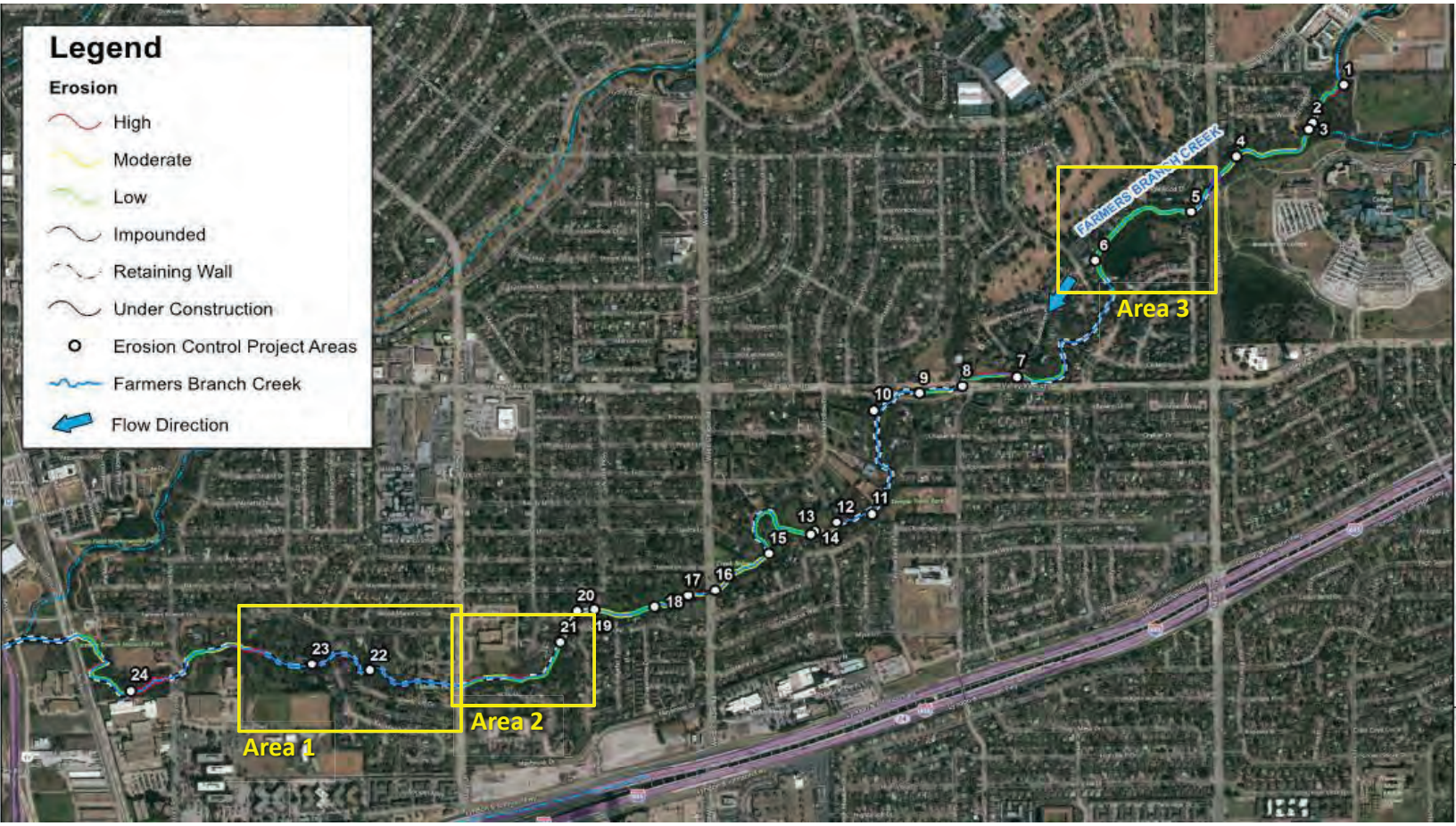
Farmers Branch Creek Watershed Study
CIP Ranked List

Municipal Drainage System Advisory Committee

May 16, 2018

Agenda

- Project Prioritization Results
  - Review Criteria Selection and Weighting Results (May 2, 2018)
  - Project Scoring Process
  - Prioritized CIP Project List
- Next Steps


Legend
Erosion
High
Moderate
Low
Impounded
Retaining Wall
Under Construction
Erosion Control Project Areas
Farmers Branch Creek
Flow Direction
FARMERS BRANCH CREEK
Area 1
Area 2
Area 3
1
2
3
4
5
6
7
8
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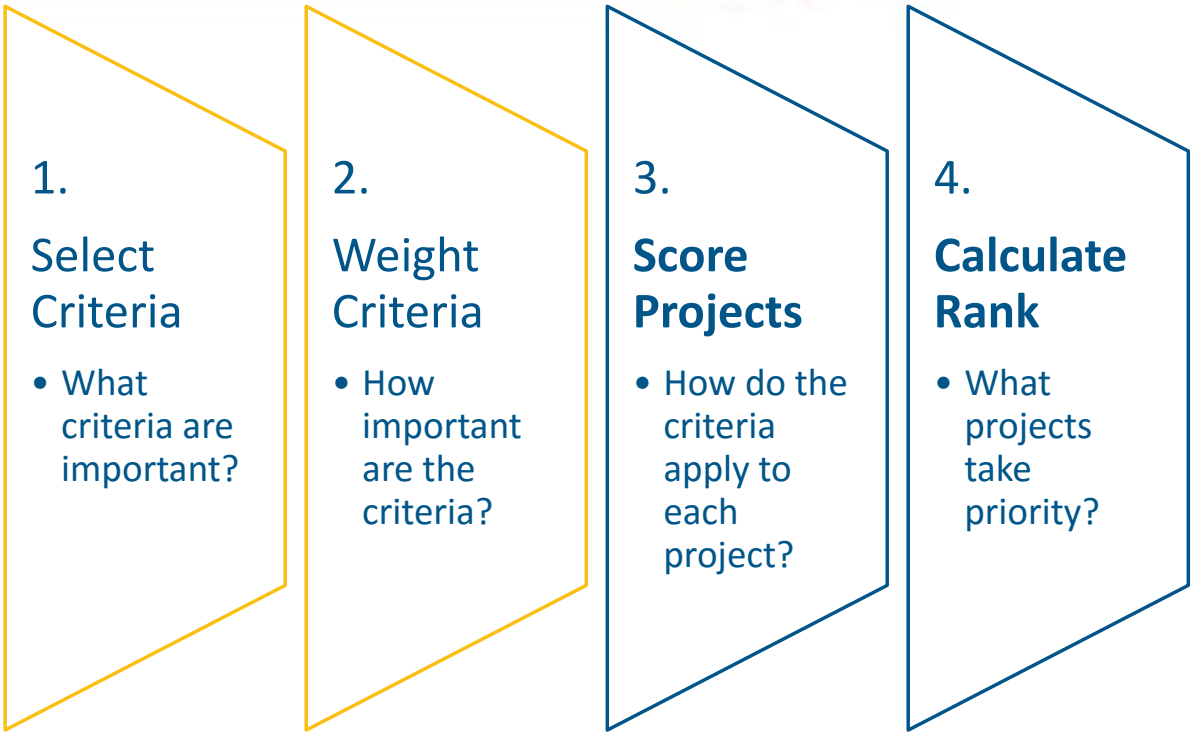
23
24

Pairwise
Project Ranking Methodology



Pairwise
Project Ranking Methodology

1.

Select Criteria

- What criteria are important?

- Construction Cost
- Maintenance
- Availability of Easements
- Schedule
- Life Safety
- Infrastructure Benefits
- Flood Risk Reduction
- Erosion Classification
- Environmental Impacts
- Aesthetics/ Usability
- Area of Impact

Pairwise Comparison Handout

Please select a response to the following questions (mark with an X)

Question #	Criteria A	Criteria A is more Important	Equally Important	Criteria B is more Important	Criteria B
1	Construction Cost				Maintenance
2	Construction Cost				Availability of Easements
3	Construction Cost				Schedule
4	Construction Cost				Life Safety / Infrastructure Benefits
5	Construction Cost				Flood Risk Reduction
6	Construction Cost				Erosion Classification
7	Construction Cost				Environmental Impacts
8	Construction Cost				Aesthetics/Usability
9	Construction Cost				Areas of Impact

Pairwise
Project Ranking Methodology

2. Weight Criteria

- How important are the criteria?

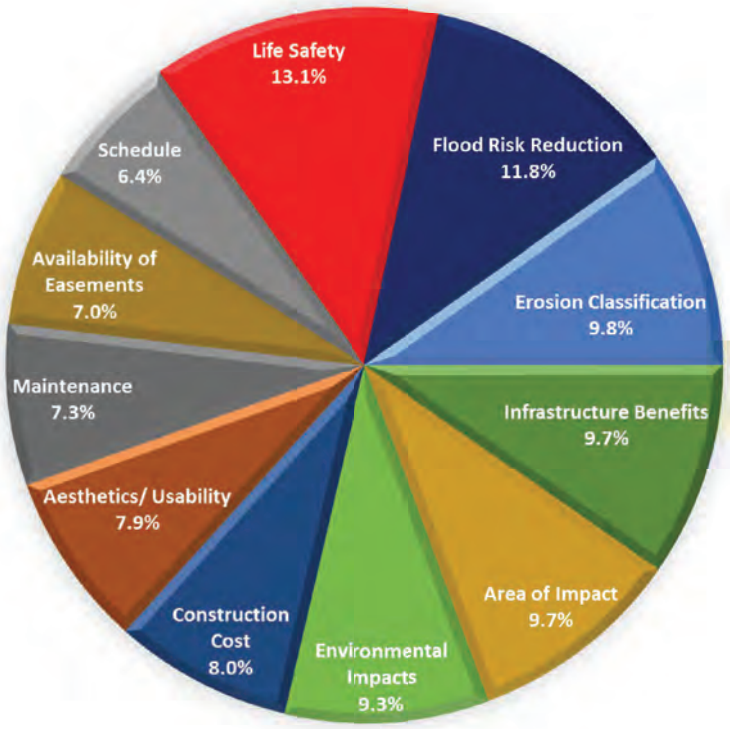
Rank	Criteria
1	Life Safety
2	Flood Risk Reduction
3	Erosion Classification
4	Infrastructure Benefits
5	Area of Impact
6	Environmental Impacts
7	Construction Cost
8	Aesthetics/ Usability
9	Maintenance
10	Availability of Easements
11	Schedule

Pairwise
Project Ranking Methodology

2. Weight Criteria

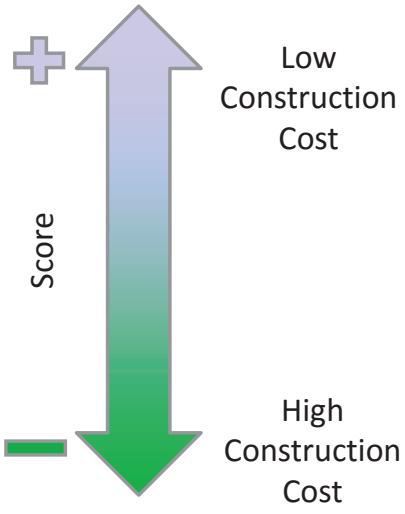
- How important are the criteria?

Rank	Criteria
1	Life Safety
2	Flood Risk Reduction
3	Erosion Classification
4	Infrastructure Benefits
5	Area of Impact
6	Environmental Impacts
7	Construction Cost
8	Aesthetics/ Usability
9	Maintenance
10	Availability of Easements
11	Schedule



Construction Cost

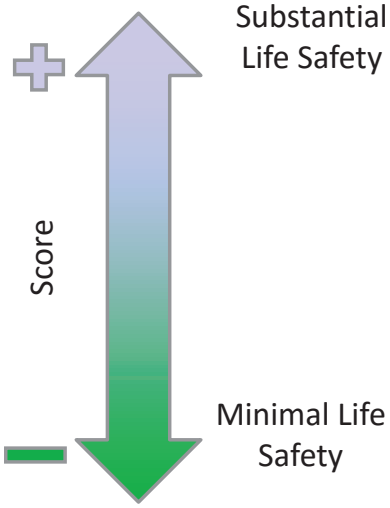
- Less expensive projects receive higher scores.
- More expensive projects receive lower scores.



Estimated Construction Cost	Score
$0 - $50,000	10
$50,000 - $125,000	8
$125,000 - $500,000	5
$500,000 - $1,000,000	3
$1,000,000 - $2,000,000	2
>$2,000,000	1

Life Safety

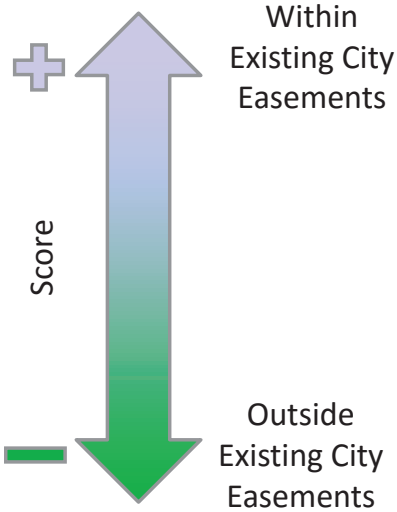
- Projects that promote life safety receive high scores.
- Projects which have no impact on life safety receive low scores.



Life Safety Impact	Score
Project provides potential substantial life safety impacts	10
Project provides limited life safety impacts	5
Project provides minimal life safety impacts	2

Availability of Easements

- Projects proposed within existing City easements receive higher scores.
- Projects proposed outside of existing City easements receive lower scores.



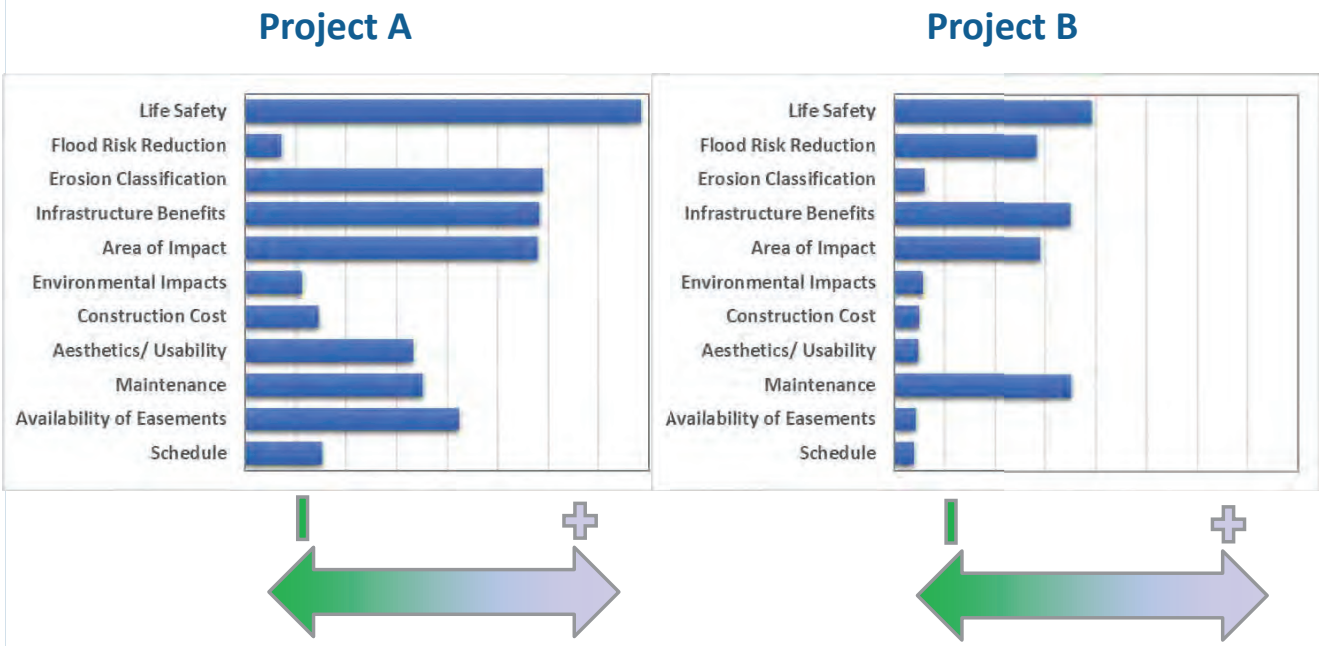
Easements Availability	Score
Project will be constructed entirely within existing City easement	10
An available easement for a single property will need to be obtained for the project	3
Available easements for multiple properties will need to be obtained for the project	2
Project will be constructed without necessary City easement	1

Project Scoring Methodology

3.

Score Projects

- How do the criteria apply to each project?



Project Scoring Example

Project E-16 : Webb Chapel Rd.

Weighted Score : 20.6

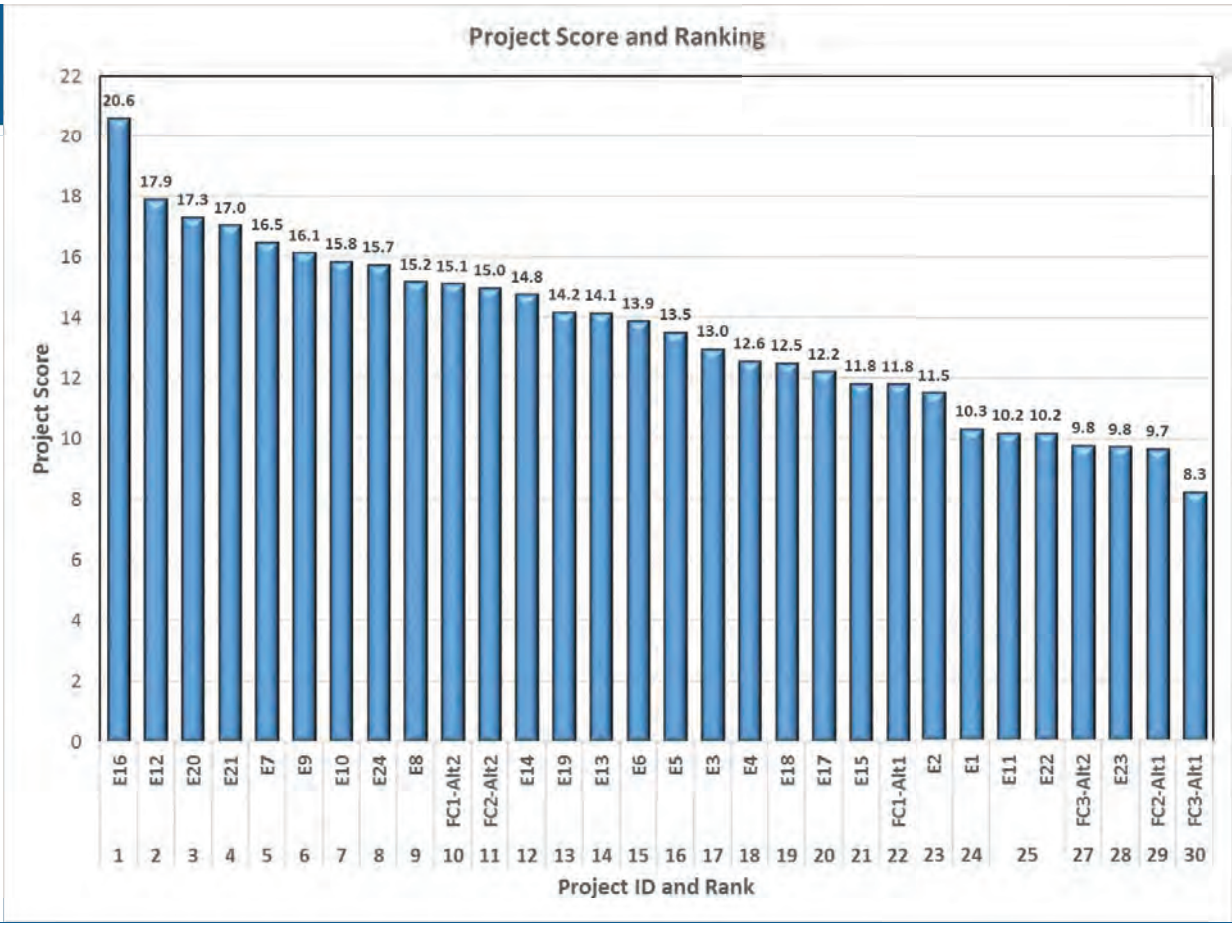
	Criteria Weighting	17.6	16.1	15.5	14.0	28.8	21.4	26.0	21.6	20.4	17.4	21.3
Project Number	Project Cost	Construction Cost	Maintenance	Availability of Easements	Schedule	Life Safety	Infrastructure Benefits	Flood Risk Reduction	Erosion Classification	Environmental Impacts	Aesthetics/ Usability	Area of Impact
E16	$567,000	3	8	10	4	10	10	1	10	2	7	10
Weighted Score		0.7	1.8	2.1	0.8	3.9	2.9	0.4	2.9	0.6	1.7	2.9

Prioritized CIP Project List

4.

Calculate Rank

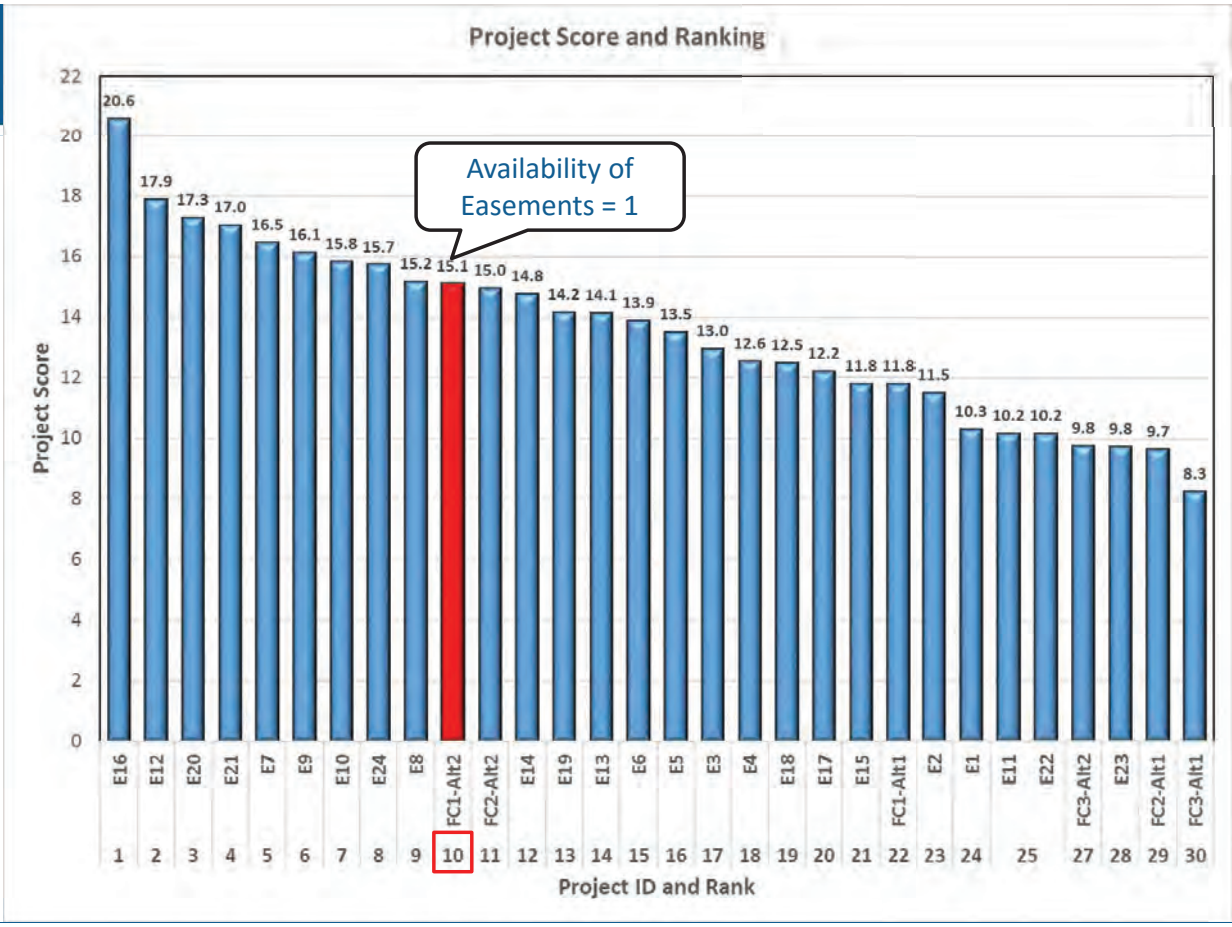
- What projects take priority?



Rank Sensitivity

Example:
Flood Control Project

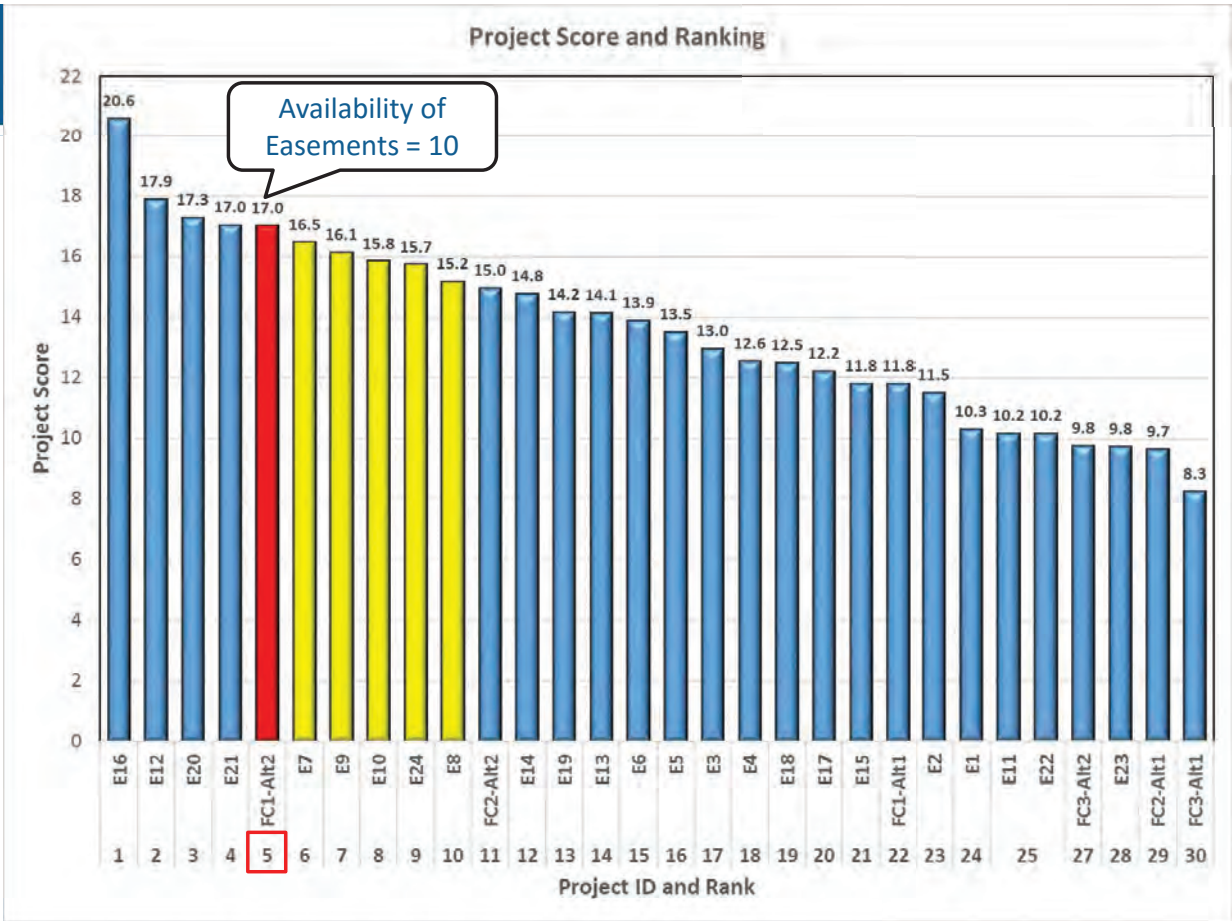
Area 1
Alternative 2



Rank Sensitivity

Example:
Flood Control Project

Area 1
Alternative 2



Top 10 CIP Projects – Geographic Distribution

Recommended Next Steps

- Receive feedback from Advisory Committee – May 23, 2018
- City Council Meeting June 5, 2018
- Final Report – July 2018

Appendix E

Flood Risk Reduction Score Sheets

ALTERNATIVE SUMMARY TABLE

Alternative	Flood Reduction Score	Normalized Score	CIP Score
FC1 Alt 1	4.860	0.693	7
FC1 Alt 2	6.260	0.893	9
FC2 Alt 1	0.378	0.054	1
FC2 Alt 2	1.434	0.205	3
FC3 Alt 1	0.980	0.140	2
FC3 Alt 2	2.852	0.407	5

Max Possible Score:	7.012

INPUT

Count	Structure address or name	Critical facility (Y/N)	Repetitive loss (Y/N)	Incremental score						Structural flooding reduction score
				2	*5*	*10*	*25*	*50*	*100*	
1	12304 Wood Manor Cir	N	N	0.3	0.1	0	0	0	0	0.4
2	12305 Wood Manor Cir	N	N	0.3	0	0	0	0	0	0.3
3	2737 Farmers Branch Ln	N	N	0	0	0	0	0	0	0
4	2839 Millwood Dr	N	N	0.3	0.1	0.06	0	0	0	0.46
5	2828 Millwood Dr	N	N	0.3	0	0	0	0	0	0.3
6	2740 Farmers Branch Ln	N	N	0.3	0	0	0	0	0	0.3
7	2709 Bay Meadows Cir	N	N	0.3	0.1	0.06	0	0	0	0.46
8	12320 Wood Manor Cir	N	N	0	0	0.06	0	0	0	0.06
9	2816 Millwood Dr	N	N	0	0	0	0	0	0	0
10	12319 Wood Manor Cir	N	N	0.3	0.1	0.06	0	0	0	0.46
11	2821 Millwood Dr	N	N	0	0	0	0	0	0	0
12	2834 Millwood Dr	N	N	0.3	0.1	0	0	0	0	0.4
13	2705 Bay Meadows Cir	N	N	0.3	0	0	0	0	0	0.3
14	2710 Farmers Branch Ln	N	N	0.3	0	0	0	0	0	0.3
15	2829 Millwood Dr	N	N	0	0	0.06	0	0	0	0.06
16	12310 Wood Manor Cir	N	N	0	0.1	0.06	0	0	0	0.16
17	12311 Wood Manor Cir	N	N	0.3	0	0	0	0	0	0.3
18	2822 Millwood Dr	N	N	0.3	0	0	0	0	0	0.3
19	2710 Bay Meadows Cir	N	N	0.3	0	0	0	0	0	0.3
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
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				0	0	0	0	0	0	0
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				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0

Total structural flooding reduction score
4.86

*Enter this value for structural flooding reduction score in the detailed input on the "Results" tab of the database input form

Project Descriptor:
FC1_Alt 1

INPUT

Count	Structure address or name	Critical facility (Y/N)	Repetitive loss (Y/N)	Incremental score						Structural flooding reduction score
				2	*5*	*10*	*25*	*50*	*100*	
1	12304 Wood Manor Cir	N	N	0.3	0.1	0.06	0	0	0	0.46
2	12305 Wood Manor Cir	N	N	0.3	0.1	0	0	0	0	0.4
3	2737 Farmers Branch Ln	N	N	0	0	0	0	0	0	0
4	2839 Millwood Dr	N	N	0.3	0.1	0.06	0	0	0	0.46
5	2828 Millwood Dr	N	N	0.3	0.1	0.06	0	0	0	0.46
6	2740 Farmers Branch Ln	N	N	0.3	0.1	0.06	0	0	0	0.46
7	2709 Bay Meadows Cir	N	N	0.3	0.1	0.06	0	0	0	0.46
8	12320 Wood Manor Cir	N	N	0	0	0.06	0	0	0	0.06
9	2816 Millwood Dr	N	N	0	0	0.06	0	0	0	0.06
10	12319 Wood Manor Cir	N	N	0.3	0.1	0.06	0	0	0	0.46
11	2821 Millwood Dr	N	N	0	0	0	0	0	0	0
12	2834 Millwood Dr	N	N	0.3	0.1	0.06	0	0	0	0.46
13	2705 Bay Meadows Cir	N	N	0.3	0.1	0.06	0	0	0	0.46
14	2710 Farmers Branch Ln	N	N	0.3	0.1	0.06	0	0	0	0.46
15	2829 Millwood Dr	N	N	0	0	0.06	0	0	0	0.06
16	12310 Wood Manor Cir	N	N	0	0.1	0.06	0	0	0	0.16
17	12311 Wood Manor Cir	N	N	0.3	0.1	0.06	0	0	0	0.46
18	2822 Millwood Dr	N	N	0.3	0.1	0.06	0	0	0	0.46
19	2710 Bay Meadows Cir	N	N	0.3	0.1	0.06	0	0	0	0.46
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
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				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0

Total structural flooding reduction score
6.26

*Enter this value for structural flooding reduction score in the detailed input on the "Results" tab of the database input form

Project Descriptor:
FC1_Alt 2

INPUT

Count	Structure address or name	Critical facility (Y/N)	Repetitive loss (Y/N)	Incremental score						Structural flooding reduction score
				2	*5*	*10*	*25*	*50*	*100*	
1	12348 Veronica Rd	N	N	0	0	0	0	0	0	0
2	2901 N Sunbeck Cir	N	N	0	0	0	0	0	0	0
3	12247 Treeview Ln	N	N	0	0	0	0	0	0	0
4	12418 Veronica Cir	N	N	0	0	0	0	0.01	0.008	0.018
5	12407 Veronica Cir	N	N	0.3	0	0	0	0	0	0.3
6	12342 Veronica Rd	N	N	0	0	0	0	0	0	0
7	12253 Treeview Ln	N	N	0	0	0	0	0	0	0
8	12330 Veronica Rd	N	N	0	0	0	0	0	0	0
9	12414 Veronica Cir	N	N	0	0	0.06	0	0	0	0.06
10	2976 Maydelle Ln	N	N	0	0	0	0	0	0	0
11	12336 Veronica Rd	N	N	0	0	0	0	0	0	0
12	2980 Maydelle Ln	N	N	0	0	0	0	0	0	0
13	2990 Maydelle Ln	N	N	0	0	0	0	0	0	0
14	12259 Treeview Ln	N	N	0	0	0	0	0	0	0
15	12411 Veronica Cir	N	N	0	0	0	0	0	0	0
16	Josey Lane Bridge	Y	N	0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0

Total structural flooding reduction score
0.378

*Enter this value for structural flooding reduction score in the detailed input on the "Results" tab of the database input form

Project Descriptor:
FC2_Alt 1

INPUT

Count	Structure address or name	Critical facility (Y/N)	Repetitive loss (Y/N)	Incremental score						Structural flooding reduction score
				2	*5*	*10*	*25*	*50*	*100*	
1	12348 Veronica Rd	N	N	0	0	0	0	0	0	0
2	2901 N Sunbeck Cir	N	N	0	0	0	0	0	0	0
3	12247 Treeview Ln	N	N	0	0	0	0	0	0	0
4	12418 Veronica Cir	N	N	0	0	0	0	0.01	0.008	0.018
5	12407 Veronica Cir	N	N	0.3	0	0	0	0	0	0.3
6	12342 Veronica Rd	N	N	0	0	0	0	0	0	0
7	12253 Treeview Ln	N	N	0	0	0	0	0	0	0
8	12330 Veronica Rd	N	N	0	0	0	0	0	0	0
9	12414 Veronica Cir	N	N	0	0	0.06	0	0	0	0.06
10	2976 Maydelle Ln	N	N	0	0	0	0	0	0	0
11	12336 Veronica Rd	N	N	0	0	0	0	0	0	0
12	2980 Maydelle Ln	N	N	0	0	0	0	0	0	0
13	2990 Maydelle Ln	N	N	0	0	0	0	0	0	0
14	12259 Treeview Ln	N	N	0	0	0	0	0	0	0
15	12411 Veronica Cir	N	N	0	0	0.06	0	0	0	0.06
16	Josey Lane Bridge	Y	N	0.3	0.1	0.06	0.02	0.01	0.008	0.996
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
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				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
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				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0

Total structural flooding reduction score
1.434

*Enter this value for structural flooding reduction score in the detailed input on the "Results" tab of the database input form

Project Descriptor:
FC2_Alt 2

INPUT

Count	Structure address or name	Critical facility (Y/N)	Repetitive loss (Y/N)	Incremental score						Structural flooding reduction score
				2	*5*	*10*	*25*	*50*	*100*	
1	13822 Wooded Creek Ct	N	N	0	0	0	0	0	0	0
2	13810 Wooden Creek Dr	N	N	0	0	0	0	0	0	0
3	13830 New Bark Cir	N	N	0	0	0	0	0	0	0
4	13806 Wooden Creek Dr	N	N	0	0.1	0.06	0	0	0	0.16
5	13706 Tanglewood Dr	N	N	0.3	0.1	0	0	0	0	0.4
6	13512 Braemar Dr	N	N	0	0	0	0	0	0	0
7	13804 Wooden Creek Dr	N	N	0.3	0	0	0	0	0	0.3
8	13617 Tanglewood Dr	N	N	0	0	0	0	0	0	0
9	13616 Tanglewood Dr	N	N	0	0	0	0	0	0	0
10	13814 Wooden Creek Ct	N	N	0	0	0	0	0	0	0
11	13826 Wooden Creek Ct	N	N	0	0	0	0	0	0	0
12	13638 Tanglewood Dr	N	N	0	0	0	0	0	0	0
13	13828 New Bark Cir	N	N	0	0	0	0	0	0	0
14	13816 Wooden Creek Ct	N	N	0	0	0	0	0	0	0
15	13724 Tanglewood Dr	N	N	0	0	0	0	0	0	0
16	13818 Wooden Creek Ct	N	N	0	0	0	0	0	0	0
17	13715 Tanglewood Dr	N	N	0	0	0.06	0	0	0	0.06
18	13824 Wooded Creek Ct	N	N	0	0	0	0	0	0	0
19	13820 Wooded Creek Ct	N	N	0	0	0	0	0	0	0
20	13802 Wooden Creek Dr	N	N	0	0	0	0	0	0	0
21	13632 Tanglewood Dr	N	N	0	0	0	0	0	0	0
22	13627 Tanglewood Dr	N	N	0	0	0	0	0	0	0
23	13626 Tanglewood Dr	N	N	0	0	0	0	0	0	0
24	13812 Wooden Creek Dr	N	N	0	0	0	0	0	0	0
25	13808 Wooden Creek Dr	N	N	0	0	0	0	0	0	0
26	13716 Tanglewood Dr	N	N	0	0	0.06	0	0	0	0.06
27	13610 Tanglewood Dr	N	N	0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
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				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0

Total structural flooding reduction score
0.98

*Enter this value for structural flooding reduction score in the detailed input on the "Results" tab of the database input form

Project Descriptor:
FC3_Alt 1

INPUT

Count	Structure address or name	Critical facility (Y/N)	Repetitive loss (Y/N)	Incremental score						Structural flooding reduction score
				2	*5*	*10*	*25*	*50*	*100*	
1	13822 Wooded Creek Ct	N	N	0	0	0	0	0	0	0
2	13810 Wooden Creek Dr	N	N	0	0	0	0	0	0	0
3	13830 New Bark Cir	N	N	0	0	0	0	0	0	0
4	13806 Wooden Creek Dr	N	N	0	0.1	0.06	0	0	0	0.16
5	13706 Tanglewood Dr	N	N	0.3	0.1	0.06	0	0	0	0.46
6	13512 Braemar Dr	N	N	0	0	0	0	0	0	0
7	13804 Wooden Creek Dr	N	N	0	0	0	0	0	0	0
8	13617 Tanglewood Dr	N	N	0	0	0	0	0	0	0
9	13616 Tanglewood Dr	N	N	0.3	0.1	0.06	0.02	0.01	0.008	0.498
10	13814 Wooden Creek Ct	N	N	0	0	0	0	0	0	0
11	13826 Wooden Creek Ct	N	N	0	0	0	0	0	0	0
12	13638 Tanglewood Dr	N	N	0.3	0.1	0.06	0.02	0.01	0.008	0.498
13	13828 New Bark Cir	N	N	0	0	0	0	0	0	0
14	13816 Wooden Creek Ct	N	N	0	0	0	0	0	0	0
15	13724 Tanglewood Dr	N	N	0	0	0	0	0	0	0
16	13818 Wooden Creek Ct	N	N	0	0	0	0	0	0	0
17	13715 Tanglewood Dr	N	N	0	0	0.06	0	0	0	0.06
18	13824 Wooded Creek Ct	N	N	0	0	0	0	0	0	0
19	13820 Wooded Creek Ct	N	N	0	0	0	0	0	0	0
20	13802 Wooden Creek Dr	N	N	0	0	0	0	0	0	0
21	13632 Tanglewood Dr	N	N	0.3	0.1	0.06	0.02	0.01	0.008	0.498
22	13627 Tanglewood Dr	N	N	0	0	0.06	0	0	0	0.06
23	13626 Tanglewood Dr	N	N	0.3	0.1	0.06	0.02	0.01	0.008	0.498
24	13812 Wooden Creek Dr	N	N	0	0	0	0	0	0	0
25	13808 Wooden Creek Dr	N	N	0	0	0	0	0	0	0
26	13716 Tanglewood Dr	N	N	0	0	0.06	0	0	0	0.06
27	13610 Tanglewood Dr	N	N	0	0	0.06	0	0	0	0.06
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0
				0	0	0	0	0	0	0

Total structural flooding reduction score
2.852

*Enter this value for structural flooding reduction score in the detailed input on the "Results" tab of the database input form

Project Descriptor:
FC3_Alt 2

Appendix F

2017 USACE Nationwide Permits

NATIONWIDE PERMIT 3

Maintenance

Effective Date: March 19, 2017

(NWP Final Notice, 82 FR 4)

3. Maintenance. (a) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This NWP also authorizes the removal of previously authorized structures or fills. Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications, including the removal of material from the stream channel, must be immediately adjacent to the project. This NWP also authorizes the removal of accumulated sediment and debris within, and in the immediate vicinity of, the structure or fill. This NWP also authorizes the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the district engineer, provided the permittee can demonstrate funding, contract, or other similar delays.

(b) This NWP also authorizes the removal of accumulated sediments and debris outside the immediate vicinity of existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.). The removal of sediment is limited to the minimum necessary to restore the waterway in the vicinity of the structure to the approximate dimensions that existed when the structure was built, but cannot extend farther than 200 feet in any direction from the structure. This 200 foot limit does not apply to maintenance dredging to remove accumulated sediments blocking or restricting outfall and intake structures or to maintenance dredging to remove accumulated sediments from canals associated with outfall and intake structures. All dredged or excavated materials must be deposited and retained in an area that has no waters of the United States unless otherwise specifically approved by the district engineer under separate authorization.

(c) This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the maintenance activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After conducting the maintenance activity, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

(d) This NWP does not authorize maintenance dredging for the primary purpose of navigation. This NWP does not authorize beach restoration. This NWP does not authorize new stream channelization or stream relocation projects.

Notification: For activities authorized by paragraph (b) of this NWP, the permittee must submit a pre-construction notification to the district engineer prior to commencing the activity (see

general condition 32). The pre-construction notification must include information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals. (Authorities: Section 10 of the Rivers and Harbors Act of 1899 and section 404 of the Clean Water Act (Sections 10 and 404))

Note: This NWP authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the Clean Water Act section 404(f) exemption for maintenance.

Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. The permittee shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/.

17. Tribal Rights. No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal lands.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on listed species and critical habitat caused by the NWP activity. Indirect effects are those effects on listed species and critical habitat that are caused by the NWP activity and are later in time, but still are reasonably certain to occur.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed activity or that utilize the designated critical habitat that might be affected by the

proposed activity. The district engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps’ determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have “no effect” on listed species or critical habitat, or until ESA section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word “harm” in the definition of “take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.nmfs.noaa.gov/pr/species/esa/ respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether “incidental take” permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act. If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed.

(d) For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation to ensure that the activity results in no more than minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. Restored riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f)).

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____

(Transferee)

_____

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards,

will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States. If an NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission is not authorized by NWP until the appropriate Corps office issues the section 408 permission to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act

(see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. For single and complete linear projects, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation

requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-Federal permittees, if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed activity or utilize the designated critical habitat that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-Federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an activity that requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from the Corps office having jurisdiction over that USACE project.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is an NWP PCN and must include all of the applicable information required in paragraphs (b)(1) through (10) of this general condition. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed; (iii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iv) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

D. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the individual crossings of waters of the United States to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51, 52, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects. For those NWPs that have a waivable 300 linear foot limit for losses of intermittent and ephemeral stream bed and a 1/2-acre limit (i.e., NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52), the loss of intermittent and ephemeral stream bed, plus any other losses of jurisdictional waters and wetlands, cannot exceed 1/2-acre.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters (e.g., streams). The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) that the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is

required to comply with general conditions 18, 20, and/or 31, or to evaluate PCNs for activities authorized by NWPs 21, 49, and 50), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

E. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

F. Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term “discharge” means any discharge of dredged or fill material into waters of the United States.

Ecological reference: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a

waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the acres or linear feet of stream bed that are filled or excavated as a result of the regulated activity. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

Navigable waters: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of “open waters” include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas.

Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Protected tribal resources: Those natural resources and properties of traditional or customary religious or cultural importance, either on or off Indian lands, retained by, or reserved by or for, Indian tribes through treaties, statutes, judicial decisions, or executive orders, including tribal trust resources.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term “single and complete project” is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

Tribal lands: Any lands title to which is either: 1) held in trust by the United States for the benefit of any Indian tribe or individual; or 2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

ADDITIONAL INFORMATION

This nationwide permit is effective March 19, 2017, and expires on March 18, 2022.

Information about the U.S. Army Corps of Engineers regulatory program, including nationwide permits, may also be found at http://www.swf.usace.army.mil/Missions/Regulatory.aspx and http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx

2017 NATIONWIDE PERMIT (NWP) REGIONAL CONDITIONS

FOR THE STATE OF TEXAS

The following regional conditions apply within the entire State of Texas:

1. For all discharges proposed for authorization under Nationwide Permits (NWP) 3, 6, 7, 12, 14, 18, 19, 21, 23, 25, 27, 29, 39, 40, 41, 42, 43, 44, 49, 51, and 52, into the following habitat types or specific areas, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32, Pre-Construction Notification (PCN). The Corps of Engineers (Corps) will coordinate with the resource agencies as specified in NWP General Condition 32(d) (PCN). The habitat types or areas are:

    a. Pitcher Plant Bogs: Wetlands typically characterized by an organic surface soil layer and include vegetation such as pitcher plants (*Sarracenia* spp.) and/or sundews (*Drosera* spp.).

    b. Bald Cypress-Tupelo Swamps: Wetlands dominated by bald cypress (*Taxodium distichum*) and/or water tupelo (*Nyssa aquatic*).

2. For all activities proposed for authorization under any Nationwide Permit (NWP) at sites approved as compensatory mitigation sites (either permittee-responsible, mitigation bank and/or in-lieu fee) under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

3. For all activities proposed for authorization under NWP 16, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 (Pre-Construction Notification) and must obtain an individual water quality certification (WQC) from the TCEQ. Work cannot begin under NWP 16 until the applicant has received written approval from the Corps and WQC.

NOTE: For all activities proposing to use equipment that has operated or been stored in a water body on the Texas list of zebra mussel (*Dreissena polymorpha*) infected water bodies, equipment should be decontaminated prior to relocation in accordance with Texas Administrative Code, Title 31, Part 2, Chapter 57, Subchapter A. The following decontamination Best Management Practices (BMPs), as a minimum, are indicated:

    a. Clean: Clean both the inside and outside of equipment and gear, by removing all plants, animals, and mud and thoroughly washing the equipment using a high pressure spray nozzle.

    b. Drain: Drain all water from receptacles before leaving the area, including livewells, bilges, ballast, and engine cooling water on boats.

    c. Dry: Allow time for your equipment to dry completely before relocating in other waters. Equipment should be dried prior to relocation. High temperature pressure washing (greater than or equal to 140F) or professional cleaning may be substituted for drying time.

The following regional condition only applies within the Albuquerque, Fort Worth, and Galveston Districts:

4. For all activities proposed for authorization under Nationwide Permit (NWP) 12 that involve a discharge of fill material associated with mechanized land clearing of wetlands dominated by native woody shrubs, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification prior to commencing the activity. For the purpose of this regional condition, a shrub dominated wetland is characterized by woody vegetation less than 3.0 inches in diameter at breast height but greater than 3.2 feet in height, which covers 20% or more of the area. Woody vines are not included.

The following regional conditions apply within the Albuquerque District.

5. Nationwide Permit (NWP) 23 – Approved Categorical Exclusions. A pre-construction notification (PCN) to the District Engineer in accordance with General Condition 32 - PCN is required for all proposed activities under NWP 23.

6. Nationwide Permit (NWP) 27 – Aquatic Habitat Restoration, Establishment, and Enhancement Activities. For all proposed activities under NWP 27 that require pre-construction notification, a monitoring plan commensurate with the scale of the proposed restoration project and the potential for risk to the aquatic environment must be submitted to the Corps. (See “NWP 27 Guidelines” at http://www.spa.usace.army.mil/Missions/RegulatoryProgramandPermits/NWP.aspx).

7. Channelization. Nationwide Permit (NWP) General Condition 9 for Management of Water Flows is amended to add the following: Projects that would result in permanent channelization to previously un-channelized streams require pre-construction notification to the Albuquerque District Engineer in accordance with NWP General Condition 32 – Pre-Construction Notification.

8. Dredge and Fill Activities in Intermittent and Perennial Streams, and Special Aquatic Sites: For all activities subject to regulation under the Clean Water Act Section 404 in intermittent and perennial streams, and special aquatic sites (including wetlands, riffle and pool complexes, and sanctuaries and refuges), pre-construction notification (PCN) to the Albuquerque District Engineer is required in accordance with Nationwide Permit General Condition 32 - PCN.

9. Springs. For all discharges of dredged or fill material within 100 feet of the point of groundwater discharge of natural springs located in an aquatic resource, a pre-construction notification (PCN) is required to the Albuquerque District Engineer in accordance with Nationwide Permit General Condition 32 - PCN. A natural spring is defined as any location where ground water emanates from a point in the ground and has a defined surface water connection to another waters of the United States. For purposes of this regional condition, springs do not include seeps or other groundwater discharges which lack a defined surface water connection.

10. Suitable Fill. Use of broken concrete as fill or bank stabilization material is prohibited unless the applicant demonstrates that its use is the only practicable material (with respect to cost, existing technology, and logistics). Any applicant who wishes to use broken concrete as bank stabilization must provide notification to the Albuquerque District Engineer in accordance with Nationwide Permit General Condition 32 - Pre-Construction Notification along with justification for such use. Use of broken concrete with rebar or used tires (loose or formed into bales) is prohibited in all waters of the United States.

The following regional conditions apply only within the Fort Worth District.

11. For all discharges proposed for authorization under all Nationwide Permits (NWP) into the area of Caddo Lake within Texas that is designated as a "Wetland of International Importance" under the Ramsar Convention, the applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification (PCN). The Fort Worth District will coordinate with the resource agencies as specified in NWP General Condition 32(d) - PCN.

12. Compensatory mitigation is generally required for losses of waters of the United States that exceed 1/10 acre and/or for all losses to streams that exceed 300 linear feet. Loss is defined in Section F of the Nationwide Permits (NWP). Mitigation thresholds are cumulative irrespective of aquatic resource type at each single and complete crossing. Compensatory mitigation requirements will be determined in accordance with the appropriate district standard operating procedures and processes. The applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

13. For all activities proposed for authorization under Nationwide Permits (NWP) 12, 14 and/or 33 that involve a temporary discharge of fill material into 1/2 acre or more of emergent wetland OR 1/10 acre of scrub-shrub/forested wetland, the applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

14. For all discharges proposed for authorization under Nationwide Permits (NWP) 51 and 52, the Fort Worth District will provide the pre-construction notification (PCN) to the U.S. Fish and Wildlife Service as specified in NWP General Condition 32(d)(2) - PCN for its review and comments.

The following regional conditions apply only within the Galveston District.

15. No Nationwide Permits (NWP), except NWP 3, shall be used to authorize discharges into the habitat types or specific areas listed in paragraphs a through c, below. The applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity under NWP 3.

a. Mangrove Marshes. For the purpose of this regional condition, Mangrove marshes are those waters of the United States that are dominated by mangroves (*Avicennia* spp., *Laguncuaria* spp., *Conocarpus* spp., and *Rhizophora* spp.).
b. Coastal Dune Swales. For the purpose of this regional condition, coastal dune swales are wetlands and/or other waters of the United States located within the backshore and dune areas in the coastal zone of Texas. They are formed as depressions within and among multiple beach ridge barriers, dune complexes, or dune areas adjacent to beaches fronting tidal waters of the United States.
c. Columbia Bottomlands. For the purpose of this regional condition, Columbia bottomlands are defined as waters of the United States that are dominated by bottomland hardwoods in the Lower Brazos and San Bernard River basins identified in the 1997 Memorandum of Agreement between the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, Natural Resource Conservation Service, and Texas Parks and Wildlife Department for bottomland hardwoods in Brazoria County. (For further information, see http://www.swg.usace.army.mil/Business-With-Us/Regulatory/Permits/Nationwide-General-Permits/)

16. A Compensatory Mitigation Plan is required for all special aquatic site losses, as defined in Section F of the Nationwide Permits (NWP), that exceed 1/10 acre and/or for all losses to streams that exceed 200 linear feet. Compensatory mitigation requirements will be determined in accordance with the appropriate district standard operating procedures and processes. The applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

17. For all seismic testing activities proposed for authorization under Nationwide Permit (NWP) 6, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification (PCN). The PCN must state the time period for which the temporary fill is proposed, and must include a restoration plan for the special aquatic sites. For seismic testing under NWP 6 within the Cowardin Marine System, Subtidal Subsystem; as defined by the U.S. Fish and Wildlife Service, Classification of Wetlands and Deepwater Habitats of the United States, December 1979/Reprinted 1992, the Corps will coordinate with the resource agencies in accordance with NWP General Condition 32(d) - PCN.

18. For all activities proposed under Nationwide Permits (NWP) 10 and 11 located in vegetated shallows and coral reefs; as defined by 40 CFR 230.43 and 230.44 respectively, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification. Examples include, but are not limited to: seagrass beds, oyster reefs, and coral reefs.

19. Nationwide Permit 12 shall not be used to authorize discharges within 500 feet of vegetated shallows and coral reefs; as defined by 40 CFR 230.43 and 230.44 respectively. Examples include, but are not limited to: seagrass beds, oyster reefs, and coral reefs.

20. For all activities proposed for authorization under Nationwide Permit 12 that involve underground placement below a non-navigable river bed and/or perennial stream bed there shall a minimum cover of 48 inches (1,219 millimeters) of soil below the river and/or perennial stream thalweg.

21. For all discharges and work proposed below the high tide line under Nationwide Permits (NWP) 14 and 18, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification (PCN). The Galveston District will coordinate with the resource agencies in accordance with NWP General Condition 32(d) - PCN.

22. For all activities proposed for authorization under Nationwide Permit (NWP) 33 the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification (PCN). The PCN must include a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions. Activities causing the temporary loss, as defined in Section F of the NWPs, of more than 0.5 acres of tidal waters and/or 200 linear feet of stream will be coordinated with the agencies in accordance with NWP General Condition 32(d) - PCN.

23. No Nationwide Permits (NWP), except NWPs 3, 16, 20, 22, 37, shall be used to authorize discharges, structures, and/or fill within the standard setback and high hazard zones of the Sabine-Neches Waterway as defined in the Standard Operating Procedure - Permit Setbacks along the Sabine-Neches Waterway. The applicant shall notify the Galveston District Engineer in accordance with NWP General Condition 32 - Pre-Construction Notification for all discharge, structures and/or work in medium hazard zones and all NWP 3 applications within the standard setback and high hazard zones of the Sabine-Neches Waterway.

24. No Nationwide Permits (NWP), except 20, 22, and 37, shall be used to authorize discharges, structures, and/or fill within the standard setback exemptions of the Gulf Intracoastal Waterway as defined in the Standard Operating Procedure- Department of the Army Permit Evaluation Setbacks along the Gulf Intracoastal Waterway. The applicant shall notify the Galveston District Engineer in accordance with NWP General Condition 32 (Pre-Construction Notification) for all discharges, structures and/or work within the standard setback, shoreward of the standard setback, and/or standard setback exemption zones.

25. The use of Nationwide Permits in the San Jacinto River Waste Pits Area of Concern are revoked. (For further information, see http://www.swg.usace.army.mil/Business-With-Us/Regulatory/Permits/Nationwide-General-Permits/)

26. The use of Nationwide Permits 51 and 52 are revoked within the Galveston District boundaries.

27. Nationwide Permit (NWP) 53 pre-construction notifications will be coordinated with resource agencies as specified in NWP General Condition 32(d) – Pre-construction Notification.

28. For all activities proposed under Nationwide Permits (NWP) 21, 29, 39, 40, 42, 43, 44, and 50 that result in greater than 300 feet of loss in intermittent and/or ephemeral streams, as defined in Section F of the NWPs, require evaluation under an Individual Permit.

The following regional conditions apply only within the Tulsa District.

29. Upland Disposal: Except where authorized by Nationwide Permit 16, material disposed of in uplands shall be placed in a location and manner that prevents discharge of the material and/or return water into waters or wetlands unless otherwise authorized by the Tulsa District Engineer.

30. Major Rivers: The prospective permittee shall notify the Tulsa District Engineer for all Nationwide Permit 14 verifications which cross major rivers within Tulsa District. For the purposes of this condition, major rivers include the following: Canadian River, Prairie Dog Town Fork of the Red River, and Red River.

NATIONWIDE PERMIT 12

Utility Line Activities

Effective Date: March 19, 2017

(NWP Final Notice, 82 FR 4)

12. Utility Line Activities. Activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2-acre of waters of the United States for each single and complete project.

Utility lines: This NWP authorizes discharges of dredged or fill material into waters of the United States and structures or work in navigable waters for crossings of those waters associated with the construction, maintenance, or repair of utility lines, including outfall and intake structures. There must be no change in pre-construction contours of waters of the United States. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and internet, radio, and television communication. The term "utility line" does not include activities that drain a water of the United States, such as drainage tile or french drains, but it does apply to pipes conveying drainage from another area.

Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g., backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

Utility line substations: This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with a power line or utility line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than 1/2-acre of waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities.

Foundations for overhead utility line towers, poles, and anchors: This NWP authorizes the construction or maintenance of foundations for overhead utility line towers, poles, and anchors in all waters of the United States, provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible.

Access roads: This NWP authorizes the construction of access roads for the construction and maintenance of utility lines, including overhead power lines and utility line substations, in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction

contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows.

This NWP may authorize utility lines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material (See 33 CFR part 322). Overhead utility lines constructed over section 10 waters and utility lines that are routed in or under section 10 waters without a discharge of dredged or fill material require a section 10 permit.

This NWP authorizes, to the extent that Department of the Army authorization is required, temporary structures, fills, and work necessary for the remediation of inadvertent returns of drilling fluids to waters of the United States through sub-soil fissures or fractures that might occur during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines. These remediation activities must be done as soon as practicable, to restore the affected waterbody. District engineers may add special conditions to this NWP to require a remediation plan for addressing inadvertent returns of drilling fluids to waters of the United States during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if any of the following criteria are met: (1) the activity involves mechanized land clearing in a forested wetland for the utility line right-of-way; (2) a section 10 permit is required; (3) the utility line in waters of the United States, excluding overhead lines, exceeds 500 feet; (4) the utility line is placed within a jurisdictional area (i.e., water of the United States), and it runs parallel to or along a stream bed that is within that jurisdictional area; (5) discharges that result in the loss of greater than 1/10-acre of waters of the United States; (6) permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 feet; or (7) permanent access roads are constructed in waters of the United States with impervious materials. (See general condition 32.) (Authorities: Sections 10 and 404)

Note 1: Where the utility line is constructed or installed in navigable waters of the United States (i.e., section 10 waters) within the coastal United States, the Great Lakes, and United States territories, a copy of the NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the utility line to protect navigation.

Note 2: For utility line activities crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Utility line activities must comply with 33 CFR 330.6(d).

Note 3: Utility lines consisting of aerial electric power transmission lines crossing navigable waters of the United States (which are defined at 33 CFR part 329) must comply with the applicable minimum clearances specified in 33 CFR 322.5(i).

Note 4: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work, in accordance with the requirements for temporary fills.

Note 5: Pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the United States are considered to be bridges, not utility lines, and may require a permit from the U.S. Coast Guard pursuant to section 9 of the Rivers and Harbors Act of 1899. However, any discharges of dredged or fill material into waters of the United States associated with such pipelines will require a section 404 permit (see NWP 15).

Note 6: This NWP authorizes utility line maintenance and repair activities that do not qualify for the Clean Water Act section 404(f) exemption for maintenance of currently serviceable fills or fill structures.

Note 7: For overhead utility lines authorized by this NWP, a copy of the PCN and NWP verification will be provided to the Department of Defense Siting Clearinghouse, which will evaluate potential effects on military activities.

Note 8: For NWP 12 activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, "District Engineer's Decision." The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. The permittee shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/.

17. Tribal Rights. No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal lands.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act

(ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which “may affect” a listed species or critical habitat, unless ESA section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on listed species and critical habitat caused by the NWP activity. Indirect effects are those effects on listed species and critical habitat that are caused by the NWP activity and are later in time, but still are reasonably certain to occur.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed activity or that utilize the designated critical habitat that might be affected by the proposed activity. The district engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps’ determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have “no effect” on listed species or critical habitat, or until ESA section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word “harm” in the definition of “take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district

engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.nmfs.noaa.gov/pr/species/esa/ respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act. If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral

history interviews, sample field investigation, and field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed.

(d) For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation to ensure that the activity results in no more than minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. Restored riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic

environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f)).

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must

consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____

(Transferee)

_____

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States. If an NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission is not authorized by NWP until the appropriate Corps office issues the section 408 permission to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to

make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. For single and complete linear

projects, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-Federal permittees, if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed activity or utilize the designated critical habitat that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-Federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the “study river” (see general condition 16); and

(10) For an activity that requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from the Corps office having jurisdiction over that USACE project.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is

an NWP PCN and must include all of the applicable information required in paragraphs (b)(1) through (10) of this general condition. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed; (iii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iv) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

D. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the individual crossings of waters of the United States to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51, 52, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects. For those NWPs that have a waivable 300 linear foot limit for losses of intermittent and ephemeral stream bed and a 1/2-acre limit (i.e., NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52), the loss of intermittent and ephemeral stream bed, plus any other losses of jurisdictional waters and wetlands, cannot exceed 1/2-acre.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters (e.g., streams). The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory

mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) that the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31, or to evaluate PCNs for activities authorized by NWPs 21, 49, and 50), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

E. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

F. Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic

resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term "discharge" means any discharge of dredged or fill material into waters of the United States.

Ecological reference: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the acres or linear feet of stream bed that are filled or excavated as a result of the regulated activity. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

Navigable waters: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of “open waters” include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas.

Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary

source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Protected tribal resources: Those natural resources and properties of traditional or customary religious or cultural importance, either on or off Indian lands, retained by, or reserved by or for, Indian tribes through treaties, statutes, judicial decisions, or executive orders, including tribal trust resources.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters

with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring

structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

Tribal lands: Any lands title to which is either: 1) held in trust by the United States for the benefit of any Indian tribe or individual; or 2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of “waterbodies” include streams, rivers, lakes, ponds, and wetlands.

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the

structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. The permittee shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/.

17. Tribal Rights. No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal lands.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on listed species and critical habitat caused by the NWP activity. Indirect effects are those effects on listed species and critical habitat that are caused by the NWP activity and are later in time, but still are reasonably certain to occur.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed activity or that utilize the designated critical habitat that might be affected by the proposed activity. The district engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps’ determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have “no effect” on listed species or critical habitat, or until ESA section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word “harm” in the definition of “take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal

applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.nmfs.noaa.gov/pr/species/esa/ respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act. If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties

identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed.

(d) For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed in the

designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation to ensure that the activity results in no more than minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. Restored riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f)).

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____
(Transferee)

_____
(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States. If an NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission is not authorized by NWP until the appropriate Corps office issues the section 408 permission to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. For single and complete linear projects, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-Federal permittees, if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed activity or utilize the designated critical habitat that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-Federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an activity that requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from the Corps office having jurisdiction over that USACE project.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is an NWP PCN and must include all of the applicable information required in paragraphs (b)(1) through (10) of this general condition. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and

conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed; (iii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iv) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

D. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the individual

crossings of waters of the United States to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51, 52, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects. For those NWPs that have a waivable 300 linear foot limit for losses of intermittent and ephemeral stream bed and a 1/2-acre limit (i.e., NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52), the loss of intermittent and ephemeral stream bed, plus any other losses of jurisdictional waters and wetlands, cannot exceed 1/2-acre.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters (e.g., streams). The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed

under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) that the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31, or to evaluate PCNs for activities authorized by NWPs 21, 49, and 50), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

E. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

F. Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term "discharge" means any discharge of dredged or fill material into waters of the United States.

Ecological reference: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the acres or linear feet of stream bed that are filled or excavated as a result of the regulated activity. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

Navigable waters: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of “open waters” include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas.

Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction

notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Protected tribal resources: Those natural resources and properties of traditional or customary religious or cultural importance, either on or off Indian lands, retained by, or reserved by or for, Indian tribes through treaties, statutes, judicial decisions, or executive orders, including tribal trust resources.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves

multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

Tribal lands: Any lands title to which is either: 1) held in trust by the United States for the benefit of any Indian tribe or individual; or 2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

ADDITIONAL INFORMATION

This nationwide permit is effective March 19, 2017, and expires on March 18, 2022.

Information about the U.S. Army Corps of Engineers regulatory program, including nationwide permits, may also be found at http://www.swf.usace.army.mil/Missions/Regulatory.aspx and http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx

2017 NATIONWIDE PERMIT (NWP) REGIONAL CONDITIONS

FOR THE STATE OF TEXAS

The following regional conditions apply within the entire State of Texas:

1. For all discharges proposed for authorization under Nationwide Permits (NWP) 3, 6, 7, 12, 14, 18, 19, 21, 23, 25, 27, 29, 39, 40, 41, 42, 43, 44, 49, 51, and 52, into the following habitat types or specific areas, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32, Pre-Construction Notification (PCN). The Corps of Engineers (Corps) will coordinate with the resource agencies as specified in NWP General Condition 32(d) (PCN). The habitat types or areas are:

    a. Pitcher Plant Bogs: Wetlands typically characterized by an organic surface soil layer and include vegetation such as pitcher plants (*Sarracenia* spp.) and/or sundews (*Drosera* spp.).

    b. Bald Cypress-Tupelo Swamps: Wetlands dominated by bald cypress (*Taxodium distichum*) and/or water tupelo (*Nyssa aquatic*).

2. For all activities proposed for authorization under any Nationwide Permit (NWP) at sites approved as compensatory mitigation sites (either permittee-responsible, mitigation bank and/or in-lieu fee) under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

3. For all activities proposed for authorization under NWP 16, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 (Pre-Construction Notification) and must obtain an individual water quality certification (WQC) from the TCEQ. Work cannot begin under NWP 16 until the applicant has received written approval from the Corps and WQC.

NOTE: For all activities proposing to use equipment that has operated or been stored in a water body on the Texas list of zebra mussel (*Dreissena polymorpha*) infected water bodies, equipment should be decontaminated prior to relocation in accordance with Texas Administrative Code, Title 31, Part 2, Chapter 57, Subchapter A. The following decontamination Best Management Practices (BMPs), as a minimum, are indicated:

    a. Clean: Clean both the inside and outside of equipment and gear, by removing all plants, animals, and mud and thoroughly washing the equipment using a high pressure spray nozzle.

    b. Drain: Drain all water from receptacles before leaving the area, including livewells, bilges, ballast, and engine cooling water on boats.

    c. Dry: Allow time for your equipment to dry completely before relocating in other waters. Equipment should be dried prior to relocation. High temperature pressure washing (greater than or equal to 140F) or professional cleaning may be substituted for drying time.

The following regional condition only applies within the Albuquerque, Fort Worth, and Galveston Districts:

4. For all activities proposed for authorization under Nationwide Permit (NWP) 12 that involve a discharge of fill material associated with mechanized land clearing of wetlands dominated by native woody shrubs, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification prior to commencing the activity. For the purpose of this regional condition, a shrub dominated wetland is characterized by woody vegetation less than 3.0 inches in diameter at breast height but greater than 3.2 feet in height, which covers 20% or more of the area. Woody vines are not included.

The following regional conditions apply within the Albuquerque District.

5. Nationwide Permit (NWP) 23 – Approved Categorical Exclusions. A pre-construction notification (PCN) to the District Engineer in accordance with General Condition 32 - PCN is required for all proposed activities under NWP 23.

6. Nationwide Permit (NWP) 27 – Aquatic Habitat Restoration, Establishment, and Enhancement Activities. For all proposed activities under NWP 27 that require pre-construction notification, a monitoring plan commensurate with the scale of the proposed restoration project and the potential for risk to the aquatic environment must be submitted to the Corps. (See “NWP 27 Guidelines” at http://www.spa.usace.army.mil/Missions/RegulatoryProgramandPermits/NWP.aspx).

7. Channelization. Nationwide Permit (NWP) General Condition 9 for Management of Water Flows is amended to add the following: Projects that would result in permanent channelization to previously un-channelized streams require pre-construction notification to the Albuquerque District Engineer in accordance with NWP General Condition 32 – Pre-Construction Notification.

8. Dredge and Fill Activities in Intermittent and Perennial Streams, and Special Aquatic Sites: For all activities subject to regulation under the Clean Water Act Section 404 in intermittent and perennial streams, and special aquatic sites (including wetlands, riffle and pool complexes, and sanctuaries and refuges), pre-construction notification (PCN) to the Albuquerque District Engineer is required in accordance with Nationwide Permit General Condition 32 - PCN.

9. Springs. For all discharges of dredged or fill material within 100 feet of the point of groundwater discharge of natural springs located in an aquatic resource, a pre-construction notification (PCN) is required to the Albuquerque District Engineer in accordance with Nationwide Permit General Condition 32 - PCN. A natural spring is defined as any location where ground water emanates from a point in the ground and has a defined surface water connection to another waters of the United States. For purposes of this regional condition, springs do not include seeps or other groundwater discharges which lack a defined surface water connection.

10. Suitable Fill. Use of broken concrete as fill or bank stabilization material is prohibited unless the applicant demonstrates that its use is the only practicable material (with respect to cost, existing technology, and logistics). Any applicant who wishes to use broken concrete as bank stabilization must provide notification to the Albuquerque District Engineer in accordance with Nationwide Permit General Condition 32 - Pre-Construction Notification along with justification for such use. Use of broken concrete with rebar or used tires (loose or formed into bales) is prohibited in all waters of the United States.

The following regional conditions apply only within the Fort Worth District.

11. For all discharges proposed for authorization under all Nationwide Permits (NWP) into the area of Caddo Lake within Texas that is designated as a "Wetland of International Importance" under the Ramsar Convention, the applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification (PCN). The Fort Worth District will coordinate with the resource agencies as specified in NWP General Condition 32(d) - PCN.

12. Compensatory mitigation is generally required for losses of waters of the United States that exceed 1/10 acre and/or for all losses to streams that exceed 300 linear feet. Loss is defined in Section F of the Nationwide Permits (NWP). Mitigation thresholds are cumulative irrespective of aquatic resource type at each single and complete crossing. Compensatory mitigation requirements will be determined in accordance with the appropriate district standard operating procedures and processes. The applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

13. For all activities proposed for authorization under Nationwide Permits (NWP) 12, 14 and/or 33 that involve a temporary discharge of fill material into 1/2 acre or more of emergent wetland OR 1/10 acre of scrub-shrub/forested wetland, the applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

14. For all discharges proposed for authorization under Nationwide Permits (NWP) 51 and 52, the Fort Worth District will provide the pre-construction notification (PCN) to the U.S. Fish and Wildlife Service as specified in NWP General Condition 32(d)(2) - PCN for its review and comments.

The following regional conditions apply only within the Galveston District.

15. No Nationwide Permits (NWP), except NWP 3, shall be used to authorize discharges into the habitat types or specific areas listed in paragraphs a through c, below. The applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity under NWP 3.

a. Mangrove Marshes. For the purpose of this regional condition, Mangrove marshes are those waters of the United States that are dominated by mangroves (*Avicennia* spp., *Laguncuaria* spp., *Conocarpus* spp., and *Rhizophora* spp.).
b. Coastal Dune Swales. For the purpose of this regional condition, coastal dune swales are wetlands and/or other waters of the United States located within the backshore and dune areas in the coastal zone of Texas. They are formed as depressions within and among multiple beach ridge barriers, dune complexes, or dune areas adjacent to beaches fronting tidal waters of the United States.
c. Columbia Bottomlands. For the purpose of this regional condition, Columbia bottomlands are defined as waters of the United States that are dominated by bottomland hardwoods in the Lower Brazos and San Bernard River basins identified in the 1997 Memorandum of Agreement between the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, Natural Resource Conservation Service, and Texas Parks and Wildlife Department for bottomland hardwoods in Brazoria County. (For further information, see http://www.swg.usace.army.mil/Business-With-Us/Regulatory/Permits/Nationwide-General-Permits/)

16. A Compensatory Mitigation Plan is required for all special aquatic site losses, as defined in Section F of the Nationwide Permits (NWP), that exceed 1/10 acre and/or for all losses to streams that exceed 200 linear feet. Compensatory mitigation requirements will be determined in accordance with the appropriate district standard operating procedures and processes. The applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

17. For all seismic testing activities proposed for authorization under Nationwide Permit (NWP) 6, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification (PCN). The PCN must state the time period for which the temporary fill is proposed, and must include a restoration plan for the special aquatic sites. For seismic testing under NWP 6 within the Cowardin Marine System, Subtidal Subsystem; as defined by the U.S. Fish and Wildlife Service, Classification of Wetlands and Deepwater Habitats of the United States, December 1979/Reprinted 1992, the Corps will coordinate with the resource agencies in accordance with NWP General Condition 32(d) - PCN.

18. For all activities proposed under Nationwide Permits (NWP) 10 and 11 located in vegetated shallows and coral reefs; as defined by 40 CFR 230.43 and 230.44 respectively, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification. Examples include, but are not limited to: seagrass beds, oyster reefs, and coral reefs.

19. Nationwide Permit 12 shall not be used to authorize discharges within 500 feet of vegetated shallows and coral reefs; as defined by 40 CFR 230.43 and 230.44 respectively. Examples include, but are not limited to: seagrass beds, oyster reefs, and coral reefs.

20. For all activities proposed for authorization under Nationwide Permit 12 that involve underground placement below a non-navigable river bed and/or perennial stream bed there shall a minimum cover of 48 inches (1,219 millimeters) of soil below the river and/or perennial stream thalweg.

21. For all discharges and work proposed below the high tide line under Nationwide Permits (NWP) 14 and 18, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification (PCN). The Galveston District will coordinate with the resource agencies in accordance with NWP General Condition 32(d) - PCN.

22. For all activities proposed for authorization under Nationwide Permit (NWP) 33 the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification (PCN). The PCN must include a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions. Activities causing the temporary loss, as defined in Section F of the NWPs, of more than 0.5 acres of tidal waters and/or 200 linear feet of stream will be coordinated with the agencies in accordance with NWP General Condition 32(d) - PCN.

23. No Nationwide Permits (NWP), except NWPs 3, 16, 20, 22, 37, shall be used to authorize discharges, structures, and/or fill within the standard setback and high hazard zones of the Sabine-Neches Waterway as defined in the Standard Operating Procedure - Permit Setbacks along the Sabine-Neches Waterway. The applicant shall notify the Galveston District Engineer in accordance with NWP General Condition 32 - Pre-Construction Notification for all discharge, structures and/or work in medium hazard zones and all NWP 3 applications within the standard setback and high hazard zones of the Sabine-Neches Waterway.

24. No Nationwide Permits (NWP), except 20, 22, and 37, shall be used to authorize discharges, structures, and/or fill within the standard setback exemptions of the Gulf Intracoastal Waterway as defined in the Standard Operating Procedure- Department of the Army Permit Evaluation Setbacks along the Gulf Intracoastal Waterway. The applicant shall notify the Galveston District Engineer in accordance with NWP General Condition 32 (Pre-Construction Notification) for all discharges, structures and/or work within the standard setback, shoreward of the standard setback, and/or standard setback exemption zones.

25. The use of Nationwide Permits in the San Jacinto River Waste Pits Area of Concern are revoked. (For further information, see http://www.swg.usace.army.mil/Business-With-Us/Regulatory/Permits/Nationwide-General-Permits/)

26. The use of Nationwide Permits 51 and 52 are revoked within the Galveston District boundaries.

27. Nationwide Permit (NWP) 53 pre-construction notifications will be coordinated with resource agencies as specified in NWP General Condition 32(d) – Pre-construction Notification.

28. For all activities proposed under Nationwide Permits (NWP) 21, 29, 39, 40, 42, 43, 44, and 50 that result in greater than 300 feet of loss in intermittent and/or ephemeral streams, as defined in Section F of the NWPs, require evaluation under an Individual Permit.

The following regional conditions apply only within the Tulsa District.

29. Upland Disposal: Except where authorized by Nationwide Permit 16, material disposed of in uplands shall be placed in a location and manner that prevents discharge of the material and/or return water into waters or wetlands unless otherwise authorized by the Tulsa District Engineer.

30. Major Rivers: The prospective permittee shall notify the Tulsa District Engineer for all Nationwide Permit 14 verifications which cross major rivers within Tulsa District. For the purposes of this condition, major rivers include the following: Canadian River, Prairie Dog Town Fork of the Red River, and Red River.

NATIONWIDE PERMIT 13

Bank Stabilization

Effective Date: March 19, 2017

(NWP Final Notice, 82 FR 4)

13. Bank Stabilization. Bank stabilization activities necessary for erosion control or prevention, such as vegetative stabilization, bioengineering, sills, rip rap, revetment, gabion baskets, stream barbs, and bulkheads, or combinations of bank stabilization techniques, provided the activity meets all of the following criteria:

(a) No material is placed in excess of the minimum needed for erosion protection;

(b) The activity is no more than 500 feet in length along the bank, unless the district engineer waives this criterion by making a written determination concluding that the discharge will result in no more than minimal adverse environmental effects (an exception is for bulkheads – the district engineer cannot issue a waiver for a bulkhead that is greater than 1,000 feet in length along the bank);

(c) The activity will not exceed an average of one cubic yard per running foot, as measured along the length of the treated bank, below the plane of the ordinary high water mark or the high tide line, unless the district engineer waives this criterion by making a written determination concluding that the discharge will result in no more than minimal adverse environmental effects;

(d) The activity does not involve discharges of dredged or fill material into special aquatic sites, unless the district engineer waives this criterion by making a written determination concluding that the discharge will result in no more than minimal adverse environmental effects;

(e) No material is of a type, or is placed in any location, or in any manner, that will impair surface water flow into or out of any waters of the United States;

(f) No material is placed in a manner that will be eroded by normal or expected high flows (properly anchored native trees and treetops may be used in low energy areas);

(g) Native plants appropriate for current site conditions, including salinity, must be used for bioengineering or vegetative bank stabilization;

(h) The activity is not a stream channelization activity; and

(i) The activity must be properly maintained, which may require repairing it after severe storms or erosion events. This NWP authorizes those maintenance and repair activities if they require authorization.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the bank stabilization activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if the bank stabilization activity: (1) involves discharges into special aquatic sites; or (2) is in excess of 500 feet in length; or (3) will involve the discharge of greater than an average of one cubic yard per running foot as measured along the length of the treated bank, below the plane of the ordinary high water mark or the high tide line. (See general condition 32.) (Authorities: Sections 10 and 404)

Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. (a) No NWP activity may occur in a component of the

National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. The permittee shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/.

17. Tribal Rights. No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal lands.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on listed species and critical habitat caused by the NWP activity. Indirect effects are those effects on listed species and critical habitat that are caused by the NWP activity and are later in time, but still are reasonably certain to occur.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed activity or that utilize the designated critical habitat that might be affected by the proposed activity. The district engineer will determine whether the proposed activity "may affect"

or will have “no effect” to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps’ determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have “no effect” on listed species or critical habitat, or until ESA section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word “harm” in the definition of “take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.nmfs.noaa.gov/pr/species/esa/ respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether “incidental take” permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National

Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act. If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed.

(d) For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly

adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district

engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation to ensure that the activity results in no more than minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. Restored riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f)).

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used

by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or

Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____

(Transferee)

_____

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States. If an NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission is not authorized by NWP until the appropriate Corps office issues the section 408 permission to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written

waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. For single and complete linear projects, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-Federal permittees, if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed activity or utilize the designated critical habitat that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-Federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an activity that requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from the Corps office having jurisdiction over that USACE project.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is an NWP PCN and must include all of the applicable information required in paragraphs (b)(1) through (10) of this general condition. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed; (iii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iv) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water

quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

D. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the individual crossings of waters of the United States to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51, 52, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects. For those NWPs that have a waivable 300 linear foot limit for losses of intermittent and ephemeral stream bed and a 1/2-acre limit (i.e., NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52), the loss of intermittent and ephemeral stream bed, plus any other losses of jurisdictional waters and wetlands, cannot exceed 1/2-acre.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by

NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters (e.g., streams). The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) that the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31, or to evaluate PCNs for activities authorized by NWPs 21, 49, and 50), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or

a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

E. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

F. Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term "discharge" means any discharge of dredged or fill material into waters of the United States.

Ecological reference: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a

decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to

offset losses of aquatic functions and services. The loss of stream bed includes the acres or linear feet of stream bed that are filled or excavated as a result of the regulated activity. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

Navigable waters: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas.

Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Protected tribal resources: Those natural resources and properties of traditional or customary religious or cultural importance, either on or off Indian lands, retained by, or reserved

by or for, Indian tribes through treaties, statutes, judicial decisions, or executive orders, including tribal trust resources.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term “single and complete project” is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term “single and complete project” is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by

one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

Tribal lands: Any lands title to which is either: 1) held in trust by the United States for the benefit of any Indian tribe or individual; or 2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a wetland is adjacent to a waterbody determined to be a water of the United States, that

waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of “waterbodies” include streams, rivers, lakes, ponds, and wetlands.

ADDITIONAL INFORMATION

This nationwide permit is effective March 19, 2017, and expires on March 18, 2022.

Information about the U.S. Army Corps of Engineers regulatory program, including nationwide permits, may also be found at http://www.swf.usace.army.mil/Missions/Regulatory.aspx and http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx

2017 NATIONWIDE PERMIT (NWP) REGIONAL CONDITIONS

FOR THE STATE OF TEXAS

The following regional conditions apply within the entire State of Texas:

1. For all discharges proposed for authorization under Nationwide Permits (NWP) 3, 6, 7, 12, 14, 18, 19, 21, 23, 25, 27, 29, 39, 40, 41, 42, 43, 44, 49, 51, and 52, into the following habitat types or specific areas, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32, Pre-Construction Notification (PCN). The Corps of Engineers (Corps) will coordinate with the resource agencies as specified in NWP General Condition 32(d) (PCN). The habitat types or areas are:

    a. Pitcher Plant Bogs: Wetlands typically characterized by an organic surface soil layer and include vegetation such as pitcher plants (*Sarracenia* spp.) and/or sundews (*Drosera* spp.).

    b. Bald Cypress-Tupelo Swamps: Wetlands dominated by bald cypress (*Taxodium distichum*) and/or water tupelo (*Nyssa aquatic*).

2. For all activities proposed for authorization under any Nationwide Permit (NWP) at sites approved as compensatory mitigation sites (either permittee-responsible, mitigation bank and/or in-lieu fee) under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

3. For all activities proposed for authorization under NWP 16, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 (Pre-Construction Notification) and must obtain an individual water quality certification (WQC) from the TCEQ. Work cannot begin under NWP 16 until the applicant has received written approval from the Corps and WQC.

NOTE: For all activities proposing to use equipment that has operated or been stored in a water body on the Texas list of zebra mussel (*Dreissena polymorpha*) infected water bodies, equipment should be decontaminated prior to relocation in accordance with Texas Administrative Code, Title 31, Part 2, Chapter 57, Subchapter A. The following decontamination Best Management Practices (BMPs), as a minimum, are indicated:

    a. Clean: Clean both the inside and outside of equipment and gear, by removing all plants, animals, and mud and thoroughly washing the equipment using a high pressure spray nozzle.

    b. Drain: Drain all water from receptacles before leaving the area, including livewells, bilges, ballast, and engine cooling water on boats.

    c. Dry: Allow time for your equipment to dry completely before relocating in other waters. Equipment should be dried prior to relocation. High temperature pressure washing (greater than or equal to 140F) or professional cleaning may be substituted for drying time.

The following regional condition only applies within the Albuquerque, Fort Worth, and Galveston Districts:

4. For all activities proposed for authorization under Nationwide Permit (NWP) 12 that involve a discharge of fill material associated with mechanized land clearing of wetlands dominated by native woody shrubs, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification prior to commencing the activity. For the purpose of this regional condition, a shrub dominated wetland is characterized by woody vegetation less than 3.0 inches in diameter at breast height but greater than 3.2 feet in height, which covers 20% or more of the area. Woody vines are not included.

The following regional conditions apply within the Albuquerque District.

5. Nationwide Permit (NWP) 23 – Approved Categorical Exclusions. A pre-construction notification (PCN) to the District Engineer in accordance with General Condition 32 - PCN is required for all proposed activities under NWP 23.

6. Nationwide Permit (NWP) 27 – Aquatic Habitat Restoration, Establishment, and Enhancement Activities. For all proposed activities under NWP 27 that require pre-construction notification, a monitoring plan commensurate with the scale of the proposed restoration project and the potential for risk to the aquatic environment must be submitted to the Corps. (See “NWP 27 Guidelines” at http://www.spa.usace.army.mil/Missions/RegulatoryProgramandPermits/NWP.aspx).

7. Channelization. Nationwide Permit (NWP) General Condition 9 for Management of Water Flows is amended to add the following: Projects that would result in permanent channelization to previously un-channelized streams require pre-construction notification to the Albuquerque District Engineer in accordance with NWP General Condition 32 – Pre-Construction Notification.

8. Dredge and Fill Activities in Intermittent and Perennial Streams, and Special Aquatic Sites: For all activities subject to regulation under the Clean Water Act Section 404 in intermittent and perennial streams, and special aquatic sites (including wetlands, riffle and pool complexes, and sanctuaries and refuges), pre-construction notification (PCN) to the Albuquerque District Engineer is required in accordance with Nationwide Permit General Condition 32 - PCN.

9. Springs. For all discharges of dredged or fill material within 100 feet of the point of groundwater discharge of natural springs located in an aquatic resource, a pre-construction notification (PCN) is required to the Albuquerque District Engineer in accordance with Nationwide Permit General Condition 32 - PCN. A natural spring is defined as any location where ground water emanates from a point in the ground and has a defined surface water connection to another waters of the United States. For purposes of this regional condition, springs do not include seeps or other groundwater discharges which lack a defined surface water connection.

10. Suitable Fill. Use of broken concrete as fill or bank stabilization material is prohibited unless the applicant demonstrates that its use is the only practicable material (with respect to cost, existing technology, and logistics). Any applicant who wishes to use broken concrete as bank stabilization must provide notification to the Albuquerque District Engineer in accordance with Nationwide Permit General Condition 32 - Pre-Construction Notification along with justification for such use. Use of broken concrete with rebar or used tires (loose or formed into bales) is prohibited in all waters of the United States.

The following regional conditions apply only within the Fort Worth District.

11. For all discharges proposed for authorization under all Nationwide Permits (NWP) into the area of Caddo Lake within Texas that is designated as a "Wetland of International Importance" under the Ramsar Convention, the applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification (PCN). The Fort Worth District will coordinate with the resource agencies as specified in NWP General Condition 32(d) - PCN.

12. Compensatory mitigation is generally required for losses of waters of the United States that exceed 1/10 acre and/or for all losses to streams that exceed 300 linear feet. Loss is defined in Section F of the Nationwide Permits (NWP). Mitigation thresholds are cumulative irrespective of aquatic resource type at each single and complete crossing. Compensatory mitigation requirements will be determined in accordance with the appropriate district standard operating procedures and processes. The applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

13. For all activities proposed for authorization under Nationwide Permits (NWP) 12, 14 and/or 33 that involve a temporary discharge of fill material into 1/2 acre or more of emergent wetland OR 1/10 acre of scrub-shrub/forested wetland, the applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

14. For all discharges proposed for authorization under Nationwide Permits (NWP) 51 and 52, the Fort Worth District will provide the pre-construction notification (PCN) to the U.S. Fish and Wildlife Service as specified in NWP General Condition 32(d)(2) - PCN for its review and comments.

The following regional conditions apply only within the Galveston District.

15. No Nationwide Permits (NWP), except NWP 3, shall be used to authorize discharges into the habitat types or specific areas listed in paragraphs a through c, below. The applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity under NWP 3.

a. Mangrove Marshes. For the purpose of this regional condition, Mangrove marshes are those waters of the United States that are dominated by mangroves (*Avicennia* spp., *Laguncuaria* spp., *Conocarpus* spp., and *Rhizophora* spp.).
b. Coastal Dune Swales. For the purpose of this regional condition, coastal dune swales are wetlands and/or other waters of the United States located within the backshore and dune areas in the coastal zone of Texas. They are formed as depressions within and among multiple beach ridge barriers, dune complexes, or dune areas adjacent to beaches fronting tidal waters of the United States.
c. Columbia Bottomlands. For the purpose of this regional condition, Columbia bottomlands are defined as waters of the United States that are dominated by bottomland hardwoods in the Lower Brazos and San Bernard River basins identified in the 1997 Memorandum of Agreement between the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, Natural Resource Conservation Service, and Texas Parks and Wildlife Department for bottomland hardwoods in Brazoria County. (For further information, see http://www.swg.usace.army.mil/Business-With-Us/Regulatory/Permits/Nationwide-General-Permits/)

16. A Compensatory Mitigation Plan is required for all special aquatic site losses, as defined in Section F of the Nationwide Permits (NWP), that exceed 1/10 acre and/or for all losses to streams that exceed 200 linear feet. Compensatory mitigation requirements will be determined in accordance with the appropriate district standard operating procedures and processes. The applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

17. For all seismic testing activities proposed for authorization under Nationwide Permit (NWP) 6, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification (PCN). The PCN must state the time period for which the temporary fill is proposed, and must include a restoration plan for the special aquatic sites. For seismic testing under NWP 6 within the Cowardin Marine System, Subtidal Subsystem; as defined by the U.S. Fish and Wildlife Service, Classification of Wetlands and Deepwater Habitats of the United States, December 1979/Reprinted 1992, the Corps will coordinate with the resource agencies in accordance with NWP General Condition 32(d) - PCN.

18. For all activities proposed under Nationwide Permits (NWP) 10 and 11 located in vegetated shallows and coral reefs; as defined by 40 CFR 230.43 and 230.44 respectively, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification. Examples include, but are not limited to: seagrass beds, oyster reefs, and coral reefs.

19. Nationwide Permit 12 shall not be used to authorize discharges within 500 feet of vegetated shallows and coral reefs; as defined by 40 CFR 230.43 and 230.44 respectively. Examples include, but are not limited to: seagrass beds, oyster reefs, and coral reefs.

20. For all activities proposed for authorization under Nationwide Permit 12 that involve underground placement below a non-navigable river bed and/or perennial stream bed there shall a minimum cover of 48 inches (1,219 millimeters) of soil below the river and/or perennial stream thalweg.

21. For all discharges and work proposed below the high tide line under Nationwide Permits (NWP) 14 and 18, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification (PCN). The Galveston District will coordinate with the resource agencies in accordance with NWP General Condition 32(d) - PCN.

22. For all activities proposed for authorization under Nationwide Permit (NWP) 33 the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification (PCN). The PCN must include a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions. Activities causing the temporary loss, as defined in Section F of the NWPs, of more than 0.5 acres of tidal waters and/or 200 linear feet of stream will be coordinated with the agencies in accordance with NWP General Condition 32(d) - PCN.

23. No Nationwide Permits (NWP), except NWPs 3, 16, 20, 22, 37, shall be used to authorize discharges, structures, and/or fill within the standard setback and high hazard zones of the Sabine-Neches Waterway as defined in the Standard Operating Procedure - Permit Setbacks along the Sabine-Neches Waterway. The applicant shall notify the Galveston District Engineer in accordance with NWP General Condition 32 - Pre-Construction Notification for all discharge, structures and/or work in medium hazard zones and all NWP 3 applications within the standard setback and high hazard zones of the Sabine-Neches Waterway.

24. No Nationwide Permits (NWP), except 20, 22, and 37, shall be used to authorize discharges, structures, and/or fill within the standard setback exemptions of the Gulf Intracoastal Waterway as defined in the Standard Operating Procedure- Department of the Army Permit Evaluation Setbacks along the Gulf Intracoastal Waterway. The applicant shall notify the Galveston District Engineer in accordance with NWP General Condition 32 (Pre-Construction Notification) for all discharges, structures and/or work within the standard setback, shoreward of the standard setback, and/or standard setback exemption zones.

25. The use of Nationwide Permits in the San Jacinto River Waste Pits Area of Concern are revoked. (For further information, see http://www.swg.usace.army.mil/Business-With-Us/Regulatory/Permits/Nationwide-General-Permits/)

26. The use of Nationwide Permits 51 and 52 are revoked within the Galveston District boundaries.

27. Nationwide Permit (NWP) 53 pre-construction notifications will be coordinated with resource agencies as specified in NWP General Condition 32(d) – Pre-construction Notification.

28. For all activities proposed under Nationwide Permits (NWP) 21, 29, 39, 40, 42, 43, 44, and 50 that result in greater than 300 feet of loss in intermittent and/or ephemeral streams, as defined in Section F of the NWPs, require evaluation under an Individual Permit.

The following regional conditions apply only within the Tulsa District.

29. Upland Disposal: Except where authorized by Nationwide Permit 16, material disposed of in uplands shall be placed in a location and manner that prevents discharge of the material and/or return water into waters or wetlands unless otherwise authorized by the Tulsa District Engineer.

30. Major Rivers: The prospective permittee shall notify the Tulsa District Engineer for all Nationwide Permit 14 verifications which cross major rivers within Tulsa District. For the purposes of this condition, major rivers include the following: Canadian River, Prairie Dog Town Fork of the Red River, and Red River.

NATIONWIDE PERMIT 14

Linear Transportation Projects

Effective Date: March 19, 2017

(NWP Final Notice, 82 FR 4)

14. Linear Transportation Projects. Activities required for crossings of waters of the United States associated with the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) the loss of waters of the United States exceeds 1/10-acre; or (2) there is a discharge in a special aquatic site, including wetlands. (See general condition 32.) (Authorities: Sections 10 and 404)

Note 1: For linear transportation projects crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Linear transportation projects must comply with 33 CFR 330.6(d).

Note 2: Some discharges for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under section 404(f) of the Clean Water Act (see 33 CFR 323.4).

Note 3: For NWP 14 activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, “District Engineer’s Decision.” The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible

inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. The permittee shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/.

17. Tribal Rights. No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal lands.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on listed species and critical habitat caused by the NWP activity. Indirect effects are those effects on listed species and critical habitat that are caused by the NWP activity and are later in time, but still are reasonably certain to occur.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed activity or that utilize the designated critical habitat that might be affected by the proposed activity. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have "no effect" on listed species or critical habitat, or until ESA section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.nmfs.noaa.gov/pr/species/esa/ respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act. If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been

submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed.

(d) For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects

historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation to ensure that the activity results in no more than minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. Restored riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f)).

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____

(Transferee)

_____

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States. If an NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission is not authorized by NWP until the appropriate Corps office issues the section 408 permission to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. For single and complete linear projects, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-Federal permittees, if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed activity or utilize the designated critical habitat that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-Federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an activity that requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from the Corps office having jurisdiction over that USACE project.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is an NWP PCN and must include all of the applicable information required in paragraphs (b)(1) through (10) of this general condition. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed; (iii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iv) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions

of the NWPs, including the need for mitigation to ensure the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

D. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the individual crossings of waters of the United States to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51, 52, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects. For those NWPs that have a waivable 300 linear foot limit for losses of intermittent and ephemeral stream bed and a 1/2-acre limit (i.e., NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52), the loss of intermittent and ephemeral stream bed, plus any other losses of jurisdictional waters and wetlands, cannot exceed 1/2-acre.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an

appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters (e.g., streams). The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) that the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31, or to evaluate PCNs for activities authorized by NWPs 21, 49, and 50), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

E. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

F. Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term "discharge" means any discharge of dredged or fill material into waters of the United States.

Ecological reference: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the acres or linear feet of stream bed that are filled or excavated as a result of the regulated activity. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

Navigable waters: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas.

Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Protected tribal resources: Those natural resources and properties of traditional or customary religious or cultural importance, either on or off Indian lands, retained by, or reserved by or for, Indian tribes through treaties, statutes, judicial decisions, or executive orders, including tribal trust resources.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term “single and complete project” is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term “single and complete project” is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of “independent utility”). Single and complete non-linear projects may not be “piecemealed” to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

Tribal lands: Any lands title to which is either: 1) held in trust by the United States for the benefit of any Indian tribe or individual; or 2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

ADDITIONAL INFORMATION

This nationwide permit is effective March 19, 2017, and expires on March 18, 2022.

Information about the U.S. Army Corps of Engineers regulatory program, including nationwide permits, may also be

found at http://www.swf.usace.army.mil/Missions/Regulatory.aspx and
http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx

2017 NATIONWIDE PERMIT (NWP) REGIONAL CONDITIONS

FOR THE STATE OF TEXAS

The following regional conditions apply within the entire State of Texas:

1. For all discharges proposed for authorization under Nationwide Permits (NWP) 3, 6, 7, 12, 14, 18, 19, 21, 23, 25, 27, 29, 39, 40, 41, 42, 43, 44, 49, 51, and 52, into the following habitat types or specific areas, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32, Pre-Construction Notification (PCN). The Corps of Engineers (Corps) will coordinate with the resource agencies as specified in NWP General Condition 32(d) (PCN). The habitat types or areas are:

    a. Pitcher Plant Bogs: Wetlands typically characterized by an organic surface soil layer and include vegetation such as pitcher plants (*Sarracenia* spp.) and/or sundews (*Drosera* spp.).

    b. Bald Cypress-Tupelo Swamps: Wetlands dominated by bald cypress (*Taxodium distichum*) and/or water tupelo (*Nyssa aquatic*).

2. For all activities proposed for authorization under any Nationwide Permit (NWP) at sites approved as compensatory mitigation sites (either permittee-responsible, mitigation bank and/or in-lieu fee) under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

3. For all activities proposed for authorization under NWP 16, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 (Pre-Construction Notification) and must obtain an individual water quality certification (WQC) from the TCEQ. Work cannot begin under NWP 16 until the applicant has received written approval from the Corps and WQC.

NOTE: For all activities proposing to use equipment that has operated or been stored in a water body on the Texas list of zebra mussel (*Dreissena polymorpha*) infected water bodies, equipment should be decontaminated prior to relocation in accordance with Texas Administrative Code, Title 31, Part 2, Chapter 57, Subchapter A. The following decontamination Best Management Practices (BMPs), as a minimum, are indicated:

    a. Clean: Clean both the inside and outside of equipment and gear, by removing all plants, animals, and mud and thoroughly washing the equipment using a high pressure spray nozzle.

    b. Drain: Drain all water from receptacles before leaving the area, including livewells, bilges, ballast, and engine cooling water on boats.

    c. Dry: Allow time for your equipment to dry completely before relocating in other waters. Equipment should be dried prior to relocation. High temperature pressure washing (greater than or equal to 140F) or professional cleaning may be substituted for drying time.

The following regional condition only applies within the Albuquerque, Fort Worth, and Galveston Districts:

4. For all activities proposed for authorization under Nationwide Permit (NWP) 12 that involve a discharge of fill material associated with mechanized land clearing of wetlands dominated by native woody shrubs, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification prior to commencing the activity. For the purpose of this regional condition, a shrub dominated wetland is characterized by woody vegetation less than 3.0 inches in diameter at breast height but greater than 3.2 feet in height, which covers 20% or more of the area. Woody vines are not included.

The following regional conditions apply within the Albuquerque District.

5. Nationwide Permit (NWP) 23 – Approved Categorical Exclusions. A pre-construction notification (PCN) to the District Engineer in accordance with General Condition 32 - PCN is required for all proposed activities under NWP 23.

6. Nationwide Permit (NWP) 27 – Aquatic Habitat Restoration, Establishment, and Enhancement Activities. For all proposed activities under NWP 27 that require pre-construction notification, a monitoring plan commensurate with the scale of the proposed restoration project and the potential for risk to the aquatic environment must be submitted to the Corps. (See “NWP 27 Guidelines” at http://www.spa.usace.army.mil/Missions/RegulatoryProgramandPermits/NWP.aspx).

7. Channelization. Nationwide Permit (NWP) General Condition 9 for Management of Water Flows is amended to add the following: Projects that would result in permanent channelization to previously un-channelized streams require pre-construction notification to the Albuquerque District Engineer in accordance with NWP General Condition 32 – Pre-Construction Notification.

8. Dredge and Fill Activities in Intermittent and Perennial Streams, and Special Aquatic Sites: For all activities subject to regulation under the Clean Water Act Section 404 in intermittent and perennial streams, and special aquatic sites (including wetlands, riffle and pool complexes, and sanctuaries and refuges), pre-construction notification (PCN) to the Albuquerque District Engineer is required in accordance with Nationwide Permit General Condition 32 - PCN.

9. Springs. For all discharges of dredged or fill material within 100 feet of the point of groundwater discharge of natural springs located in an aquatic resource, a pre-construction notification (PCN) is required to the Albuquerque District Engineer in accordance with Nationwide Permit General Condition 32 - PCN. A natural spring is defined as any location where ground water emanates from a point in the ground and has a defined surface water connection to another waters of the United States. For purposes of this regional condition, springs do not include seeps or other groundwater discharges which lack a defined surface water connection.

10. Suitable Fill. Use of broken concrete as fill or bank stabilization material is prohibited unless the applicant demonstrates that its use is the only practicable material (with respect to cost, existing technology, and logistics). Any applicant who wishes to use broken concrete as bank stabilization must provide notification to the Albuquerque District Engineer in accordance with Nationwide Permit General Condition 32 - Pre-Construction Notification along with justification for such use. Use of broken concrete with rebar or used tires (loose or formed into bales) is prohibited in all waters of the United States.

The following regional conditions apply only within the Fort Worth District.

11. For all discharges proposed for authorization under all Nationwide Permits (NWP) into the area of Caddo Lake within Texas that is designated as a "Wetland of International Importance" under the Ramsar Convention, the applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification (PCN). The Fort Worth District will coordinate with the resource agencies as specified in NWP General Condition 32(d) - PCN.

12. Compensatory mitigation is generally required for losses of waters of the United States that exceed 1/10 acre and/or for all losses to streams that exceed 300 linear feet. Loss is defined in Section F of the Nationwide Permits (NWP). Mitigation thresholds are cumulative irrespective of aquatic resource type at each single and complete crossing. Compensatory mitigation requirements will be determined in accordance with the appropriate district standard operating procedures and processes. The applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

13. For all activities proposed for authorization under Nationwide Permits (NWP) 12, 14 and/or 33 that involve a temporary discharge of fill material into 1/2 acre or more of emergent wetland OR 1/10 acre of scrub-shrub/forested wetland, the applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

14. For all discharges proposed for authorization under Nationwide Permits (NWP) 51 and 52, the Fort Worth District will provide the pre-construction notification (PCN) to the U.S. Fish and Wildlife Service as specified in NWP General Condition 32(d)(2) - PCN for its review and comments.

The following regional conditions apply only within the Galveston District.

15. No Nationwide Permits (NWP), except NWP 3, shall be used to authorize discharges into the habitat types or specific areas listed in paragraphs a through c, below. The applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity under NWP 3.

a. Mangrove Marshes. For the purpose of this regional condition, Mangrove marshes are those waters of the United States that are dominated by mangroves (*Avicennia* spp., *Laguncuaria* spp., *Conocarpus* spp., and *Rhizophora* spp.).
b. Coastal Dune Swales. For the purpose of this regional condition, coastal dune swales are wetlands and/or other waters of the United States located within the backshore and dune areas in the coastal zone of Texas. They are formed as depressions within and among multiple beach ridge barriers, dune complexes, or dune areas adjacent to beaches fronting tidal waters of the United States.
c. Columbia Bottomlands. For the purpose of this regional condition, Columbia bottomlands are defined as waters of the United States that are dominated by bottomland hardwoods in the Lower Brazos and San Bernard River basins identified in the 1997 Memorandum of Agreement between the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, Natural Resource Conservation Service, and Texas Parks and Wildlife Department for bottomland hardwoods in Brazoria County. (For further information, see http://www.swg.usace.army.mil/Business-With-Us/Regulatory/Permits/Nationwide-General-Permits/)

16. A Compensatory Mitigation Plan is required for all special aquatic site losses, as defined in Section F of the Nationwide Permits (NWP), that exceed 1/10 acre and/or for all losses to streams that exceed 200 linear feet. Compensatory mitigation requirements will be determined in accordance with the appropriate district standard operating procedures and processes. The applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

17. For all seismic testing activities proposed for authorization under Nationwide Permit (NWP) 6, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification (PCN). The PCN must state the time period for which the temporary fill is proposed, and must include a restoration plan for the special aquatic sites. For seismic testing under NWP 6 within the Cowardin Marine System, Subtidal Subsystem; as defined by the U.S. Fish and Wildlife Service, Classification of Wetlands and Deepwater Habitats of the United States, December 1979/Reprinted 1992, the Corps will coordinate with the resource agencies in accordance with NWP General Condition 32(d) - PCN.

18. For all activities proposed under Nationwide Permits (NWP) 10 and 11 located in vegetated shallows and coral reefs; as defined by 40 CFR 230.43 and 230.44 respectively, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification. Examples include, but are not limited to: seagrass beds, oyster reefs, and coral reefs.

19. Nationwide Permit 12 shall not be used to authorize discharges within 500 feet of vegetated shallows and coral reefs; as defined by 40 CFR 230.43 and 230.44 respectively. Examples include, but are not limited to: seagrass beds, oyster reefs, and coral reefs.

20. For all activities proposed for authorization under Nationwide Permit 12 that involve underground placement below a non-navigable river bed and/or perennial stream bed there shall a minimum cover of 48 inches (1,219 millimeters) of soil below the river and/or perennial stream thalweg.

21. For all discharges and work proposed below the high tide line under Nationwide Permits (NWP) 14 and 18, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification (PCN). The Galveston District will coordinate with the resource agencies in accordance with NWP General Condition 32(d) - PCN.

22. For all activities proposed for authorization under Nationwide Permit (NWP) 33 the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification (PCN). The PCN must include a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions. Activities causing the temporary loss, as defined in Section F of the NWPs, of more than 0.5 acres of tidal waters and/or 200 linear feet of stream will be coordinated with the agencies in accordance with NWP General Condition 32(d) - PCN.

23. No Nationwide Permits (NWP), except NWPs 3, 16, 20, 22, 37, shall be used to authorize discharges, structures, and/or fill within the standard setback and high hazard zones of the Sabine-Neches Waterway as defined in the Standard Operating Procedure - Permit Setbacks along the Sabine-Neches Waterway. The applicant shall notify the Galveston District Engineer in accordance with NWP General Condition 32 - Pre-Construction Notification for all discharge, structures and/or work in medium hazard zones and all NWP 3 applications within the standard setback and high hazard zones of the Sabine-Neches Waterway.

24. No Nationwide Permits (NWP), except 20, 22, and 37, shall be used to authorize discharges, structures, and/or fill within the standard setback exemptions of the Gulf Intracoastal Waterway as defined in the Standard Operating Procedure- Department of the Army Permit Evaluation Setbacks along the Gulf Intracoastal Waterway. The applicant shall notify the Galveston District Engineer in accordance with NWP General Condition 32 (Pre-Construction Notification) for all discharges, structures and/or work within the standard setback, shoreward of the standard setback, and/or standard setback exemption zones.

25. The use of Nationwide Permits in the San Jacinto River Waste Pits Area of Concern are revoked. (For further information, see http://www.swg.usace.army.mil/Business-With-Us/Regulatory/Permits/Nationwide-General-Permits/)

26. The use of Nationwide Permits 51 and 52 are revoked within the Galveston District boundaries.

27. Nationwide Permit (NWP) 53 pre-construction notifications will be coordinated with resource agencies as specified in NWP General Condition 32(d) – Pre-construction Notification.

28. For all activities proposed under Nationwide Permits (NWP) 21, 29, 39, 40, 42, 43, 44, and 50 that result in greater than 300 feet of loss in intermittent and/or ephemeral streams, as defined in Section F of the NWPs, require evaluation under an Individual Permit.

The following regional conditions apply only within the Tulsa District.

29. Upland Disposal: Except where authorized by Nationwide Permit 16, material disposed of in uplands shall be placed in a location and manner that prevents discharge of the material and/or return water into waters or wetlands unless otherwise authorized by the Tulsa District Engineer.

30. Major Rivers: The prospective permittee shall notify the Tulsa District Engineer for all Nationwide Permit 14 verifications which cross major rivers within Tulsa District. For the purposes of this condition, major rivers include the following: Canadian River, Prairie Dog Town Fork of the Red River, and Red River.