



DEPARTMENT OF THE ARMY  
SOUTHWESTERN DIVISION, CORPS OF ENGINEERS  
1100 COMMERCE STREET  
DALLAS TX 75242-0216

REPLY TO  
ATTENTION OF

CESWD-CMP-P (1105)

17 July 2003

MEMORANDUM FOR Commander, Fort Worth District

SUBJECT: Pecan Bayou Watershed, Brownwood, Texas

1. References:

a. Memorandum, CESWF-PM-C, dated 20 May 2002, Subject: Pecan Bayou, Brownwood, Texas (074799)-Final Feasibility Report.

b. E-mail, CESWD-TMR, dated 26 March 2003, Subject: Approval of Real Estate Plan-Pecan Bayou (Willis Creek Channel Improvement), TX , Section 205 Project.

c. E-mail, CESWF-PM-C, dated 31 March 2003, Subject: Pecan Bayou – Revised Pages.

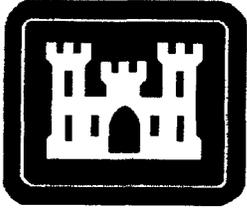
2. The Pecan Bayou Watershed, Brownwood, Texas, Interim Feasibility Report and Integrated Environmental Assessment is approved. The report recommends constructing the project under Section 205 of the Continuing Authority Program.

3. The date of this memorandum will serve as the official date of converting the Pecan Bayou Watershed, TX, study from the General Investigation Program to the Construction General Program. Fort Worth District may initiate the plans and specification phase of the Willis Creek Channel Improvement, Brownwood, TX, Section 205 study with funds provided in the 1 May 2003 work allowance.

4. If you have any questions, please contact Mr. John Gerrity, CESWD-CMP-P, at (214) 767-2310. Questions regarding funds should be directed to Mrs. Gwendolyn Albert, CESWD-CMP-P, at (214) 767-2309.

  
MICHAEL L. SCHULTZ  
Colonel, EN  
Acting Commander

CF : CESWF-PER-P  
CMP-P/Albert



**US Army Corps  
of Engineers**  
Fort Worth District

**FINAL  
INTERIM FEASIBILITY REPORT  
AND  
INTEGRATED ENVIRONMENTAL ASSESSMENT**

**PECAN BAYOU WATERSHED  
BROWNWOOD, TEXAS**

**February 2003**

## NON-FEDERAL FINANCIAL PLANNING

The purpose of strategic financial planning is to optimize the use of capital over time in response to long-term financial goals. The three principal elements involved include cost recovery alternatives, selection of the preferred financing alternative, and implementation of the cost recovery approach. Although financing decisions are ultimately the sponsors', the Corps of Engineers can assist in the decision making process through the provision of timely information on costs, benefits, and cost recovery opportunities. The sponsor is responsible for making arrangements to finance the project sufficiently in advance of construction to enable the project schedule to be met. A financial capability assessment of the non-Federal Sponsor is required prior to execution of the Plan and Specification Phase. The City has indicated that funding for the proposed project would be through issuance of a General Obligation Bond. Maintenance and Operations costs would be covered through the City's annual budget.

## ABILITY-TO-PAY ANALYSIS

Based on ER 1165-2-121, an ability-to pay test should be applied to all flood control projects. The test determined the eligibility of the study area to qualify for a reduction in the amount to be cost shared by the non-Federal interest. To qualify for a reduction, the results of both the benefit and income portions of the twofold ability-to-pay test must fall within the specified guidelines.

The benefits' test determines the maximum reduction, called the "benefits based floor" (BBF), in the level of non-Federal cost sharing for any project. The factor is determined by dividing the project B/C ratio by four. If the factor (expressed as a percentage) is less than the standard level of cost sharing, the project may be eligible for a reduction in the non-Federal share to this BBF. The WRDA 86 authorized cost share level for the Flood Protection project is 25 percent. The Recommended Plan's B/C ratio of 2.0 was divided by four to yield a BBF of .50 or 50 percent.

The income test determines qualification for the reduction calculated in the benefit step. Qualification depends on a measure of the current economic resources of both the project area and the State in which the project is located.

In accordance with factors released in Economic Guidance 96-4, the income index factors for the state of Texas and Brown County are 90.81 and 102.77, respectively. The Eligibility Factor (EF) for a flood control project is calculated according to the following formula:

$$\begin{aligned} EF &= a - b_1 * (\text{State factor}) - b_2 * (\text{area factor}) \text{ where:} \\ a &= 15.86794 \\ b_1 &= 0.06771 \\ b_2 &= 0.13543 \end{aligned}$$

Using the above formula, an EF of -4.2 was calculated for the city of Brownwood. An EF below zero indicates ineligibility for a reduction in construction cost sharing. As stated previously, a BBF factor for the investigated plan was calculated at 50 percent. To qualify for a reduction, the BBF factor must be less than the authorized level of cost sharing in accordance with ER-1165-2-121 paragraph 5a(2). The city of Brownwood does not meet the criteria for a reduction in construction cost since this project meets neither test. Therefore, the city of Brownwood must pay the currently authorized cost share level.

## RECOMMENDATIONS

As indicated earlier, the primary planning objective for this feasibility level investigation was to determine the most economically and environmentally feasible plan to substantially alleviate the flooding problems within the Pecan Bayou watershed within the city of Brownwood.

The National Economic Development Plan (NED) identified in this investigation would consist of 15,680 feet of hydraulic channel improvement of Willis Creek within the city of Brownwood. The improvement would consist of reshaping the existing channel into a grass-lined trapezoidal channel with side slopes of 1 vertical to 3.5 horizontal with a bottom width of 40 feet with pilot channel. The channel

depth would vary between 4 and 11 feet deep with the top varying between 40 to 135 feet wide. A diversion channel will be constructed approximately 1200 feet downstream of 14<sup>th</sup> Street Bridge to the 4<sup>th</sup> Street Bridge. The improvement will also require box culvert modifications to the 14<sup>th</sup> Street Bridge and 4<sup>th</sup> Street Bridge, side slope modifications at Austin Avenue Bridge, and some storm drain and utility relocations. Riprap will be placed at the bridge approaches for erosion protection. Environmental mitigation measures would consist of bypassing several oxbows and allowing them to serve as wildlife habitat and wetlands. Approximately 102.1 acres of reforestation/prairie restoration will be undertaken to replace the habitat removed by the channel excavation.

## **CONCLUSIONS**

The following conclusions and recommendations are made in connection with the study findings of these investigations:

1. A significant need for a local flood damage reduction project within the Willis Creek, Brownwood, study area exists. This plan would reduce expected annual damages of by 92 percent; eliminate all damages caused by the 10 percent ACE event and nearly 90 percent of the damages caused by the 1-percent event.
2. The overall flood damage reduction plan would have estimated first costs of \$8,270,190, annual cost of \$574,000, net benefits of about \$313,600, and a benefit-to-cost ratio of 1.55.
3. The city of Brownwood was identified as the local sponsor for construction of the project. Federal and non-Federal cost apportionments for the Recommended Plan were estimated at \$4,135,095 (50%) Federal and \$4,135,095 (50%) non-Federal.
4. The Recommended Plan will cause no significant environmental impacts within the study area. A Finding of No Significant Impacts (FONSI) has been prepared and is included herein. Distribution of this report, including the FONSI, was made to the public for review on August 03, 2001.
5. The City of Brownwood has provided a letter dated December 18, 2001 requesting the Corps of Engineers to begin the Plans and Specifications phase of the project.
6. The City of Brownwood has provided a letter dated April 19, 2002 indicating that their portion of funding for the proposed project would be through the issuance of a General Obligation Bond by public vote. Maintenance and Operation costs would be covered through the City's annual budget.

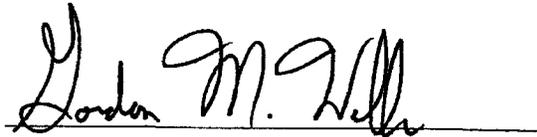
## **RECOMMENDATIONS**

I offer the following recommendations:

1. The flood damage reduction measures identified as the Recommended Plan for the Willis Creek, Brownwood, study area be authorized for construction.
2. Prior to project implementation, the non-Federal sponsor shall enter into a binding agreement with the Secretary of the Army to perform the items of local cooperation, as specified in this document.
3. This recommended project be converted from the General Investigations Program authority to the Continuing Authority Program authority due to the project cost, size, and scope. This will allow for a more timely implementation of the project.

Revised February 2003

The above recommendations contained herein reflect the information available at this time and current Departmental policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national Civil Works construction program nor the perspective of higher review levels within the Executive Branch. Consequently, the recommendations may be modified before they are transmitted to the Congress as proposals for authorization and implementation funding. However prior to transmittal to the Congress, the sponsor, the State, interested Federal agencies, and other parties will be advised of any modifications and will be afforded an opportunity to comment further.

A handwritten signature in black ink, reading "Gordon M. Wells", is written over a solid horizontal line.

Gordon M. Wells  
Colonel, Corps of Engineers, Fort Worth District  
Commander and District Engineer

**FINDING OF NO SIGNIFICANT IMPACT  
Local Flood Protection Project (Section 205)  
WILLIS CREEK, BROWNWOOD, TEXAS**

Willis Creek originates about five miles southwest of Brownwood, Texas, and flows generally north and then east, passing through the southern Brownwood, to its confluence with Pecan Bayou southeast of the city. The watershed has a drainage area of 28.4 square miles. At the request of Brownwood, the U.S. Army Corps of Engineers initiated studies under the authority of Section 205 of the Flood Control Act of 1948, as amended, to evaluate potential solutions to flooding problems associated with Willis Creek within the city limits of Brownwood.

Structural and nonstructural alternatives that were evaluated for consideration included flood regulation, flood forecasting and warning, flood proofing, flood plain management, permanent relocation, detention ponds, levees, hydraulic channels, and bridge relocations. The hydraulic channel was the only alternative that proved economically, technically, and socially feasible. Hydraulic channels with bottom widths of 10, 20, 45, and 60 feet were evaluated for further consideration. A 40-foot bottom width hydraulic channel alternative approximately 15,680 long was incrementally selected as the Recommended Plan.

The proposed plan for Willis Creek local flood damage reduction would be a hydraulic channel improvement approximately 15,680 feet long beginning near Asbury Street, and extending approximately 6,400-feet downstream (about 1,200 feet downstream of 14<sup>th</sup> Street.) At this point, a diversion channel would be excavated across an open field, reconnecting to Willis Creek about 2,000-feet downstream (approximately 500-feet upstream of 4<sup>th</sup> Street). The improved channel would proceed 7,880-feet to the downstream terminus of the plan. The improved channel, including the diversion channel would have an average bottom width of 40-feet, with side slopes of 1 vertical on 3.5 horizontal. The plan would require modifications to two box culvert crossings. The four existing 8-foot by 6-foot culverts at 14<sup>th</sup> Street would be replaced with eight 10-foot by 10-foot culverts. Three 10-foot by 8-foot culverts would be added to the four existing 10-foot by 8-foot culverts on 4<sup>th</sup> Street. Riprap would be placed at the bridge approaches for erosion protection. Approximately 545-feet of different types of storm drain (reinforced concrete and galvanized pipe) would be extended. In addition, approximately 1,581-feet of various sanitary sewer, water, and gas utility lines would be relocated.

This plan reduces expected annual damages by 92 percent; eliminates all damages caused by the 10 percent ACE event and nearly 90 percent of the damages caused by the 1-percent event.

The Recommended Plan and other feasible alternatives were evaluated for impacts to cultural resources and the natural and human environment. As proposed, The Recommended Plan would have no adverse affects on cultural resources, beneficial affects to the human environment by providing flood protection, and adverse affects to the terrestrial and aquatic ecosystem of Willis Creek. The Recommended Plan would adversely affect an estimated 15.9 acres of old field and 31.7 acres of forested habitat.

During public review of the draft Feasibility Report/Environmental Assessment, comments by the TNRCC led to the development of a revised aquatic mitigation plan. This plan and minor modification of the terrestrial mitigation plan as described in the Feasibility Report/Environmental Assessment was fully coordinated with TNRCC. The TNRCC subsequently issued a water quality certification under Section 401(a) of the Clean Water Act as a result of the inclusion of the aquatic and terrestrial mitigation plans to the report.

The possible consequences of the recommended plan have been considered in accordance with Sections 404 and 401 of the Clean Water Act. The Recommended Plan would result in adverse affects to approximately 13,336 linear feet of channel and 9.1 acres of waters of the United States. On the basis of the guidelines set forth in ER 1105-2-100 and 40 CFR Part 230 for a Section 404(b)(1) evaluation (Guidelines for Specification of Disposal Sites for Dredged or Fill Material), the recommended plan for the Willis Creek Flood Damage Reduction Project would be specified as complying with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects to the aquatic ecosystem and to implement and abide by the mitigation plan in this document. The proposed project is in compliance with Section 401 of the Clean Water Act.

Based upon the Environmental Assessment and results of coordination, I have concluded that the proposed action would not have a significant adverse affects on the human or natural environment. Consequently, construction of the proposed project would not constitute a major Federal action of sufficient magnitude to warrant the preparation of an Environmental Impact Statement.

1 April 2002

Date



Gordon M. Wells  
Colonel, Corps of Engineers  
District Engineer