



DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
CIVIL WORKS
108 ARMY PENTAGON
WASHINGTON DC 20310-0108

09 NOV 1998

REPLY TO
ATTENTION OF

MEMORANDUM FOR DIRECTOR OF CIVIL WORKS

SUBJECT: Dallas Floodway Extension, Dallas, Texas

We have evaluated your request to recommend a Standard Project Flood (SPF) level of protection for the subject project. The basis for our evaluation is your memorandum dated August 18, 1998, and supplemental data provided by your Planning Division.

The Dallas Floodway Extension Project was authorized by Section 301 of the River and Harbor and Flood Control Act of 1965. The project would extend from the existing Dallas Floodway downstream about 9 miles to Five Mike Creek. The project developed in the current General Reevaluation Report includes a chain of wetlands plus setback levees along both banks of the Trinity River. Except for the levee protecting the Cadillac Heights neighborhood, all the levees provide a SPF level of protection at a high degree of reliability. The Cadillac Heights levee would only provide 100-year level of protection at a 34 percent reliability.

I concur in your recommendation to provide SPF protection for the entire Dallas Floodway Extension project for the following reasons. First, the alternative levee for the Cadillac Heights neighborhood does not meet Federal Emergency Management Agency standards for protecting the area from a 100-year flood, nor does it provide an acceptable level of reliability, particularly when compared with other project elements. Second, the alternative levee for Cadillac Heights exposes this area to increased flooding due to the construction of other project levees. Exposing this minority and low-income community to the disproportionately high and adverse impacts of such flooding is not appropriate. Finally, Congress has already authorized the project, including the Cadillac Heights levee, at a SPF level of protection. For the reasons noted above, the project providing a consistent SPF level of protection is not an exception to policy. The project is the Federal Supportable Plan and subject to normal cost sharing.

A handwritten signature in black ink, appearing to read "Joseph W. Westphal".

Joseph W. Westphal
Assistant Secretary of the Army
(Civil Works)



DEPARTMENT OF THE ARMY

U.S. Army Corps of Engineers
WASHINGTON, D.C. 20314-1000REPLY TO
ATTENTION OF:

SA8082101

CECW-PC

18 AUG 1998

MEMORANDUM FOR Assistant Secretary of the Army for Civil Works

SUBJECT: Dallas Floodway Extension, Dallas, Texas - Request For Exception

1. **PURPOSE:** To submit my recommendation regarding a request for policy exception to selection of the National Economic Development (NED) plan, for the Dallas Floodway Extension, Dallas, Texas project. In this specific case, the request is really for an exception to the Federally Supported Plan (FSP) and not the NED Plan. The FSP is a smaller element of the NED plan that is combined with incrementally justified elements in the form of levees. HQUSACE and ASA(CW) acceptance of the FSP was accomplished at an Alternative Formulation Briefing (AFB) held in June 1997. The Locally Preferred Plan (LPP) is a plan that increases the level of protection of the Cadillac Heights levee, to a height and level of protection that is consistent with most of the other FSP levees, but which is not incrementally justified. As such, this request for exception is to the FSP and not the NED plan; but in concept it should be viewed as the same, since the FSP is the basis for cost sharing.

2. BACKGROUND:

a. The existing Federal flood damage reduction project at Dallas, Texas, consists of two levees (East Levee and West Levee) that were designed to provide protection to the downtown Dallas community, from the Standard Project Flood (SPF), which was then estimated as a flood that would have an Annual Chance of Exceedance (ACE) of approximately 0.11% (approximately a 900-year event). These levees were authorized for construction by the Rivers and Harbors Acts of March 2, 1945 and May 17, 1950. Construction of these levees was completed in 1960. Since that time, development in the upstream basin and vegetative growth (forestation) in the channel downstream of the two levees, have resulted in a significant lowering of the provided level of protection. At this time, the levees only provide protection from the 0.4% ACE (250-year) flood. In addition the Dallas community has grown to the east, downstream of the existing Federal project. Local communities constructed several non-Federal levees to provide partial protection to these areas. These levees are the Central Waste Water Treatment Plant (CWWTP) and the Rochester Park Levees. These levees currently provide protection from the approximate 0.7% ACE (140-year) flood. Other areas, including the Cadillac Heights Community and the Lamar Street Community, have no structured flood protection. Flooding would occur in these communities with as low as a 20% ACE (5-year) flood.

b. The Dallas Floodway Extension, Dallas, Texas study was authorized by Section 301 of the River and Harbor and Flood Control Act of 1965. The proposed project would extend from the downstream end of the existing Dallas Floodway Flood Control Project. The recommended plan consists of a 3.7-mile-long swale with a 400 to 600-foot bottom width and excavated wetlands and tree plantings (environmental restoration features) within the swale to form a "chain of wetlands." This plan would incorporate existing non-Federal levees at Rochester Park and the Central Wastewater Treatment Plant, and would add two new levees at Lamar Street and Cadillac Heights. The levees would have an average height of 21 feet and would be about three miles long.

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SUBJECT: Dallas Floodway Extension, Dallas, Texas - Request For Exception

c. A request for exception was initiated by a 3 June 1998, CESWF-PM-C memorandum, subject: Dallas Floodway Extension, Dallas, Texas - Request For Exception (enclosure 1). This request was endorsed by the Southwestern Division Commander on 8 July 1998 (enclosure 2). If approved, this exception would allow the LPP to be fully cost shared, in lieu of the non-Federal sponsor providing 100 percent of all costs that are greater than the FSP.

3. DISCUSSION: The following provides pertinent information regarding the FSP and the LPP.

a. Federally Supportable Plan (FSP). The FSP would restore SPF level of protection to the existing Federal levees, would provide the same to the Lamar Street Community, but would only provide protection from the 1.0% ACE (100-year) flood for the Cadillac Heights Community. With implementation of the FSP, a flood event greater than the 1.0% ACE flood would overtop at the Cadillac Heights levee and subject the community to a real possibility of loss of life. The Cadillac Heights levee, being lower, would overtop prior to the other higher levees. A 1.0% ACE flood would likely overtop the proposed Cadillac Heights FSP levee. About 131 residential and 29 commercial structures would incur damages, putting approximately 328 people at risk. The maximum flood depth, which is measured at the lowest protected structure, would be 10.7 feet. A Standard Project Flood would overtop the FSP at the Cadillac Heights levee by over 9 feet. About 215 residential and 66 commercial structures would incur damages, putting approximately 538 people at risk. The maximum flood depth would be approximately 20 feet.

b. Locally Preferred Plan (LPP). The LPP would provide the same level of protection to the Cadillac Heights Community as would be provided to the East, West, and Lamar Street Levees. Current risk and uncertainty modeling programs, which calculate levels of confidence only up to a 0.2% ACE (500-year) flood, shows that these levees would provide protection from the 0.2% ACE (500-year) flood, with confidence levels varying from 86% to 92%. They would pass the SPF with lesser confidence levels.

It is likely that the LPP will be the recommended plan in the final report, as the sponsor is not willing to implement the FSP. The non-Federal sponsor is fully aware that the LPP would provide a lesser, but consistent level of protection for the four leveed areas. In all cases, the level of protection that would be provided by the LPP would be far greater than that provided without a project. The community is willing to accept this trade-off condition. The Sponsor, and community at large, do not feel that the Federally Supported Plan is implementable because of the social impacts that are evident; that is, providing a lower level of protection, and higher risk of loss of life, to the low-income, minority community of Cadillac Heights.

c. Options for the Selected Plan: There are three viable options that should be considered for the project.

OPTION 1. Construct the FSP with traditional cost sharing (75% Federal; 25% non-Federal).

OPTION 2. Construct the LPP at 100 percent non-Federal cost above the FSP level.

OPTION 3. Construct the LPP at full traditional cost sharing (75% Federal; 25% non-Federal).

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SUBJECT: Dallas Floodway Extension, Dallas, Texas - Request For Exception

In selecting an option, the first question is whether the FSP is really implementable. The FSP is engineeringly feasible, economically justified, and environmentally acceptable, but it is clearly not socially acceptable from the local sponsor's point of view. Even though the FSP is considered implementable from the Federal perspective, I believe Option 3 should still be selected, as the increase in Federal cost is relatively small (\$1,197,200), and this economic cost should not be weighed against the added social cost of Option 2. I believe that the District and Division are correct in their warning that in selecting Option 2, the Federal Government would open itself to severe criticism by the American public. By selecting the LPP, emphasis would be placed on lives, people, equality and implementability. Other than maximizing benefits, all other goals and objectives would be met with the selection of Option 3.

4. RECOMMENDATION FOR EXCEPTION: I recommend that the Locally Preferred Plan (LPP), be the federally selected plan and that the exception be granted, providing full cost sharing per Option 3, above. Not only is the FSP socially unacceptable from the sponsor's point of view, I believe that there is a risk in selecting a plan that would result in an increased risk to life in a low income, minority community, while providing a higher level of protection and lower risk to life for the rest of the community. Additional basis for this recommendation is provided in the enclosed District/Division request for exception.

FOR THE COMMANDER:

2 Encls
as

RUSSELL L. FUHRMAN
Major General, USA
Director of Civil Works

BY MG
Figure 11
11/11/98
11/11/98

CESWD-ETP-S (CESWF-PM-C/03 June 1998) (1105-2-100) 1st End
Mr. Gerrity//214-767-2310
SUBJECT: Dallas Floodway Extension, Dallas, Texas - Request For
Exception

Commander, U.S. Army Engineer Division, Southwestern, ATTN: **8** JUL 1998
CESWD-ETP-S, 1114 Commerce Street, Dallas, Texas 75242-0216

FOR Commander, U.S. Army Corps of Engineers, ATTN: CECW-PC,
20 Massachusetts Ave. NW, Washington, DC 20314-1000

1. The city of Dallas has expressed the desire to assure social equity in the construction of flood damage prevention measures in urban areas along the Dallas Floodway. The subject exception request is forwarded for your review and processing to the Assistant Secretary of the Army (Civil Works) for his approval. The requested exception would provide a Standard Project Flood (SPF) levee at Cadillac Heights instead of the 100 - year levee currently included in the Federally Supported Plan (FSP). The primary beneficiaries of the increased protection would be low-income and minority residents along this reach.

2. The proposed increased levee height is not incrementally justified. However, there are valid, overriding and compelling reasons favoring the selection of the larger Locally Preferred Plan (LPP), as outlined in the district's request.

3. I strongly support the request for exception to the FSP. I recommend that the exception be granted and that the cost sharing for the SPF-levee at Cadillac Heights (LPP) is the same as for the FSP.

4. If you have any questions, please contact Mr. John Gerrity, CESWD-ETP-S, (214)767-2310.

SIGNED

Encl
nc

DONALD R. HOLZWARTH
Colonel, EN
Commanding

CF:
CESWD-PPM (w/encl)
CESWF-PM-C (wo encl)



DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF

CESWF-PM-C

3 June 1998

MEMORANDUM FOR Commander, Southwestern Division, 1114 Commerce Street, Dallas,
TX 75242-0216

SUBJECT: Dallas Floodway Extension, Dallas, Texas - Request For Exception

1. Reference memorandum, CESWF-PM to USACE, ATTN: CECW-AR, 31 October 1997, subject: Dallas Floodway Extension, Dallas, TX, General Reevaluation Report (GRR) and Integrated Environmental Impact Statement (EIS).
2. Purpose: This document presents supporting rationale for the request for an exception by the Assistant Secretary of the Army (Civil Works) to allow Federal participation in a Locally Preferred Plan (LPP) for the subject project in accordance with paragraph 5.16.c of ER 1105-2-100.
3. Sponsor: City of Dallas, Texas.
4. Background: Continued extensive urbanization throughout the Trinity River watershed is a significant factor influencing both the current and future flood problems. Various Federal and non-Federal flood control projects have been constructed to alleviate the flooding problems. Federal projects which have significantly reduced the threat to life and property include the Fort Worth and Dallas Floodways and six reservoirs. These various projects are shown in the enclosed figure EP-1.
 - a. Existing Dallas Floodway Flood Control Project: The existing Dallas Floodway Flood Control Project, completed in 1960, protects downtown Dallas. The levee system extends along the Trinity River upstream from the AT&SF Railroad bridge (River Mile 497.37). The East Levee is 11.7 miles long. The West Levee is 10.9 miles long. The Dallas Floodway includes an improved channel and various pumping plants, pressure conduits, and drainage structures. The levees were designed to convey the Standard Project Flood (SPF). The SPF was estimated as a flood with a peak discharge of 226,000 cubic feet per second (cfs) with greater than a 900-year level of protection. Since construction, the project flood flow capacity has diminished, and the level of protection is no longer adequate. The East Levee now protects against floods with a 0.4 percent chance of exceedance with an 83 percent level of confidence, while the West Levee now protects against floods with a 0.2 percent chance of exceedance with an 83 percent level of confidence.
 - b. Authorized Dallas Floodway Extension Project: Construction of the Dallas Floodway Extension (DFE) was authorized by the River and Harbor and Flood Control Act of 1965 (P.L. 89-298) as one of five projects in the Trinity River project. As authorized, the DFE would extend about nine miles from the downstream end of the existing Dallas Floodway to Five Mile Creek,

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including the lower end of White Rock Creek. The authorized plan includes about 9.6 miles of tributary channel improvements.

In 1981, the authorized plan was reevaluated in a General Design Memorandum (GDM). The GDM recommended channels and levees for flood protection, and designated approximately 5,000 acres between the levees as a greenbelt-recreation area. The floodway was designed to convey the SPF, or 270,000 cfs. The total cost of the recommended plan was estimated at \$199.2 million (1997 prices). In 1985, work was terminated on the DFE following the failure of a city of Dallas bond election intended to support the project. No further action was pursued regarding reauthorization; therefore, the 1965 plan remains the Authorized Plan.

c. The General Reevaluation Study: Major flooding in 1989 prompted the City to restart the DFE project development. A general reevaluation, initiated in FY91, determined that the originally authorized project is no longer justified. In the draft General Reevaluation Report (GRR), the purpose of the DFE is to restore the authorized flood capacity of the existing Dallas Floodway, and to provide flood damage reduction benefits, environmental restoration features and recreation amenities to the study area.

The draft GRR and EIS was submitted by the referenced memorandum for Washington level policy compliance review. Report completion is scheduled for May 1998. \$450,000 has been allocated for FY98 to complete the GRR phase.

5. National Economic Development (NED) Plan: The NED plan consists of 1200-foot bottom width swales, separated at Interstate 45, and designated as upper and lower swales. The first cost of the NED Plan is approximately \$59.2 million, including \$50.0 million attributable to flood control and \$9.2 million to recreation. Average annual flood control benefits of \$13.6 million are provided by this plan, yielding a flood control benefit-cost ratio of 2.46. Total net annual flood control benefits for the NED Plan are \$8.0 million.

One of the most controversial issues that surfaced with the NED Plan was the overwhelming public opposition to the plan because of its adverse impact on environmental resources within the study area, and the vast amount of mitigation required for implementation. The plan would eliminate over 725 acres of mature bottomland hardwoods, would fragment the remaining habitat, and would require the purchase and management of approximately 3,200 acres of mitigation land. Land acquisition of this magnitude within an urban area would be challenging due to a lack of readily available resources. Widespread public opposition to the NED Plan, based primarily on environmental concerns, caused the City to doubt the NED Plan was implementable. The magnitude of these adverse impacts and oppositions led the City to seek a more environmentally sensitive plan.

Another controversial issue regarding the NED Plan deals with the beneficiaries -- downstream residents versus the Central Business District (CBD). A large portion of the benefits (74 percent) attributable to the NED Plan would be experienced along the existing Dallas Floodway, a Federal levee project located immediately upstream of the current study area which protects the CBD, and not within the actual study area being targeted for flood damage reduction.

6. Federally Supportable Plan: The Federally Supportable Plan (FSP), also known as the Chain-of-Wetlands-Plus-Levees Plan, includes the development of the Chain of Wetlands, incorporation and modification of non-Federal levees, construction of new flood damage reduction levees, and construction of new recreation facilities which are compatible with the regional recreation master plan, including hike/bike trails, equestrian trails, canoe launches and pavilions. These separable elements are described below.

a. Chain of Wetlands: The Chain of Wetlands consists of swales (shallow ditches or overflow channels) separated at Interstate Highway 45. The upper swale would have a 400-foot width and would extend from Cedar Creek to the oxbow lake at Interstate Highway 45, a distance of about 1.5 miles. The lower swale would have a 600-foot width and extend from Interstate Highway 45 to Loop 12, a distance of about 2.2 miles. It would be aligned through the Linfield Landfill and Sleepy Hollow Golf Course to minimize impacts to adjacent historic neighborhoods and bottomland hardwood trees situated in forested areas along the river. Excavated wetlands and vegetative plantings would be added as environmental restoration features to form the "Chain of Wetlands." A Congressional amendment to the original authorization will be needed to add the environmental restoration purpose.

b. Non-Federal Levees: Flooding and increased public pressure led the City to construct the Rochester Park Levee and improve the existing Central Wastewater Treatment Plant (CWWTP) Levee. Both are along the alignment of the authorized DFE project.

(1) CWWTP Levee: The CWWTP Levee is along the west bank. It was upgraded in 1993 at a cost of \$14,220,000. The design was based on coordination with the Corps to ensure that the levee would be physically compatible with the authorized project. The upgraded levee currently provides protection from floods corresponding to a one percent probability of occurrence, with a confidence level of 66 percent. No modifications to this levee are proposed as part of the FSP.

(2) Rochester Park Levee: The Rochester Park Levee is along the east bank. It was constructed between 1991 and 1993 at a cost of \$12,738,000. It was built generally following the alignment proposed in the authorized plan. The levee currently provides protection from floods corresponding to a one percent probability of occurrence, with a confidence level of 63 percent. Modifications to this levee are proposed, as discussed below.

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(3) Water Resources Development Act of 1996 Section 351: Section 351 modifies the authorized project to include the Rochester Park and the CWWTP levees and allow the costs to be included in the project costs, and credited against the non-Federal share, to the extent the work is compatible with the project and required for construction of the project as determined by Assistant Secretary of the Army for Civil Works (ASA(CW)). The draft GRR recommends that the CWWTP Levee and a portion of the Rochester Park Levee be included in the FSP, with credit granted accordingly. Part of the Rochester Park Levee is not recommended for credit because it is not necessary for the construction of the FSP. The creditable portion of the Rochester Park Levee is estimated at \$8,900,000.

c. New Levees: This plan would include construction of two new earthen levees, the Lamar Street Levee on the east bank and the Cadillac Heights Levee on the west bank.

(1) Lamar Street Levee: The Lamar Street Levee would extend on the east bank from the existing Dallas Floodway East Levee to the Rochester Park levee, a distance of 2.9 miles. This levee has an average height of 21 feet. About 1,000 feet of the existing Rochester Park levee would be raised about one foot. About 4,500 feet of the Rochester Park levee would be made unnecessary by the Lamar Street levee. The levee would provide protection from floods corresponding to a 0.2 percent probability of occurrence, with a confidence level of 92 percent. Analysis has shown that the levee providing maximum NED contributions is larger than the LPP, as shown in the enclosed Figure 5-2 (as shown in the draft GRR). As per Planning Guidance Letter 97-10, no attempt was made to identify the larger levee which maximizes benefits.

(2) Cadillac Heights Levee: The Cadillac Heights Levee would extend on the west bank from near Cedar Creek to the CWWTP, a distance of 5,838 feet long (1.1 miles). The top-of-levee elevations would range from 412.5 to 416.3 feet. The average levee height is 5.2 feet, with a maximum height of 16.1 feet. A 400-foot long concrete floodwall would be constructed to protect the main structures of a meat packing plant located upstream of the Missouri-Kansas-Topeka railroad. This levee/floodwall system would protect against a 115,200 cfs flood with a one percent chance of exceedance (100-year level of protection) at a 50 percent level of confidence. This height is considered to be the optimum height from an NED perspective, as indicated by the optimization curve shown in Figure 5-1 (as shown in the draft GRR).

d. Environmental Impacts: The plan would eliminate about 146 acres of mature bottom land hardwood forest, cause minimal fragmentation, and require the purchase of 1,135 acres of mitigation land at a cost of approximately \$4.0 million.

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e. Costs and Benefits: The estimated economic flood control only project costs for the FSP are shown in the following table:

<u>Project Element</u>	<u>Construction</u>	<u>LERRD</u>	<u>Total</u>
Chain of Wetlands	\$42,565,000	\$13,469,000	\$56,034,000
Cadillac (100-year)	2,203,000	2,272,000	4,475,000
Lamar (SPF)	<u>9,897,000</u>	<u>8,116,000</u>	<u>18,013,000</u>
Subtotal	\$54,665,000	\$23,857,000	\$78,522,000
<u>Non-Federal Work</u>			
CWWTP	\$14,030,000	\$ 190,000	\$14,220,000
Rochester (compatible)	<u>8,144,000</u>	<u>756,000</u>	<u>8,900,000</u>
Subtotal	\$22,174,000	\$ 946,000	\$23,120,000
Total Project	\$76,839,000	\$24,803,000	\$101,642,000

The plan has a total investment cost of \$105,482,000 for flood control only and a flood control benefit-cost ratio of 1.81. In addition to the flood control features, \$5,542,000 is proposed for environmental restoration, and \$7,318,000 for recreation. The total financial cost of the FSP is \$118,490,000.

7. LPP: City concerns about flood damage reduction in the Cadillac Heights area resulted in formulation of the LPP. The sponsor desires a level of protection greater than the FSP in this area. The City has requested that an exception be granted to include the Cadillac Heights Levee at a height that would protect against the SPF as part of the plan recommended for Federal action with Federal participation in the added height. Additional components/modifications to the FSP are detailed below:

a. Raising the Cadillac Heights Levee: The LPP will provide a level of flood protection to the Cadillac Heights area that is consistent with the SPF level of protection provided upstream and across the channel. The length of the Cadillac Heights Levee would increase to 11,891 feet (2.25 miles), with top-of-levee elevations varying from 421.5 to 426.0 feet. The average height would be 14.9 feet with a maximum height of 25.75 feet. The levee would provide protection from floods with a flow of 201,000 cfs, which has an exceedance probability of 0.2 percent (a 500-year flood), with a confidence level of 91 percent. Increasing the Cadillac Heights level of protection from the one percent exceedance level to SPF decreases the level of protection in the existing Dallas Floodway from a 900-year to 800-year level of protection, which are both rare, infrequent events.

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b. Raising the CWWTP Levee: The City, after considering two options, elected not to pursue raising the CWWTP to provide SPF protection. One option, referred to as the "long option", included raising the entire CWWTP Levee to SPF levels. The preferred alternative, referred to as the "short option" and included in the LPP, involves raising only a portion of the CWWTP Levee to provide SPF protection to the Cadillac Heights neighborhood, but NOT providing SPF protection to the CWWTP. The City's decision to support the short option was based on several factors. The city's commitment to providing much needed protection to the people in the Cadillac Heights neighborhood was a driving force, and necessitated the inclusion of a levee in this area. The perception of many of the lower income, minority residents downstream of the existing Dallas Floodway is that flood damage risks to their lives and property were increased, due to the Dallas Floodway levees, in order to protect the businesses upstream. From an economic perspective, the "short option" provides greater annual benefits than the "long option". The "long option", while providing increased protection to the CWWTP, provides less protection in the upstream Dallas Floodway. Comparatively, the "short option" raises SPF flood elevations at the downstream end of the existing Dallas Floodway about 0.65 feet less than the "long option". The "short option", in conjunction with the Chain of Wetlands and the SPF Lamar levee, increases the protection to the CWWTP from the current 140-year level to about the 500-year level. Furthermore, in the event of a flood greater than about the 500-year frequency, the flooding of the CWWTP would in essence be a safety valve for the upstream Dallas Floodway levee. Comparatively, the "long option" would remove this safety valve and the critical low point in the levee system would be around the upstream Central Business District (CBD). In addition, since the "long option" would primarily benefit only the CWWTP, the incremental cost of this option over the "short option" was assumed to be entirely a non-Federal responsibility. The City did not deem this \$3.5 million cost increase justifiable for an increase in protection from the 500-year level to the SPF level.

c. Environmental Impacts: No significant incremental environmental impacts to critical natural resources, such as bottomland hardwoods and/or wetlands, have been identified for increasing the Cadillac Heights levee height to the SPF level. Mitigation requirements for the SPF levee are not expected to increase significantly over those required for the one percent levee height.

d. Costs and Benefits: The estimated economic flood control only project costs for the LPP are shown in the following table. The LPP total project costs (financial) are estimated at \$91,156,000 for construction and \$32,003,000 for LERRD. The total cost is estimated at \$123,159,000, which is \$4,670,000 greater than the FSP. For the flood control features only, the total investment cost is \$110,779,000, the average annual cost is \$8,937,000, the average annual benefits are \$13,051,000, the average annual net benefit is \$4,114,000, and the benefit-cost ratio is 1.46. Raising the Cadillac Heights levee to provide SPF protection reduces flood protection upstream along the existing Dallas Floodway by \$2,164,000 annually (primarily to businesses in the CBD) while increasing the level of protection behind the levee by \$83,500 annually (primarily to residences in Cadillac Heights).

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SUBJECT: Dallas Floodway Extension, Dallas, Texas - Request For Exception

<u>Project Element</u>	<u>Construction</u>	<u>LERRD</u>	<u>Total</u>
Chain of Wetlands	\$42,565,000	\$13,469,000	\$56,034,000
Cadillac (SPF)	3,661,000	5,452,000	9,113,000
Lamar (SPF)	<u>9,897,000</u>	<u>8,116,000</u>	<u>18,013,000</u>
Subtotal	\$56,123,000	\$27,037,000	\$83,160,000
<u>Non-Federal Work</u>			
CWWTP	\$14,030,000	\$ 190,000	\$14,220,000
Rochester (compatible)	<u>8,144,000</u>	<u>756,000</u>	<u>8,900,000</u>
Subtotal	\$22,174,000	\$ 946,000	\$23,120,000
Total Project	\$78,297,000	\$27,983,000	\$106,280,000

8. Urban Flood Protection: Paragraph 5.17.c of ER 1105-2-100 states that the documentation required by Paragraph 5-17.a of ER 1105-2-100 is also required for seeking a granted exception for plans providing greater than 100-year protection. The following subparagraphs describe each portion of Paragraph 5-17.a as it applies:

a. Urban Area: Neither the FSP nor the LPP would leave urban areas within the post-project 100-year flood plain, although the confidence limits applied to the protection of Cadillac Heights are rather low. The FSP does, however, leave a portion of the study area subject to flooding from major events above the one percent probability of exceedance, including the Cadillac Heights area. Other areas such as below White Rock Creek (Reach 1) are still subject to flooding during rare events, but these are sparsely populated in comparison to Cadillac Heights. The LPP provides SPF protection to an additional major damage center. With implementation of the LPP, 287 structures would no longer be at risk from the SPF event within the Cadillac Heights area. With the FSP, 207 structures would no longer be at risk from the 100-year flood within the same area, but 271 structures would be subject to inundation in SPF events (Note: 16 structures would be removed from the SPF floodplain as a result of the chain of wetlands construction).

b. Incremental Costs: Increasing the height of the Cadillac Heights Levee and modifying the CWWTP Levee would change the first costs, annual cost, annual benefits, and benefit-cost ratios for the flood control only features of the two plans as shown in the following table. Costs and benefits for other features, including environmental restoration and recreation features, would not change. As a total system, the FSP has net flood damage reduction benefits of \$6,817,000, with a benefit-to-cost ratio of 1.81. Comparatively, the LPP has net annual flood control benefits of \$4,114,000, with a Benefit-Cost Ratio (BCR) of 1.46. The average annual flood control net benefits would decrease about \$2,700,000, or about 40 percent.

**Benefit-Cost Comparison of Federally Supportable Plan and LPP
Flood Control Only**

(October 1997 prices, 7.125% interest, 50-year period of analysis)

Project Alternatives Include Land/Mitigation & HTRW Costs	FSP	LPP	Difference
INVESTMENT			
Estimated First Cost	\$78,521,600	\$83,159,400	\$4,637,800
Interest During Construction	\$3,840,600	\$4,499,800	\$659,200
Cost of Non-Federal Levees	\$23,120,000	\$23,120,000	\$0
Investment Cost	\$105,482,200	\$110,779,200	\$5,297,000
ANNUAL CHARGES			
Interest	\$7,779,300	\$8,169,900	\$390,600
Amortization	\$228,200	\$239,700	\$11,500
Operation/Maintenance (\$/year)	\$441,000	\$527,000	\$86,000
Replacements	\$0	\$0	\$0
TOTAL ANNUAL CHARGES	\$8,448,500	\$8,936,600	\$488,100
ANNUAL BENEFITS			
Inundation Reduction	\$5,337,000	\$5,286,800	(\$50,200)
Insurance Subsidy	\$94,200	\$94,200	\$0
Existing Dallas Floodway	\$8,790,800	\$6,626,400	(\$2,164,400)
IH-45 Proposal	\$1,043,500	\$1,043,500	\$0
TOTAL BENEFITS	\$15,265,500	\$13,050,900	(\$2,214,600)
NET BENEFITS	\$6,817,000	\$4,114,300	(\$2,702,700)
BENEFIT-COST RATIO	1.81	1.46	-0.35

The costs shown include LERRD and mitigation costs. The prevailing Federal interest rate of 7.125 percent was applied. A project life of 50 years was assumed. The total difference in investment cost of \$5,297,000, or an increase of 5 percent, allows for a project to be constructed which stresses social equality for Cadillac Heights residents, compared to upstream existing reaches and also to those residing on the east side of the river. Furthermore, it addresses the issue of existing negative impacts in the study area being a result of project implementation upstream, while restoring flood protection back to original levels in the upstream reaches.

c. Cost Sharing Impacts: Tables 6-7 through 6-9, as shown in the draft GRR, present the cost apportionment calculations for the Recommended Plan and the LPP. Table 6-10 shown below (extracted from the draft GRR) reflects the cost apportionment for the Recommended Plan. The total cost of this plan was estimated at \$118.5 million. As shown, the Federal cost, prior to application of the levee credit, would total approximately \$78.8 million (66.5 percent), while the non-Federal cost would equal approximately \$39.6 million (33.5 percent).

Table 6-10
Cost Apportionment Data for Recommended Plan

Purpose	Federal Cost	Non-Federal Cost	Total Cost
Flood Damage Reduction	\$71,584,000	\$34,045,500	\$105,629,500
Environmental Restoration	\$3,602,000	\$1,939,600	\$5,541,600
Recreation	\$3,659,200	\$3,659,200	\$7,318,400
Sub-Total	\$78,845,300	\$39,644,200	\$118,489,500
Percentage	66.5	33.5	100
Credit for Compatible Non-Federal Construction	\$22,174,000	(\$22,174,000)	
Total	\$101,019,300	\$17,470,200	\$118,489,500
Uncredited Compatible Non-Federal Construction		\$0	

Table 6-11 (extracted from the draft GRR) shows the cost apportionment for the Locally Preferred Plan, should an exception be approved for full Federal participation in the implementation of the LPP. The total cost of the LPP was estimated at \$123.2 million, a difference of \$4.7 million compared to the Recommended Plan. With an approved exception, and prior to application of the levee credit, the Federal share was calculated to be approximately \$80.0 million (65 percent), while the non-Federal share was estimated at \$43.1 million (35 percent). Table 12 (extracted from the draft GRR) shows the cost apportionment for the LPP in the absence of an exception, and the additional incremental sponsor cost to construct the Locally Preferred Plan. The Federal share of the LPP in this scenario, and prior to application of the levee

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credit, was calculated to be approximately \$78.8 million (64%), while the non-Federal share was estimated at \$44.3 million (34%).

Table 6-11
Cost Apportionment Data for Locally Preferred Plan -
With Exception

Purpose	Federal Cost	Non-Federal Cost	Total Cost
Flood Damage Reduction (FSP)	\$72,781,300	\$37,517,900	\$110,299,200
Environmental Restoration	\$3,602,000	\$1,939,600	\$5,541,600
Recreation	\$3,659,200	\$3,659,200	\$7,318,400
Sub-Total	\$80,042,500	\$43,116,700	\$123,159,200
Percentage	65	35	100
Credit for Compatible Non-Federal Construction	\$22,174,000	(\$22,174,000)	
Total	\$102,216,600	\$20,942,600	\$123,159,200
Uncredited Compatible Non-Federal Construction		\$0	

**Table 6-12
Cost Apportionment Data for Locally Preferred Plan -
Without Exception**

Purpose	Federal Cost	Non-Federal Cost	Total Cost
Flood Damage Reduction (FSP)	\$71,584,000	\$34,045,500	\$105,629,500
Environmental Restoration	\$3,602,000	\$1,939,600	\$5,541,600
Recreation	\$3,659,200	\$3,659,200	\$7,318,400
Sub-Total for Recommended Plan	\$78,845,300	\$39,644,200	\$118,489,500
Additional Sponsor Cost to Construct Recommended Plan	\$0	\$4,669,700	\$4,669,700
Sub-Total for Recommended Plan	\$78,845,300	\$44,313,900	\$123,159,200
Percentage	64	36	100
Credit for Compatible Non-Federal Construction	\$22,174,000	(\$22,174,000)	
Total	\$101,019,300	\$22,139,900	\$123,159,200
Uncredited Compatible Non-Federal Construction		\$0	

d. National Flood Insurance Program (NFIP): Flood prone areas within the 100-year floodplain of the watershed were identified by Federal Emergency Management Agency (FEMA) in March 1984. The city of Dallas enrolled in the National Flood Insurance Program's Emergency Program since June 19, 1970, and the Regular Program since July 23, 1971, and currently holds 2,833 flood insurance policies valued at \$146,577,700. The LPP will not reduce non-Federal eligibility requirements for the NFIP, since both the FSP and LPP remove the same amount of structures from the 100-year FEMA floodplain.

e. Disaster Relief: The LPP has the potential to reduce future net subsidized reimbursements for flood losses, both insured and uninsured relative to the FSP. If flood events occur which are over and above the design level, the Cadillac Heights Levee, as formulated in the FSP, is subject

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to flanking and overtopping. All structures being protected by the levee would be inundated, some by water levels at catastrophic levels. Disaster declaration would be a certainty, as would tremendous negative publicity against the Corps, and the city of Dallas.

f. Local Planning Environment: It is unlikely that the LPP would significantly change the local planning environment relative to the FSP. Both plans would remove the restrictions usually reserved for areas which flood at recurrence intervals more frequent than the one percent chance flood.

(1) With-project Residual Risk and Induced Damages: Annual residual damages in the Cadillac Heights Levee area are \$100,500 with the one percent levee and \$17,100 with the SPF levee. Annual residual damages for the proposed project area are \$6,025,700 with the one percent levee and \$8,240,400 with the SPF levee. There are no changes in residual damages associated with modifying the CWWTP levee.

(2) Floodplain Development: No changes in the floodplain development with the LPP relative to the FSP are anticipated.

9. Residual Risk Reduction: Paragraph 5.17.c of ER 1105-2-100 states that the documentation required by Paragraph 5-17.b of ER 1105-2-100 is also required for seeking a granted exception for plans providing greater than 100-year protection. During major floods, residents typically have little warning, less than a day's notice, to evacuate. It is not uncommon for areas flooded to remain inundated up to a week or more.

a. Features to Reduce Structural Failure: The Cadillac Heights levee in the LPP is less likely to overtop and fail due to its increased height relative to the FSP. The probability of exceeding the design is reduced from one percent to approximately 0.125 percent in any given year.

b. Features to Reduce Hazard of Overtopping: The 100-year Cadillac Heights Levee would be designed with the initial overflow area located along Cedar Creek, upstream of the protected reach. The area would be fully inundated prior to any overtopping of the levee structure. Thus, no catastrophic type failure would take place. The SPF Cadillac Heights Levee would perform in a similar manner, but at SPF levels.

c. Non-Structural Measures to Reduce Residual Risk: There are no non-structural measures planned which would reduce residual flood risk.

10. Special Conditions Which Remain Critical: This documentation is required by Paragraph 5-17.c of ER 1105-2-100 to address special considerations that are critical and are not fully captured in the residual risk analyses.

a. Flood Characteristics:

(1) Historical Floods: A number of major floods have been recorded in the study area prior to and since the turn of the century. The flood of record occurred in May 1908 and had an estimated peak discharge of 184,000 cubic feet per second at the Dallas gage. This flood caused the death of 11 persons and produced over \$5 million (1908 dollars) in damage. The following table presents the frequencies of floods since 1957. Frequencies for flood events prior to 1957, when construction of dams/reservoirs within the upstream watershed was completed, are not comparable to frequencies computed after this construction, and are not included in this table. None of these floods would overtop the proposed Cadillac Heights levee at either elevation.

Time of Significant Flood Event	Dallas Gage Discharge (CFS)	Frequency (Year)
May 1957	75,300	28-yr.
May 1966	42,100	6-yr.
May 1969	67,000	20-yr.
Nov 1981	37,400	5-yr.
May 1989	58,700	15-yr.
May 1990	82,300	35-yr.
Dec 1991	62,200	17-yr.

The flood of October 1981 sustained damages estimated at \$15.2 million (1981 dollars). The flood of May 1990 damaged or destroyed about 200 homes and businesses in Rochester Park and 24 homes in South Dallas. Damages exceeded \$30 million (1990 dollars) in Dallas.

(2) H&H Analyses: As extensive urbanization has taken place upstream of the study area, the stage versus frequency curve has continued an upward shift. Increased runoff due to the change in imperviousness, as well as reduced valley storage, are major causes of this upward shift. Increased roughness downstream has also contributed to the shift. Public perception, however, remains strong that upstream Corps projects are major contributors to the problem, and only equal protection will remedy the issue.

The effect of future upstream development on increasing runoff over time was considered in the analyses. Future runoff was computed for the year 2050. For the Cadillac Heights Levee, the 100-year flood is estimated to rise 0.4 feet, and SPF is expected to rise 0.5 feet.

(3) Transfer of Damages: The completed Dallas Floodway project, which ends about one mile upstream of the proposed Cadillac Heights Levee, was designed to provide an SPF level of protection. The Dallas Floodway channels convey flood waters downstream more quickly and the levees confine flood waters which previously spread out over the upstream floodplain. Both factors have raised the downstream water surfaces and led to more severe flooding in the Dallas Floodway Extension area, including the Cadillac Heights area, when flood events occur.

(4) Concentration of Damages: The proposed Lamar Levee (immediately across the channel) is justified at the SPF level. Implementing the Cadillac Heights Levee at a comparatively lower height would cause flood damages to concentrate in the Cadillac Heights area when flood events exceed the one percent probability of exceedance.

(5) Flood Warning Times: The SPF hydrograph indicates an approximate 14-hour time difference between overtopping of a 100-year levee and overtopping of the SPF levee at Cadillac Heights. This additional time provided by the added levee height could be critical to evacuation procedures. Furthermore, and perhaps more importantly, the public's perception of a levee project is generally that of "total" protection, with little understanding of the different levels of risk associated with different levee heights. The false sense of "total" security yields the potential for a higher risk of loss of life associated with the 100-year levee.

b. Characteristics of Protected Area: The Cadillac Heights levee protects an urban area with a mix of commercial, residential, and public infrastructure facilities. However, the primary beneficiaries of the increased flood protection would be local residents in the reach. The sponsor's commitment to providing equal protection to the residents is highlighted by their desire to pursue higher flood protection for Cadillac Heights, while electing not to pursue increased flood protection to the city-owned Central Wastewater Treatment Plant.

c. Concerns of Others:

(1) City of Dallas: This request for exception is critical to the sponsor, the city of Dallas, and its public involvement efforts. The sponsor is very concerned about the social inequity and public acceptability issues that construction of the FSP could generate. Social inequity is already an issue due to perceptions that the Dallas Floodway project shifted flood damages from the central business district to low-income and minority neighborhoods. Over the years, repeated flooding has caused losses of life and led to significant financial losses to residences, businesses, and infrastructure in the DFE area. Repeated flooding has created undesirable physical conditions within the area forcing some people and businesses to relocate from the area. Such conditions have also prevented economic growth and adversely affected community economic health. The Cadillac Heights area is a low income minority residential neighborhood and light industrial area.

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(2) Transportation Interests: The Texas Department of Transportation initiated a Major Investment Study of the traffic congestion in the Dallas area in June 1996. This study recommends improvements estimated to cost in excess of \$1 billion, including a roadway (Trinity Parkway Reliever) within the existing floodway and extending southward, utilizing a portion of the proposed Dallas Floodway Extension project. Construction of the SPF levee around the Cadillac Heights area would protect existing roads, as well as any new improvements, from catastrophic flood events.


11. Options:

a. Construct LPP at 100 Percent Non-Federal Cost above FSP Level: Construction of only the FSP would open up the City and the Corps to severe criticism from local citizens as well as National organizations such as the NAACP. The social inequity issue is so strong that the sponsor has acknowledged it will be forced to pursue the LPP without regard to cost sharing differences. The total cost difference to the sponsor, with exception versus without an exception, is \$1,197,200. To the sponsor, this may be a small additional price to pay in order to avoid the potential problems. There is some concern by the City that the FSP may not be an implementable project.

b. Construct LPP at Full Federal Cost Share above FSP Level: Given the data provided above, and acknowledging that the FSP would be extremely difficult to implement, this option has many reasons for being selected. Other than maximizing benefits, all other goals and objectives are being full achieved with this project. Emphasis is being placed on lives, people, equality, and implementability.

12. Recommendation: Based on the compelling evidence provided, I recommend that the request for exception to the FSP be granted, and that the LPP be constructed at full Federal cost share above the FSP level.

Encl


JAMES S. WELLER
Colonel, EN
Commanding

CF:
CECW-PC
CECW-AR

5. Clarifications and Supplemental Data Needs.

a. A good clear map showing existing project and the various features of the extension project. Need to show the chain of wetlands and each levee element of the project, with names.

Response: See maps sent by Federal Express.

b. Some sort of table or list which shows the design discharge and level of protection of the original project as authorized; flow capacity (discharge) and level of protection that the system deteriorated to over time (current conditions); flow capacity (discharge) and level of protection that the system would continue to deteriorated to over time (say in project year 50); design discharge and level of protection is for the Federally Supportable Plan (FSP); and design discharge and level of protection for the Locally Preferred Plan (LPP). If the levels of protection are different for the various levees, please provide that information for each levee. Trying to find out how conditions changed, how they change with the FSP and LPP, and how they change when we add the Cadillac Heights levee.

Response: The requested data is provided in the table below. This should be sufficient to develop a general understanding of the changing conditions. Some additional clarification is needed regarding the Cadillac Heights addition. As a last added element, the Cadillac Heights levee only changes conditions in the reaches upstream of the area, and this occurs only for the LPP height, i.e., the FSP causes no adverse impact to upstream design water surfaces.

**Dallas Floodway Extension
Flow Capacity and Level of Protection
for Various Scenarios**

Scenario	Flow Capacity (cfs)		Level of Protection	
	Dallas Floodway (1960)	226,000 (design)		SPF
Authorized Extension Project	270,000 (design)		SPF	
Current Conditions	212,000		550-yr (Floodway only)	
Year 2050 without Project	192,000		400-yr (Floodway only)	
Year 2000 with FSP	Cadillac	Remainder	Cadillac	Remainder
	115,200	269,200	100	SPF
Year 2000 with LPP	269,200		SPF	

c. Information on the level of confidence on the various levees. The Fort Worth District memorandum provides data on the discharge, level of protection, and "level of confidence" of some of the levees. Need similar data for the levees in the FSP and the LPP. Over the phone the other day you said the Cadillac Heights levee in the Federally Supportable Plan (100-year) has a

48% confidence level. Some of this data may be in Paragraph 3b of the Fort Worth District's memorandum.

Response: Two tables have been extracted from the DFE draft report, and are provided below. The reaches corresponding to the numbers are: (1) Five Mile Creek to White Rock Creek, (2) White Rock confluence area, (3) Rochester Park, (4A) Lamar Street Area, (4B) Oakland Channel, (5) Cadillac Heights, (6) Central Wastewater Treatment Plant, (7) Dallas Floodway East Levee, and (8) Dallas Floodway West Levee.

Please note that table D-34 shows the level of confidence for passage of the 100-year event is only 34%, and not the 48% as stated in your comment. Also, the tables provide no confidence levels for the SPF. The model used for the computation, HEC-FDA, does not provide this information primarily because the SPF varies in frequency from watershed to watershed.

**Table D-34
Project Performance by Reach For
Chain of Wetlands with SPF Lamar and 100-Year Cadillac Levees**

Reach	Target Stage	Expected Annual Target Stage Exceedance Probability		Long Term Risk (Years)			Conditional Non-Exceedance Probability by Event					
		Median	Expected	10	25	50	10%	4%	2%	1%	.4%	.2%
1	395.70	0.193	0.201	0.8935	0.9963	1.0000	0.0521	0.0004	0.0000	0.0000	0.0000	0.0000
2	401.88	0.042	0.049	0.3977	0.7185	0.9208	0.9480	0.4314	0.1153	0.0093	0.0012	0.0001
3	levee	0.000	0.000	0.0027	0.0068	0.0135	1.0000	1.0000	0.9999	0.9958	0.9805	0.9313
4A	levee	0.001	0.001	0.0098	0.0243	0.0481	1.0000	1.0000	0.9992	0.9799	0.9257	0.8004
4B	levee	0.007	0.010	0.0956	0.2222	0.3950	1.0000	0.9876	0.8835	0.5022	0.2639	0.1041
5	levee	0.010	0.014	0.1317	0.2974	0.5063	0.9998	0.9630	0.7739	0.3360	0.1446	0.0472
6	levee	0.002	0.003	0.0334	0.0815	0.1563	1.0000	0.9996	0.9904	0.8812	0.7082	0.4699
7	levee	0.000	0.000	0.0036	0.0090	0.0179	1.0000	1.0000	0.9999	0.9945	0.9759	0.9165
8	levee	0.000	0.000	0.0045	0.0111	0.0221	1.0000	1.0000	0.9998	0.9926	0.9679	.8952

**Table D-35
Project Performance by Reach For
Chain of Wetlands with SPF Lamar and Cadillac Levees**

Reach	Target Stage	Expected Annual Target Stage Exceedance Probability		Long Term Risk (Years)			Conditional Non-Exceedance Probability by Event					
		Median	Expected	10	25	50	10%	4%	2%	1%	.4%	.2%
1	395.70	0.197	0.204	0.8977	0.9967	1.0000	0.0461	0.0004	0.0000	0.0000	0.0000	0.0000
2	401.88	0.042	0.049	0.3977	0.7185	0.9208	0.9480	0.4314	0.1153	0.0093	0.0012	0.0001
3	levee	0.000	0.000	0.0026	0.0065	0.0130	1.0000	1.0000	0.9999	0.9952	0.9780	0.9243
4A	levee	0.000	0.000	0.0032	0.0079	0.0157	1.0000	1.0000	0.9999	0.9952	0.9783	0.9244
4B	levee	0.007	0.010	0.0956	0.2222	0.3950	1.0000	0.9876	0.8835	0.5022	0.2639	0.1041
5	levee	0.000	0.000	0.0034	0.0085	0.0170	1.0000	1.0000	0.9999	0.9940	0.9732	0.9101
6	levee	0.002	0.004	0.0402	0.0975	0.1855	1.0000	0.9993	0.9854	0.8421	0.6424	0.3973
7	levee	0.000	0.000	0.0022	0.0055	0.0110	1.0000	1.0000	0.9996	0.9884	0.9526	0.8586
8	levee	0.000	0.001	0.0068	0.0168	0.0333	1.0000	1.0000	0.9996	0.9884	0.9518	0.8555

d. Need to know if the levels of protection claimed for the plans are based on current hydrology, future hydrology (50th year), or some average over time. Need to understand what we are saying on the levels of protection and are we consistent among the individual levees.

Response: All levels of protection cited in the request for exception are based on Year 2000 hydrology. For the report, Year 2050 hydrology was used only in the development of Average Annual Equivalents. The LPP will provide essentially the same level of protection (SPF) to all reaches except reach 6 (Central Wastewater Treatment Plant). The FSP also provides roughly the same level of protection to all reaches except reach 6 and reach 5 (Cadillac Heights). A slight drop in confidence levels to reaches 7 and 8 occurs if the LPP is constructed (a drop from approximately 90 percent to 86 percent for the 0.2 percent event).

6. Additional Areas of Possible Federal Interest.

a. The FSP claims that the Cadillac Heights levee will provide a 100-year level of protection. On the phone the other day I was told that the levee of confidence in this level of protection is only 48%. How does this level compare with the level of confidence we are providing in the existing project and at the other levees for the FSP and LPP? How does this level compare with other projects in the Fort Worth District or Corps-wide standards?

Response: If the 100-year Cadillac Heights levee were constructed, it would be the only urban flood levee within the Fort Worth District to have a design level lower than SPF.

b. If the Cadillac Heights levee only has a confidence level of 48%, does the area still need to have flood insurance. My understanding is that protection against the 100-year flood with only a 48% confidence level would not meet risk based standards for claiming the area does not need flood insurance. If the area really does not have 100-year protection then getting to that level, reducing non-Federal eligibility requirements for the National Flood Insurance Program, and reducing future net subsidized reimbursements for flood losses would be in the Federal interest. It has been a factor in other NED exceptions. What would be the levee height that would meet FEMA standards? Is it the LPP levee or some other levee height? What would that levee cost?

Response: The 100-year Cadillac Heights levee was derived during the optimization process, without regard to the FEMA certification requirements. For the Cadillac Heights levee to meet FEMA's requirements, it would have to be approximately 3 feet higher than formulated for the FSP. Additional analysis would be required to accurately estimate the additional cost of a levee of this height.

c. In looking at Cadillac Heights should we really be looking at it like it is a separable decision? I know we look at projects this way. Formulate making economic decision on each of the parts. But is Cadillac Heights a separable element? It seems to me that based on all that I have heard about what the affect this levee has on upstream hydraulics and protection, or what has been said about upstream levees making conditions worse at Cadillac Heights, that the Cadillac Heights area can't really be separated out the way we have done the analysis. I would like to make sure that we really do not have a case where the other levees (either upstream or as part of the Dallas Floodway Extension) cause the flooding problems at the Cadillac Heights area to get worse, and that we really have a case of mitigation for the effects of other elements of the project.

Response: It is the District's belief that the Cadillac Heights levee is a separable element from an economic and hydraulic perspective. The Cadillac Heights levee is not being constructed for mitigation of other elements. In fact, the area actually receives benefits even with no levee being constructed. This is a result of the increased conveyance achieved by the chain of wetlands element. However, the question of its political separability is viable. Public comments examined at this point indicate a strong public belief that the lower (100-year) Cadillac Heights levee, as proposed in the FSP, was designed as a safety valve to protect the Central Business District and the north side of the Trinity at the total expense and sacrifice of the minority population in the poorer Cadillac Heights neighborhood.

September 3, 1998

Mr. Gene T. Rice, Jr
Project Manager, ATTN: CESWF-PM-C
U.S. Army Corps of Engineers, Fort Worth District
P.O. Box 17300,
Fort Worth, Texas 76102-0300

Re: Dallas Floodway Extension Project: Cadillac Heights

Dear Mr. Rice:

As you requested, the following is demographic information regarding the Cadillac Heights neighborhood as it compares to the overall City, including Cadillac Heights. The numbers represent 1990 Census Bureau statistics with the following exceptions. Questions #1 and #7 represent North Central Texas Council of Government figures that are approximately one year old. Questions #2 and #3 represent Dallas County Appraisal District figures that also are about one year old.

	<u>CADILLAC HEIGHTS</u>	<u>CITY OF DALLAS</u>
1. Number of homes?	416	479,622
2. High and low for the price of the homes?	\$53,500/\$3,960	\$11,949,900/NA
3. The average appraised value of a house?	\$17,500	\$64,700
4. Percent homeowners?	51.5%	44.1%
5. Percent single-family units?	64.9%	47.5%
6. Percent multi-family units?	31.0%	50.4%
7. Number of persons? - - - - -	1,168	1,052,300
8. Percent persons under 18 years of age?	35.5%	25.0%
9. Percent persons over 65 years of age?	6.8%	9.7%
10. Total percent hispanic? - - - - -	58.0%	20.3%
11. Total percent black?	40.9%	29.5%
12. Total percent white?	1.0%	47.7%
13. Total percent without a high school degree?	73.4%	26.5%
14. Total percent unemployed?	9.1%	7.4%
15. Average income? - - - - -	\$15,089	\$27,489
16. Percent households on public assistance?	35.4%	5.7%
17. Number of persons below poverty level?	46.6%	17.8%
18. Other Federal assistance?	N/A	N/A

The City is strongly committed to providing the same level of flood protection for the economically depressed minority neighborhood of Cadillac Heights as we are providing

for neighborhoods across the river and upstream. The City does not want to further the social

Dallas Floodway Extension Project: Cadillac Heights

September 3, 1998

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and economic inequities that would result with a 100-year Cadillac Heights levee. I appreciate the continued efforts to gain full Federal cost sharing support for the Locally Preferred Plan (LPP).

Sincerely,

Peter H. Vargas

Director, Trinity River Corridor Project

c: Gavino Sotelo, Interim City Manager
Ryan Evans, Assistant City Manager
Mary Suhm, Assistant City Manager
David Dybala, Director of Public Works