

# Department of Homeland Security **Office of Inspector General**

## **Comal County Understated Project Cost in Its Hazard Mitigation Grant Program Project Application**





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Department of Homeland Security

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September 10, 2013

MEMORANDUM FOR: George A. Robinson  
Regional Administrator, Region VI  
Federal Emergency Management Agency

FROM: *for Christopher Dodd*  
John V. Kelly  
Assistant Inspector General  
Office of Emergency Management Oversight

SUBJECT: *Comal County Understated Project Cost in Its HMGP  
Project Application*  
FEMA Disaster Number 1606-DR-TX  
Audit Report Number DD-13-13

The objective of this report is to disclose additional information related to the data that the Federal Emergency Management Agency (FEMA) relied on in its February 2008 decision to approve Comal County's (County) Hazard Mitigation Grant Program (HMGP) application. This report supplements our audit report, *FEMA Hazard Mitigation Grant Program Funds Awarded to Comal County, Texas, DD-12-13*, dated June 21, 2012, and provides additional information demonstrating that FEMA based its approval of the County's HMGP application on incomplete information.

The Texas Division of Emergency Management (TDEM), a FEMA grantee, submitted the County's HMGP application to FEMA for funding following Hurricane Rita. In February 2008, FEMA approved the County's \$7 million (\$5,250,000 Federal share) initial HMGP request to construct a drainage improvement structure to mitigate future flood losses. In December 2010, FEMA approved an additional \$9,302,516 for the project because of a design flaw in the County's original engineering plan, bringing the total award for this project to \$16,302,516 (\$12,226,887 Federal share).

We conducted this performance audit from March through May 2013, pursuant to the *Inspector General Act of 1978*, as amended, and according to generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based upon our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based upon our audit objective. We conducted this audit by applying the statutes, regulations, and FEMA policies and guidelines in effect at the time of the disaster.



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We met with FEMA officials, reviewed project application information, and performed other procedures necessary to accomplish our objective. We did not assess the adequacy of the County's internal controls applicable to grant activities because it was not necessary to accomplish our audit objective.

### BACKGROUND

FEMA's HMGP eligibility criteria require projects to be cost-effective, comply with environmental and historic preservation requirements, and provide a long-term beneficial impact. FEMA established its cost-effectiveness analysis based on the principle that a project has to return more money over its life than it costs initially. This analysis requires a comprehensive estimate of both the expected benefits and costs. In other words, to be eligible for HMGP funding, FEMA guidelines require the project's benefits to exceed its costs as demonstrated with a benefit-to-cost ratio that equals or exceeds one (1.00).

In our June 2012 audit report, we stated that the County's benefit cost analysis (BCA) did not use the net present value methodology FEMA regulations require. We reported that, if the County had used the correct BCA methodology, the resultant benefit-to-cost ratio would have been less than one (0.36). During the exit conference we held with FEMA to discuss the results of our audit, FEMA told us that it concurred with our finding. However, in its formal response to our audit report, FEMA disallowed only the \$9,302,516 in additional funding it approved for the project. FEMA stated that, because TDEM and County officials proceeded with the project based on FEMA's approval, FEMA would allow the County to retain the original \$7 million (\$5,250,000 Federal share) grant award.

Although we agree that the County proceeded with the project based on FEMA's approval, FEMA based its approval on understated cost information that the County provided. After receiving FEMA's formal response to our report, we met with FEMA officials in October 2012 and discussed with them their decision to disallow only the \$9.3 million associated with the project's increased costs. At that meeting, we showed FEMA evidence that the County had provided an understated project cost estimate in its January 2006 HMGP application. In a December 2012 memorandum, FEMA officials thanked us for meeting with them in October 2012, but stated, "Without a revised Audit Report which references this new information, we are not persuaded to change our response at this time." Therefore, this report provides additional information related to our concerns about the completeness of the County's cost estimate.



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### RESULTS OF AUDIT

In its application for HMGP grant funding, the County did not disclose that an engineering firm had estimated the minimum construction costs for the project at \$9.7 million. Instead, the County submitted an unsupported \$7 million cost estimate for the project and used it with a flawed BCA methodology, which did not account for the net present value of benefits, to produce a benefit-to-cost ratio of 1.2. FEMA relied on the understated \$7 million estimate and the County's flawed BCA in approving the project and awarded the County grant funding that it was not entitled to receive.

If the County had used a more realistic cost estimate of \$10.5 million (the engineering firm's \$9.7 million base construction estimate plus the County's estimate for engineering costs of \$753,600) the resultant benefit-to-cost ratio would have been only 0.8, using the County's flawed BCA methodology. If calculated correctly (using the net present value of benefits), the \$10.5 million project cost estimate would have resulted in a 0.24 benefit-to-cost ratio.

If the County had provided FEMA with complete information in its January 2006 HMGP application, it is unlikely that FEMA would have approved it. Therefore, FEMA should fully implement the recommendation that we made in our June 2012 report to disallow all costs awarded to the County for an ineligible HMGP project.

Federal grant applications require applicants to certify that all data, including project costs, is true and accurate. FEMA HMGP program guidance requires an applicant to disclose all project costs when applying for grant funds. The mitigation project cost is the sum of all direct construction costs plus other costs such as architectural and engineering fees, testing, permits, and project management. Applications should include written backup for the data that is used and a detailed cost breakdown from an engineering cost estimate, rather than a lump sum value. Additionally, when an applicant uses an alternate BCA methodology, as the County did, FEMA guidance requires the applicant to thoroughly explain and document any deviations from standard procedures.

#### **County Officials Did Not Disclose a \$9.7 Million Engineering Estimate**

The County did not provide a copy or disclose information from an engineering report it received on the project the month before it submitted its HMGP application. The engineering firm that the County hired provided it with a preliminary design report containing a very detailed base construction cost estimate of \$9.7 million (see exhibit). The estimate did not include engineering and design fees or project management costs. Although FEMA policy does not permit an applicant to include contingency-based costs



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Department of Homeland Security

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in its total project costs, the engineering firm's report estimated that unforeseen additional expenses could increase the total estimated construction cost to \$13.8 million.

Because of feasibility concerns at the proposed project location, the engineering firm's report recommended that the County evaluate other sites that would likely provide a better value. At the selected site, expert geologists performed geologic and geotechnical investigations that identified extensive foundation problems stating, "The overall foundation quality is poor due to the large number of voids, the low rock quality, and the high permeability." The report also warned, "Extensive and costly foundation treatment would be required to construct a dam at this site ... In addition, even extensive foundation treatment may not preclude problems such as settlement, excessive seepage, or instability due to such seepage."

Because the County did not disclose the engineering firm's report, FEMA was at a disadvantage when it approved the County's HMGP project. If FEMA had known that the independent engineering report estimated the minimum base construction costs at \$9.7 million and that feasibility concerns and contingencies could likely drive the costs up to \$13.8 million, the benefit-to-cost ratio would have been less than 1.0, and it is likely that FEMA would not have approved this project.

### **County Officials Used an Unsupported Project Cost Estimate To Obtain Federal Grant Funding**

In January 2006, the County submitted a \$7 million project cost estimate in its HMGP application, without disclosing the engineering firm's higher cost estimate. In fact, the County provided no breakdown or explanation of what its \$7 million estimate included. The County did provide more than 450 pages of supporting documentation, including an engineering study, to support its \$177,289 in projected annual benefits. With the \$7 million project cost and \$177,289 in average annual benefits, the County calculated a benefit-to-cost ratio of 1.2 using its own BCA methodology, which did not meet Federal requirements, as explained in our June 2012 report.

In January 2012, as part of our initial audit, we asked the County to provide the engineering and design cost opinion for its \$7 million project cost estimate. Instead of providing an engineering report to support the \$7 million cost estimate, the County provided unsupported project cost breakdowns prepared by two County officials who were familiar with the project. However, as table 1 demonstrates, although the two estimates each totaled \$7 million, the two project cost breakdowns arrive at the \$7 million total in substantially different ways, which indicates that there was no actual source document to support the \$7 million estimate. One of the County officials stated



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that he knew the construction costs were between \$7 and \$9 million, but wanted to limit the project cost request to the \$7 million amount, noting that the County would be responsible for cost overruns.

**Table 1: Comparison of \$7 Million Project Cost Breakdown**

<b>Cost Breakdown</b>	<b>County Official One</b>	<b>County Official Two</b>	<b>Variance One vs. Two Increase/(Decrease)</b>
Site Preparation and Excavation	\$1,098,675	\$530,000	(51.76%)
Foundation Preparation	981,401	1,584,750	61.48%
Roller Compacted Concrete Structure	3,802,157	4,480,250	17.83%
Weir Crest & Stilling Basin	240,721	310,000	28.78%
Inlet Structure, Outlet Conduit, and Other	123,447	95,000	(23.04%)
Final Engineering and Environmental	753,600	0	(100.00%)
<b>Total</b>	<b>\$7,000,001</b>	<b>\$7,000,000</b>	

Source: Comal County

If the County had used a more realistic estimate of \$10.5 million (the engineering firm's \$9.7 million base construction estimate plus the County's estimate for engineering costs of \$753,600), the project would not have been cost-effective. Using the County's flawed BCA methodology, which did not account for the net present value of benefits, the \$10.5 million project cost and \$177,289 average annual benefits results in a 0.8 benefit-to-cost ratio; and, if calculated correctly, using the net present value of benefits, the benefit-to-cost ratio would be 0.24. Further, if the County had provided FEMA with the full engineering report indicating that the costs could likely increase to \$13.8 million, FEMA would have known that the ratio could have decreased even more. Had the County used FEMA's required net present value methodology, the County's \$177,289 average annual benefits would only support \$2,529,914 in project costs.

**Conclusion**

Our first report proved that Comal County's HMGP project was not eligible for FEMA funding because the present value of future benefits was far less than the cost. In this report, we prove that Comal County officials did not disclose relevant project cost information in their possession and thereby understated the estimated costs for the project. FEMA relied on the County's understated project cost information in approving the project and awarded the County grant funding that it was not entitled to receive.



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**RECOMMENDATION**

We recommend that the Regional Administrator, FEMA Region VI, fully implement the recommendation that we made in our June 2012 report to disallow all funds awarded to Comal County for an ineligible HMGP project.

**DISCUSSION WITH MANAGEMENT AND AUDIT FOLLOWUP**

We discussed our finding and recommendation with FEMA officials and included their comments in this report as appropriate. We also provided a draft report in advance to these officials and discussed it at an exit conference held on June 3, 2013. FEMA officials withheld comment on our finding and recommendation.

Within 90 days of the date of this memorandum, please provide our office with a written response that includes your (1) agreement or disagreement, (2) corrective action plan, and (3) target completion date for the recommendation. Also, please include responsible parties and any other supporting documentation necessary to inform us about the current status of the recommendation. Until we receive and evaluate your response, we will consider the recommendation open and unresolved.

Consistent with our responsibility under the *Inspector General Act*, we will provide copies of our report to appropriate congressional committees with oversight and appropriation responsibility over the Department of Homeland Security. We will post the report on our website for public dissemination.

Major contributors to this report are Christopher Dodd, Acting Director; Moises Dugan, Audit Manager; and Sharon Snedeker, Senior Auditor.

Please call me with any questions at (202) 254-4100, or your staff may contact Christopher Dodd, Acting Director, Central Regional Office, at (214) 436-5200.



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Department of Homeland Security

**Exhibit**

**Excerpt from CH2M Hill's Preliminary Design Summary Report December 22, 2005**

DRY COMAL CREEK FLOOD RETARDING STRUCTURE – PRELIMINARY DESIGN SUMMARY REPORT

reduce the uplift forces enough to satisfy this design criterion. One of these solutions or a combination of these solutions may be employed in the final design to ensure the satisfaction of appropriate safety measures.

**Conceptual Cost Opinion**

The cost estimate has been prepared based on the attached conceptual drawings. The intent of the estimate is for guidance in project evaluation and implementation from the information available at the time of the estimate. The final cost for the project will depend on such criteria as actual labor and material costs, competitive market conditions, actual site conditions, final project scope, and other variables. As a result, the final project cost will vary from this estimate. The proximity to actual costs will depend on how close the assumptions of this estimate match final project conditions. Because of this, project feasibility and funding needs must be carefully reviewed prior to making specific financial decisions to help assure proper project evaluation and adequate funding.

**TABLE 5**  
Dry Comal Creek Flood Retarding Structure – Preliminary Cost Opinion  
Comal County, Texas, December 2005

Item Number	Item Description	Estimated Quantity	Units	Unit Cost	Extended Cost
1	Diversion and care of water	1	LS	\$50,000	\$50,000
2	Clearing and grubbing	1	LS	\$2,000	\$2,000
3	Rock excavation	96,000	CY	\$20	\$1,920,000
4	Foundation cleanup	1,800	SY	\$35	\$63,000
5	Dental concrete for foundation defects	200	CY	\$675	\$135,000
6	Slush grout foundation surface	19,500	SK	\$35	\$682,500
7	Grout nipples	287	EA	\$95	\$27,265
8	Grout hole setups	692	EA	\$130	\$89,960
9	Drill grout curtain holes	9,450	LF	\$25	\$236,250
10	Drill grout blanket holes	3,040	LF	\$25	\$76,000
11	Special washing of grout holes	68	EA	\$250	\$17,000
12	Water pressure testing of grout holes	692	EA	\$120	\$83,040
13	Mix and inject cement grout	20,420	CF	\$20	\$408,400
14	Provide Portland cement for grout	9,544	SACK	\$15	\$143,160
15	Provide sand for grout	142	TON	\$50	\$7,100
16	Core and test grout verification holes	420	LF	\$100	\$42,000
17	Blanket drain	1,200	CY	\$30	\$36,000
18	Drain wells	30	EA	\$3,000	\$90,000
19	Roller compacted concrete	109,500	CY	\$45	\$4,927,500

SAN/WP/COMAL/TECHNICAL MEMORANDUM

Source: Comal County





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DRY COMAL CREEK FLOOD RETARDING STRUCTURE – PRELIMINARY DESIGN SUMMARY REPORT

**TABLE 5**  
Dry Comal Creek Flood Retarding Structure – Preliminary Cost Opinion  
Comal County, Texas, December 2005

Item Number	Item Description	Estimated Quantity	Units	Unit Cost	Extended Cost
20	Reinforced concrete weir crest	400	CY	\$500	\$200,000
21	Reinforced concrete stilling basin	102	CY	\$500	\$51,000
22	Reinforced concrete weir training walls	126	CY	\$500	\$63,000
23	Reinforcing tendons	1	LS		\$100,000
24	Anchor bars	1	LS		\$100,000
25	Outlet conduit – Furnish and install steel pipe	94	LF	\$650	\$61,100
26	Outlet conduit – Concrete encasement	101	CY	\$200	\$20,200
27	Inlet structure	1	EA	\$15,000	\$15,000
28	Trashracks	3	EA	\$1,000	\$3,000
	Backfill	5,000	CY	\$5	\$25,000
29	Monitoring wells	6	EA	\$3,000	\$18,000
30	Survey monuments	1	LS	\$18,000	\$18,000
31	Staff gage	1	EA	\$2,500	\$2,500
32	<b>Subtotal</b>				<b>\$9,712,975</b>
33	Allowance for unscoped items	3%			\$291,400
34	<b>Subtotal</b>				<b>\$10,004,375</b>
35	Mobilization, Demobilization, and General Conditions	6%			\$600,300
36	<b>Subtotal</b>				<b>\$10,604,675</b>
37	Contingency	30%			\$3,181,400
38	<b>Total</b>				<b>\$13,786,075</b>

**Summary**

This Preliminary Engineering Report presents the results of our analysis for the Dry Comal Creek Flood Retention Structure. This Report also documents the basis of design recommended for the facility. Upon approval by Comal County, the basic facility sizing and design concepts presented here will direct the rest of the project as it moves forward into the final design phase.

Source: Comal County



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