URBAN DRAINAGE AND FLOOD CONTROL DISTRICT

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Cooperating Technical Partner Program
The District's experience to date

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Introduction

In November, 1997, the Federal Emergency Management Agency (FEMA) published "Modernizing FEMA's Flood Hazard Mapping Program, A Progress Report." One objective of the program was to implement a Cooperating Technical Communities Program (now called Cooperating Technical Partners) with state and local entities that had demonstrated sufficient technical capabilities to assume certain flood hazard identification functions.

On May 17, 1999, FEMA and the Urban Drainage and Flood Control District (District) executed the first Cooperating Technical Partnership (CTP) agreements in the nation. The agreements were signed in a ceremony at the opening session of the annual National Flood Conference, which was being held in Denver. FEMA was represented by Michael J. Armstrong, Associate Director for Mitigation; and the District was represented by Cathy Reynolds, Chairman of the Board, and Scott Tucker, Executive Director.

Two agreements were signed. The first was a "Memorandum of Agreement" in which the two parties agree to cooperate, in a general way, on flood hazard identification efforts. This agreement is sometimes referred to as the "Barney" agreement, after a certain purple dinosaur ("I love you. You love me.").

The second agreement, "Task Agreement 1 – Hydrologic and Hydraulic Data Preparation and Review" set forth specific areas of cooperation that have carried through to this day. This agreement, and four subsequent task agreements, will be discussed below.

Task Agreement 1

In this agreement the District agreed to conduct its flood hazard area delineation (FHAD) studies in accordance with FEMA's guidelines; and in accordance with the Colorado Water Conservation Board's (CWCB) rules and regulations. In return, FEMA agreed to perform "limited review of UDFCD flood studies for general conformance to applicable standards as referenced in this Agreement." What this means is that FEMA's Map Coordination Contractor (MCC) does not conduct a rigorous review of District studies, so that they can be accepted more quickly, and put on the Flood Insurance Rate Maps (FIRMs).

FEMA recognizes the District's rainfall runoff model, the Colorado Urban Hydrograph Procedure / Stormwater Management Model (CUHP/SWMM) as the basis for establishing flood discharges. Previously, we had had some nasty disputes with FEMA over the conflict between our model and FEMA's desire to use regional regression analyses.

Another long running disagreement between the District and FEMA (and FEMA's predecessor) is the use of future watershed conditions hydrology. The District has always used future conditions hydrology in its FHAD and master planning studies; whereas FEMA uses existing conditions for their FIRMs. The reasons for the disagreement are not important to this article, but they were real and long standing.

Task Agreement 1 addressed the disagreement as well as it could under those circumstances. First, the parties each acknowledge the other's position. Then, procedures are established for new hydrologic and hydraulic studies

At the signing ceremony, from left to right, Michael Armstrong, Scott Tucker, Cathy Reynolds and Art Patton.

done by the District. For hydrology, the District will complete hydrologic analyses for both existing and future conditions. If the future conditions discharges are within 130% of the existing, FEMA will accept them for use on the FIRMs. If the difference is greater than 130% the existing conditions hydrology will be used for the FIRMs.

FEMA also agreed to include future conditions hydrology information in Flood Insurance Studies (FIS) and FIRMs in accordance with a then on-going study under FEMA's Map Modernization Program.

For hydraulics, the agreement states that if base flood elevations (BFEs) were calculated for both existing and future discharges, and they were within 0.5 feet, then FEMA would consider a request to publish only the future hydrology BFEs and floodways.

The agreement also discusses digital mapping and cost sharing, but there is nothing there of great import. Finally, the agreement establishes a dispute resolution procedure.

How has it worked?
FEMA's recognition of the District's hydrology model has meant that the District has been able to move forward with numerous FHAD and master planning studies with confidence that a dispute with FEMA does not await at the end of the process, even if the future discharges exceed 130% of existing. Now the District, as a part of each study involving new hydrology, will complete a hydrology report and submit it to FEMA for acceptance. All such studies have been accepted by FEMA.

In a number of cases, most notably the Willow Creek FHAD, Plum Creek and Tributaries FHAD (which will be discussed in greater detail below) and Big Dry Creek FHAD, the discharges were within 130%. In these cases FEMA wrote letters accepting the hydrology and we were able to proceed with requests for Letters of Map Revision based on the future hydrology.

There have also been cases where the future hydrology exceeded the existing by more than 130%, with the Upper and Lower Box Elder Creek and Tributaries FHADs being the biggest examples. The District has published the FHADs using the future hydrology conditions, and we also have the existing discharges flood outlines and profiles in digital form ready to go when FEMA converts the affected FIRMs to Digital FIRMs (DFIRMs).

FEMA published a new rule in 2002 that allows local governments to request that future conditions 100-year floodplains be shown on FIRMs. These are shown in addition to the existing discharges floodplain, which is still the official floodplain for flood insurance purposes.

There has not been a situation develop where the 0.5 feet difference in BFEs has come into play. Neither has there been any need to invoke the dispute resolution procedure.

Task Agreement 2
In November, 1999, the District and FEMA Region 8 executed an agreement for a $20,000 grant to be used for a pilot project to combine AutoCAD files from the District's FHAD for Willow Creek, Little Willow Creek and East Willow Creek in Douglas County, completed by Icon Engineering, with Douglas County ArcInfo GIS road center line base maps to produce a sample DFIRM using FEMA's then current DFIRM Spatial Database requirements.

The District's GIS consultant, Merrick and Company, completed the project for the District. A number of problems were encountered which won't be detailed here. However, as a result of this initial experience a draft guidance document (*UDFCD Guidelines for FHAD Mapping for use in DFIRMs*) was prepared to guide future FHAD studies. This document was used by WRC Engineering for the Big Dry Creek FHAD and Plum Creek and Tributaries FHAD; with very good results. The document was revised to make a few minor changes and a final version was published in March, 2002. FEMA has accepted the DFIRM conversion of the Willow Creek FHAD flood data. The Big Dry Creek and Plum Creek flood data have been added to the Willow Creek data and the entire package was submitted to FEMA for review in November, 2002. The guidelines are now incorporated into all District FHAD contract documents.

Task Agreements 3, 4 & 5
In early 2001, FEMA and the District entered into Task Agreement 3 to conduct a pilot project for the District to review requests for Letters of Map Change, specifically Conditional Letters of Map Revision (CLOMR) and Letters of Map Revision (LOMR) for the 32 communities within the District that are participating in the National Flood Insurance Program (NFIP). The project was funded by a $100,000 grant administered through FEMA Region 8.

The District retained Icon Engineering to assist with the technical reviews of the applications. The project began on Monday, July 2, 2001, and a request was received that day. The agreement called for a six-month evaluation of the District's performance, which was held in Denver on February 26, 2002. At that time FEMA agreed to provide additional funding to finish the year (Task Agreement 4 for $40,000), and a second year of the pilot was also agreed to (Task Agreement 5 for $140,000).

Thirty-seven cases were assigned to the initial grant. Of those, thirty-four were successfully completed, two applicants withdrew, and one was still active and was reassigned to the second grant. The average time taken from receipt of all data to providing a draft letter to FEMA for signature was 21 days. FEMA received fees from the applicants totaling $121,200 and the District expended $98,661.94. A final report on the initial grant will be completed by January 31, 2003.

Broomfield DFIRM conversion
In 2000, the voters of Colorado established the new City and County of Broomfield. The new county came into

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years. They have to meet interim goals of a ten percent reduction each year. How in the world does the State expect this to be realistically accomplished? Technically, Los Angeles will be in violation of their permit if these conditions are not met and then subject to citizen suit and enforcement actions by the state. This is a regulatory program run amuck.

Most Phase II communities will be initially permitted without having to consider the implications of a Total Maximum Daily Load (TMDL) study. TMDL studies are performed for water bodies that are not meeting their beneficial uses. Wasteload allocations (WLA) are assigned to each point source which if met will theoretically restore the beneficial use to the stream. TMDLs are done for each pollutant that is causing the water not to meet its beneficial use. For point sources the TMDL WLA will be enforced and implemented through NPDES permits. What this means is that Phase I and Phase II municipal stormwater permitted entities can expect their permits to be cranked up a notch or two to meet the WLA assigned to them if a TMDL has been completed in their watershed. Local governments will have to do whatever it takes to meet the WLA requirement regardless of cost. TMDLs are a big sleeping giant that could escalate the cost of complying with Phase I and Phase II permits dramatically.

The last issue is how water quality standards will be applied to municipal stormwater. The bottom line in municipal Phase I and Phase II permits is that stormwater discharges must not cause or have the reasonable potential to cause or contribute to a violation of a water quality standard. Also, if a TMDL is in place the WLA necessary to meet requisite water quality standards are to be expressed in numeric form in the TMDL. For the classic or normal point source these are translated to numeric maximum allowable concentrations of the pollutant in question at the end of the pipe. The discharger is required to monitor the effluent and report any exceedences. The impracticality of doing this for storm sewers, however, is recognized and EPA in recent guidance stated that "… wasteload allocations in TMDLs may be expressed in the form of best management practices (BMPs) under specified circumstances". The EPA guidance goes on to say "… that most WQBELs (Water Quality Based Effluent Limits) for NPDES-regulated municipal and small construction storm water discharges will be in the form of BMPs, and that numeric limits will be used only in rare instances." So for the time being meeting water quality standards will mean implementing the BMPs that are determined necessary to meet the standard. The good news is that compliance will be based on doing the BMPs you said you were going to do in your NPDES permit and not on numeric effluent limits at the end of the pipe. The bad news is that the BMPs that are determined to be necessary to meet water quality standards could be quite extensive and expensive, much more than the initial Phase I and Phase II permits.

To summarize the municipal stormwater NPDES permit program in my view, it could be said that what we see now is just the beginning. Requirements will be ramped up with each 5-year permit renewal. If a TMDL has been completed for an impaired receiving water and a WLA has been assigned to municipal stormwater the increased requirements could be substantial. Just look at Los Angeles and a requirement of zero trash in stormwater discharge at the end of ten years. Also, there is always the specter of end of pipe numerical effluent limits being applied to municipal stormwater. EPA has been careful to say, for example, that wasteload allocations may be expressed in the form of BMPs, leaving the door open to impose numerical effluent limits if they or a state chooses to do so.

Board Chairmanship Change

Councilwoman Cathy Reynolds has been Chairman of the Board of Directors of the Urban Drainage and Flood Control District since 1980 and she has served on the Board since 1976. Her term as a Councilwoman in Denver will end in July 2003 and she will no longer be able to serve on the Board. Speaking for myself, the staff, and the entire Board, her leadership will be greatly missed. She is a natural leader, which is demonstrated by the fact that a disparate Board made up of mayors and county commissioners from all over the metro area expressed their confidence in her by asking her each year for 22 years to be their chairman. No mean feat from a pretty tough crowd. I have worked with Cathy on many issues and will miss her guidance. She is not only smart, but she has good common sense, good instincts, and a good sense of humor. I have always respected, trusted, and followed her judgment and advice. We will all miss Cathy a great deal.

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being on November 15, 2001. The District saw the creation of this county as an opportunity to prepare a new countywide Digital Flood Insurance Rate Map (DFIRM), utilizing FEMA's DFIRM specifications. Our belief was that we could learn a great deal about the process that would be involved in such an effort while completing a countywide map for a small county, which was affordable to the District.

Although this project was not the subject of a CTP task agreement, we felt our relationship with FEMA was such that we could both benefit from this effort.

After the District had begun its DFIRM conversion effort, FEMA published a draft Implementation Strategy for Flood Map Modernization. We determined that our Broomfield effort very closely resembled FEMA's definition of a Level 1 Flood Map Upgrade. The process we followed and the lessons we learned are discussed in a paper published on our web site. This paper is intended to demonstrate how the District has in effect developed a Level 1 map upgrade for Broomfield, and how that DFIRM is vastly superior to the current paper FIRM. The paper has been provided to FEMA for their use in finalizing DFIRM conversion guideance. The DFIRM was provided to FEMA in November and is currently undergoing their revies.