



MEMORANDUM

TO: Mayor and Council

FROM: Victoria J. Li, P.E., Director
Watershed Protection Department

DATE: July 16, 2014

SUBJECT: Staff Report - Resolution No. 20140515-064 – Flood Insurance Programs and Federal Buyout Assistance

On May 15, 2014, Council passed Resolution No. 20140515-064 directing the City Manager to provide options for city-wide flood prevention, protection and preparedness and to report to Council on various aspects of federal buy out assistance and flood insurance programs. Specifically, the resolution requires a report identifying gaps in current flood insurance enrollment city-wide, a history of changes to the Flood Insurance Rate Map for Travis County, the local impact of federal legislation amending the National Flood Insurance Act, and opportunities for improving Austin's Community Rating System classification. The resolution also directs the City Manager to analyze the impacts of pursuing local options for flood prevention and recovery efforts on the eligibility for federal buyout assistance.

Flood Insurance Programs:

With 11,000 properties at risk of flooding in the City and only 4,900 buildings with flood insurance policies, it is clear that a wide gap exists between the number of buildings at risk of flooding versus the number of flood insurance policies. While the City does not regulate or sell flood insurance, we do have the responsibility of informing the public about flood risks in order for them to make informed decisions that will help protect themselves and their families during and after flood events. The Watershed Protection Department has a targeted public outreach component to our floodplain program that is continually improving our ability to contact the public through a variety of media types.

The solvency of the FEMA (Federal Emergency Management Agency) National Flood Insurance Program (NFIP) has been a topic at the national level for many years. Congress has revised the flood insurance program twice in the past two years. Even though recent legislation in HFIAA-14 (Homeowner's Flood Insurance Affordability Act of 2014) reinstated or modified some of the subsidies that were eliminated in the 2012 legislation, to some degree all flood insurance policy premiums will be increasing in order to attempt to get the NFIP out of debt.

With that said, the City participates in the Community Rating System (CRS) that aims at reducing flood losses by encouraging communities to strengthen their floodplain management program. In addition to increased resilience to flood events, the CRS program discounts flood insurance premiums for all policies in the City. Austin residents currently receive a 20% discount on flood insurance premiums because the City's floodplain management regulations exceed FEMA's minimum standards. There are

ways to improve our rating to further increase the premium savings, such as property buyouts, preserving open space, and expanding our floodplain regulations.

In addition to our education and outreach to communicate flood safety to the community, the City, in partnership with FEMA, creates maps that indicate the location and extent of floodplains throughout the City. These maps are used by the City to regulate development in the floodplain, by insurance agents to rate flood insurance policies, and by the general public to determine flood risk. As the technology used to complete floodplain studies improves, the floodplain maps, consequently, change over time. Over the past 33 years, the City has completed many updates to our floodplain maps each time to more accurately indicate flood risk for the community's use.

Federal Buyout Assistance:

Resolution No. 20140515-064 further directed the City Manager to analyze the impacts of pursuing local flood options for flood prevention and recovery efforts on the eligibility for federal buyout assistance.

The City of Austin's Onion Creek Buyout Project, in conjunction with the US Army Corps of Engineers (Corps), Travis County, the City of Sunset Valley and the LCRA, has more than \$76 million in allocated project costs from both Federal and non-Federal funding. Those costs are applied to, 1) property buyouts, 2) ecosystem restoration, and 3) recreation elements of the project. The City's total cost share is almost \$28 million of which approximately \$23 million is expenditure for the buyout portion of the project.

The federal budget includes an \$11.8 million appropriation for the Onion Creek Buyout Project for Fiscal Year 2014, the President has included a request for \$3.6 million in the federal budget for Fiscal Year 2015, and the project has moved beyond the "new start" procedural barrier. Thus, it is highly probable that the project will be funded in future years, along with other on-going projects of the Corps, until the project is completed.

A significant issue currently unresolved is whether the City will be reimbursed for expenditures beyond the City's allocated share of the project, which has already been exceeded. The projected buyout expenditures by the end of this fiscal year will be over \$45 million, surpassing the City's buyout cost share of \$23 million. Staff is presently working with the Corps on a "project partnership agreement" which may clarify to what extent the City will be reimbursed. We anticipate completing that agreement by the end of August 2014.

Attached for your information is a detailed report in response to the referenced resolution.

Resolution No. 20140515-064 included direction to bring forward options as a part of the Fiscal Year 2014-15 budget for investment in flood prevention, protection and preparedness for properties city-wide. Staff is working with the Budget Office to develop those options and will distribute a separate report by July 31st.

Please contact Jose Guerrero, Assistant Director, Watershed Protection Department, should you have any detailed questions or concerns at (512) 974-3386 or via e-mail at Jose.Guerrero@austintexas.gov.

Attachment

Cc: Marc A. Ott, City Manager
Sue Edwards, Assistant City Manager
Joe Pantalione, P.E., Deputy Director, Watershed Protection Department
Jose M. Guerrero, P.E., Assistant Director, Watershed Protection Department



**WATERSHED PROTECTION DEPARTMENT
REPORT FOR COUNCIL RESOLUTION NO. 20140515-064**

Council Resolution No. 20140505-064 directed the City Manager to prepare a report identifying gaps in current flood insurance enrollment city-wide, a history of changes to the Flood Insurance Rate Map for Travis County, the local impact of federal legislation amending the National Flood Insurance Act, and opportunities for improving Austin's Community Rating System classification. The resolution also directed the City Manager to analyze the impacts of pursuing local options for flood prevention and recovery efforts on the eligibility for federal buyout assistance.

Gaps in Current Flood Insurance Enrollment:

Flood insurance backed by the federal government is available to anyone in Austin based on the City's participation in the National Flood Insurance Program (NFIP). The City does not sell or regulate flood insurance; nor does the City determine or enforce when flood insurance is required. Federal regulations require flood insurance when someone has a federally-backed mortgage for a building that touches the 100-year floodplain, as indicated on a FEMA Flood Insurance Rate Map (FIRM) map. The City does create floodplain maps to include on updated FIRMs. We also enforce floodplain regulations in order to participate in the NFIP.

There are 5,977 flood insurance policies in the City of Austin covering 4,903 buildings with \$1.2 billion of insurance in force. The difference in these values (1,074) is due to condominium units having multiple policies in one building. Since Austin joined the National Flood Insurance Program in 1981, there have been 1,686 claims paid out to a total amount of \$40.1 million.

Comparing the 4,903 covered buildings with the nearly 11,000 buildings at risk of flooding in the City, it is clear that there is a gap in flood insurance coverage in the City. Several studies have indicated that only around 50% of homes nationwide identified by FEMA as being within the 100-year floodplain have flood insurance. It is the lender's responsibility to require insurance when a home is in the floodplain either at the time it is purchased or if the floodplain maps change. Lenders' compliance rate with the mandatory flood insurance requirement is around 75% nationwide.

There are several factors that could be contributing to this lack of coverage nationwide. Analysis has shown that there is a general lack of awareness as to the risk of flooding outside of coastal areas and away from major waterways such as the Mississippi River. This may be even more pronounced in Austin due to the large number of creeks that are relatively small compared to larger bodies of water such as the Colorado River; the recent drought conditions; and the fact that many area creeks are dry most of the year. Research nationwide has shown that the total number of structures at risk in a community affects flood insurance coverage, with a larger number of structures at risk being associated with a higher rate of insurance coverage. While the City of Austin has a sizeable number of homes at risk of flooding, their dispersal throughout the city caused by our large number of watersheds could contribute to a lack of awareness of risk as opposed to a more typical community that has their at-risk structures concentrated in one neighborhood or area with a more obvious flooding source.

Working to increase flood insurance coverage is vital for both the City of Austin and the nation as a whole. Flood insurance can help to minimize the disruption citizens face and to provide economic stability following a flood event. In recent years the banking industry has made improvements to better determine when a flood insurance policy is required on a property. As properties continue to change ownership due to the current real estate climate in Austin, we should expect some improvement in flood insurance coverage based upon lender requirements. This will not, however, completely address the issue, and continued and increased education about flood risk within the City of Austin appears to be our most powerful tool to ensure that all at-risk properties are adequately insured.

The Watershed Protection Department (WPD) has had a public outreach/education component to our floodplain program for many years. Through news events, neighborhood meetings, Web presence, community events, and kids' poster contests, WPD continues to educate the public about flood safety, including flood insurance. Within our current budget limits, we have increased our efforts to diversify the types and frequency of media we use to improve our success with outreach and education. With additional funding, we could further our goal by using media that would reach a broader audience.

History of Changes to the Flood Insurance Rate Map for Travis County:

City of Austin participation in the National Flood Insurance Program (NFIP) began in 1977 with the creation of Flood Hazard Boundary Maps (FHBM). Our more formal initiation of the NFIP within the City was on September 2, 1981, with our adoption of the first Flood Insurance Rate Maps (FIRM). Since that time the FIRMs for the City of Austin and Travis County have gone through several major changes since the creation of the original FHBM in 1977 (City of Austin) and 1978 (Travis County). The most significant of the changes occurred in 1981/1982, 1993, and 2008. The 1981/1982 update, which was based on comprehensive engineering studies by URS/Forrest & Cotton and the U.S. Army Corps of Engineers (Corps), resulted in the first set of FIRMs for Austin and Travis County. The 1993 update provided revised analyses for most of the major watersheds in the area and produced the first county-wide Flood Insurance Study (FIS) and FIRMs. Until the 1993 update, the FIS and FIRMs had been separate for each incorporated community and the unincorporated portions of Travis County. The 2008 update, which was prompted in part by FEMA's Map Modernization program, revised the analyses for many of the major watersheds, established a new panel scheme for the FIRMs, and produced the first digital versions of the data presented in the FIRMs.

The 1993 update resulted in the most significant changes to the Onion Creek floodplains. In 1991, the Corps completed an updated engineering study for the Onion Creek watershed that incorporated new topographic data and included revised hydrologic analysis that produced significantly higher flow rates. The combination of these two factors resulted in 100-year flood elevation increases as large as 10 feet in the area immediately upstream of East William Cannon Drive. The 1993 update was the first major change to the Onion Creek floodplain since FEMA published the original FIRMs in 1981. Subsequent minor revisions and the Corps feasibility study completed in 2006 resulted in additional changes to the Onion Creek floodplain, but none as significant as the 1993 FIRMs.

Upcoming Map Changes:

Additional significant changes to the City's FIRMs will become effective in August 2014 and in late 2015. The 2014 update will incorporate changes to the Walnut Creek and Gilleland/Decker/Elm Creeks floodplains. The Walnut Creek changes are due to the City's construction of a regional detention facility (Pond G). The Gilleland/Decker/Elm Creek changes are due to the City's updated floodplain study (completed in 2010). The 2015 update will incorporate changes based on the City's updated floodplain studies of the Dry Creek East, Cottonmouth, Carson, Fort, Tannehill, Boggy, Shoal, and Bull Creek watersheds that the City completed between 2011 and 2013. Table 1 provides a full history of the FIRM updates for Austin and Travis County while Table 2 provides a corresponding history of the associated Flood Insurance Studies (FIS). The Floodplain Office maintains digital copies of most of the historical floodplain maps that have been produced for Austin and Travis County.

Reasons for Map Change:

The need to update a FIRM is based on several factors; the frequency of the update is dependent on the rate at which these factors change. The primary factors that trigger the update of a FIRM are as follows:

1. Changes in the level of development within studied watersheds;
2. Construction of significant flood control projects;
3. New and more detailed topographic data;
4. Improved engineering methods and computational models for the estimation of runoff (flows) and the calculation of flood elevations;
5. Changes in jurisdictional boundaries; and
6. Major initiatives promulgated by FEMA.

Most of the comprehensive or large scale updates to the FIRMs that have occurred within Travis County have resulted from a combination of all or most of these factors.

FEMA versus Fully Developed Condition Floodplains:

The FIRMs and FIS provide flood risk information based on existing watershed conditions. The FIRMs primary purpose is to determine flood risk to set insurance rates. The City's floodplain regulations are based on fully developed conditions within a watershed, which is a higher standard than FEMA's existing conditions. The City considers these fully developed condition floodplain maps and supporting models as the effective regulatory tools as soon as they are completed and approved by the WPD. The effective condition FEMA floodplains, on the other hand, must go through the formal Federal process before they are represented on the effective FIRMs and thus used for insurance purposes. This Federal process typically takes at least two years after the engineering and mapping portions of the studies have been completed.

Frequency of Watershed Updates:

As indicated by the sequence of major FIRM updates, the WPD periodically revisits and revises the floodplain studies and maps for the watersheds that impact the public. These updates have typically occurred at 10 year intervals. The significant development that has occurred within Travis County during the past decade combined with known limitations associated with previous studies has prompted the WPD to reduce the interval between restudies for several watersheds such as Shoal Creek, Boggy Creek, Fort Branch and Carson Creek. For some of these watersheds, sufficient funding was not available for complete restudy during the previous updates that resulted in the 2008 FIRM update. The WPD's current 10-year plan calls for restudy or study update of major watersheds on a 5- to 10-year basis, with the specific frequency dependent on the factors listed above. In some cases, significant events such as the 1981 Memorial Day flood or the 2013 Halloween Flood may prompt more frequent floodplain study updates.

Digital Versions of Historic FIRMs:

After the 2013 Halloween Flood, the Floodplain Office produced a series of maps depicting the changes in the FEMA floodplains for the two areas within the City of Austin that were hardest hit by the flood (Onion Creek upstream of William Cannon Drive and Onion Creek between Bluff Springs Road and IH 35). The production of such maps takes a significant amount of time and effort since the information from the historic flood maps is not available in digital format. The effort is often complicated by the quality of the base mapping used for the historic flood maps. This base mapping typically does not align well with current, more accurate data. The Floodplain Office is currently partnering with the WPD Master Planning group to improve the usability of available historic floodplain maps. This will provide us with a full, digital set of the historic floodplain information for the City that can be used to produce maps similar to those generated for the Onion Creek areas. We anticipate that this effort will take several months to complete.

Table 1: Travis County and City of Austin Flood Insurance Rate Map Revisions

Date	Type of Map	Notes	Impacted Watersheds
City of Austin			
May 31, 1977	FHBM	Based on Corps Flood Plain Information studies and other sources	All studied watersheds
September 2, 1981	FIRM	Based on 1981 Corps study, which built upon the 1978 URS/Forrest and Cotton Study	All studied watersheds
September 5, 1984	FIRM	One panel (0040C) revised – minor floodplain changes	Walnut Creek (small area)
September 27, 1985	FIRM	Three panels (0035C, 0040D, and 0095C) revised	Revised corporate limits
May 15, 1986	FIRM	One panel (0020C) revised – minor floodplain changes	Little Walnut Creek
Travis County			
March 7, 1978	FHBM	Based on Corps Flood Plain Information studies and other sources	All studied watersheds
April 1, 1982	FIRM	Based on 1981 Corps study, which built upon the 1978 URS/Forrest and Cotton Study	All studied watersheds
September 27, 1985	FIRM	Five panels (0250C, 0255C, 0260C, 0295C, and 0300C) revised	Revised corporate limits
January 2, 1987	FIRM	Two panels (0255D, 0300D) revised – minor floodplain changes	Williamson Creek (upper)

Date	Type of Map	Notes	Impacted Watersheds
Travis County (Countywide)			
June 16, 1993	FIRM	First county-wide study. All county and incorporated community maps re-paneled to enforce consistency throughout the county. Studies performed primarily by the Corps with additional studies by CDM, Dannenbaum, Dewberry & Davis, Espey Huston and the City of Austin. Studies completed from January 1986 through August 1991.	Barton, Bear, Boggy, Tannehill, East Bouldin, West Bouldin, Bull, Cherry, Cottonmouth, Kincheon, Shoal, Gilleland, Harris, Johnson, Little Bear, Little Walnut, Marble, Onion, Waller, Walnut, and Williamson creeks
June 5, 1997	FIRM	Four panels (0170F, 0210F, 0215F, 0255F) revised based on studies by the Corps (SBG – Nov 1995) and the City of Austin (CCE, CCW – Jan 1996)	South Boggy, Country Club East, and Country Club West Creeks
January 19, 2000	FIRM	Eleven panels (0095F, 0100F, 0130F, 0135F, 0170G, 0175F, 0215G, 0260F, 0265F, 0305F, 0340F) revised	Onion Creek
April 15, 2002	FIRM	Six panels (0315E, 0320E, 0325E, 0350E, 0355E, and 0360E) revised to produce 2 panels at 1:800 (0690F and 0670F) and 17 panels at 1:400 (0689F, 0802F, 0804F, 0812F, 0814F, 0801F, 0803F, 0811F, 0813F, 0782F, 0784F, 0792F, 0794F, 0781F, 0783F, 0791F, 0793F)	Lake Travis and tributaries
September 18, 2008	FIRM / DFIRM	FEMA Map Modernization study – Re-paneled entire county and set all panel numbers to H. Produced first Digital Flood Insurance Rate Maps (DFIRM) for Travis County.	Danz, East Bouldin, West Bouldin, Walnut, Little Walnut, Marble, Carson, Colorado River, Fort, Shoal, Onion, Tannehill, Waller; Boggy, Blunn, Slaughter; Dry North, Harris, Johnson; Williamson, Cherry, Kincheon, Pleasant Hill and Sunset Valley creeks
August 18, 2014	FIRM / DFIRM	Walnut Creek main stem (Pond G LOMR) and the Gilleland/Decker/Elm Creek study – 15 panels	Walnut, Gilleland, Decker, and Elm Creeks

Date	Type of Map	Notes	Impacted Watersheds
~October 2015	FIRM / DFIRM	Dry Creek East and new floodplain studies for Cottonmouth, Shoal, Fort, Tannehill, Boggy, Shoal, Bull and West Bull watersheds – 23 panels	Dry Creek East, South Fork of Dry Creek East, North Fork of Dry Creek East, Cottonmouth, Carson, Boggy, Fort, Tannehill, Shoal, Bull, and West Bull creeks

Table 2: Travis County FIS Revision History

FIS Revision Date	Source of Study	Notes
City of Austin FIS		
June 1978	URS/Forrest and Cotton Inc.	The hydrologic and hydraulic analyses for the FIS dated June 1978 were prepared by URS/Forrest and Cotton, Inc., Consulting Engineers, for FEMA, under Contract No. H-3972.
March 2, 1981	Corps	In the FIS revision dated March 2, 1981, and the FIRM dated September 2, 1981, the hydrologic and hydraulic analyses were prepared by the Corps based on the URS/Forrest and Cotton work.
May 15, 1986		Minor changes to Walnut Creek near the confluence with Little Walnut Creek.
Travis County FIS		
June 1978	URS/Forrest and Cotton Inc.	The hydrologic and hydraulic analyses for the FIS dated June 1978 were prepared by URS/Forrest and Cotton, Inc., Consulting Engineers, for FEMA, under Contract No. H-3972.
October 1, 1981	Corps	In the FIS revision dated March 2, 1981 and the FIRM dated September 2, 1981, hydrologic and hydraulic analyses were prepared by the Corps based on the URS/Forrest and Cotton work.
January 2, 1987		Minor changes to upper Williamson Creek.
Travis Countywide FIS		
June 16, 1993	Corps, March 1991	Onion Creek flows were updated based on revised flows produced by the Corps in a 1984 study and incorporated into the 1991 Corps study that produced the 1993 FIS
June 5, 1997	Corps, November 1995 and City of Austin, January 1996	Corps study of South Boggy Creek completed in November 1995 and City of Austin study of Country Club East and Country Club West Creeks completed in January 1996.

FIS Revision Date	Source of Study	Notes
January 19, 2000	Corps, July 1997	The hydrologic and hydraulic analyses for the restudy of Onion were performed for FEMA by the Corps under Interagency Agreement No. EMW-95-E4759, Project Order No. 4. This restudy was completed in July 1997.
April 15, 2002		Update of panels for Lake Travis and its tributaries in the vicinity of Lago Vista.
September 26, 2008	MAS 1, MAS 2, MAS 3 and MAS 4 (Primarily Halff Associates)	FEMA Map Modernization study – Danz, East Bouldin, West Bouldin, Walnut, Little Walnut, Marble, Carson, Colorado River, Fort, Shoal, Onion, Tannehill, Waller; Boggy, Blunn, Slaughter; Dry North, Harris, Johnson; Williamson, Cherry, Kincheon, Pleasant Hill and Sunset Valley. Studies were performed by Halff Associates, Watershed Concepts, Espey Consultants, Corps and various LOMRs incorporated by Halff Associates.
August 18, 2014	Freese & Nichols, Halff Associates	Physical Map Revision (PMR) for the Walnut Creek main stem (Pond G LOMR – Freese & Nichols) and the Gilleland/Decker/Elm Creek study (Halff Associates).
~October 2015	MAS 5 (Halff Associates, Atkins)	Physical Map Revision for the Dry Creek East and Mapping Activity Statement (MAS) 5 studies (Cottonmouth, Shoal, Fort, Tannehill, Boggy, Shoal, Bull and West Bull watersheds).

Summary of Local Impact of Federal Legislation amending the National Flood Insurance Rate Act

On March 21, 2014, President Obama signed the Homeowner Flood Insurance Affordability Act of 2014 (HFIAA-14) into law. This law repeals and modifies certain provisions of the Biggert-Waters Flood Insurance Reform Act of 2012 (BW-12), and makes additional changes to other aspects of the National Flood Insurance Program (NFIP) not covered by BW-12. Many provisions of BW-12 remain and are still being implemented.

HFIAA-14 lowers the recent rate increases on some policies, prevents some future rate increases, and implements a surcharge on all policy holders. This annual surcharge (\$25 for primary residences and renters, \$250 for others) will apply to all policies nationwide to offset the cost of subsidies which were reinstated by HFIAA-14. It will affect all 5,977 Austin policy holders.

With the reinstated subsidies, owners of primary residences that were previously receiving a subsidy on their flood insurance premium will continue to receive a subsidy with future scheduled rate increases limited to no more than 18 percent annually. Owners of business properties, non-primary residences, severe repetitive loss properties, or buildings that have been substantially damaged or substantially improved will still see the 25 percent annual rate increases called for by BW-12 until full risk rates have been achieved.

HFIAA-14 reinstates some of the grandfathering options previously eliminated by BW-12. Properties affected by changes to FEMA maps will now be limited to, at most, 18 percent annual increases (up to full actuarial risk rates). This gradual increase is in lieu of the immediate increase to actuarial rates called for under BW-12. In addition, the option to renew a policy based on a property being outside the floodplain (Preferred Risk Policies) on properties recently mapped in the 100-year floodplain is limited to only one year. Before BW-12, these policies could be renewed for five years.

There are several different scenarios regarding the future status of NFIP policies for the structures affected by the October 2013 flood events. However, specifics of each policy are unique and owners with questions about changes to their policy should speak directly with their flood insurance agent.

Almost all of the homes affected by the October 2013 flood within the City of Austin are considered pre-FIRM structures. Pre-FIRM structures are defined as structures that were built prior to the issuance of the initial FIRMs for a community (9/2/1981 and 4/1/1982 for Austin and Travis County, respectively). Pre-FIRM structures are eligible for some types of grandfathered rates that are not available to post-FIRM structures. Under the current legislation, some policy holders of owner-occupied structures will be able to maintain their subsidized rates with possible annual increases of no more than 18 percent. Owners of structures which are non-primary residences, i.e. rental properties, will see their subsidies phased out with annual increases of no more than 25 percent until full risk rates are achieved.

Structures which have been declared substantially damaged, owner occupied or not, may eventually see an increase of 25 percent annually until full risk rates are achieved. It is the City's understanding from conversations with FEMA officials, that the intent of this requirement is not to raise rates for owners that are continuing to work with the local community to bring the substantially damaged building into compliance. Rather, the intent is for owners of substantially damaged homes that have not made an effort to bring their homes into compliance with federal and local rules to eventually pay premiums based upon their full risk.

This means that for the flood affected areas in the City, almost all policies could see some increase in premiums, with some at a fairly high rate. A scenario in which an owner could see a decrease in premiums is if they were to bring their home, substantially damaged or not, into compliance with current floodplain requirements. A home with the finished floor raised to one-foot above the floodplain elevation, as required by city code, would have an actuarial rate that is lower than the subsidized rates currently paid by owners in these neighborhoods.

Given that the grandfathered premiums could increase fairly quickly to the full risk rates, it is worth discussing what the full risk rate for these structures could be. Working with officials from the FEMA Region 6 offices and the Texas Water Development Board (TWDB), we have calculated a possible scenario for the full risk, actuarial rate for a typical home in the Onion Creek Forest/Yarabee Bend neighborhoods. Assuming a single family, slab on grade, one story home valued at \$100,000 with a finished floor six feet below the 100-year flood elevation, and factoring in the existing Community Rating System discount that Austin residents receive, the total annual cost of a NFIP policy for building coverage only (no contents coverage) would be \$7,275. The cost of current policies varies, but likely range between \$800 and \$1,200 per year.

As previously stated, residents will not see these increases immediately. However, when considering the continued affordability of flood-prone homes in these neighborhoods, the actuarial cost of insuring these buildings should be considered since the NFIP will ultimately implement these rates under the current legislation.

Opportunities for Improving Austin's CRS Rating

The City of Austin has participated in the National Flood Insurance Program (NFIP) since 1981. One requirement to participate is to enforce the NFIP minimum standard floodplain regulations. In 1981, the City (and many other communities nationwide when they entered the program) chose to adopt and enforce floodplain regulations that exceed the minimum standards to further protect the health, safety, and welfare of the public from flood hazards. FEMA implemented the Community Rating System (CRS) in 1990 as a voluntary program for recognizing and encouraging community floodplain management activities exceeding the minimum NFIP standards. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: reduce flood damage to insurable property; strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management.

The City of Austin is currently a CRS class 6 community. As a result, NFIP policy holders in the City are eligible to receive up to a 20 percent discount on flood insurance premiums. Each increase in class reduces premiums by up to 5 percent with a class 1 community receiving up to a 45 percent reduction in premiums. FEMA recently revised the CRS program in several ways, which may prove beneficial to the City of Austin. Among the changes most relevant to the City is the increase in credit awarded for preserving and rehabilitating the natural and beneficial functions of floodplains. This dovetails well with the requirements of the City's recently adopted Watershed Protection Ordinance. Staff is working to ensure that we are able to claim as much credit for this and other activities as possible the next time Austin completes a re-verification visit from FEMA, which is expected to occur within the next 12 months.

There are four CRS activities which receive the most points toward an improved rating: open space preservation; higher standards; acquisition and relocation; and flood protection. The open space preservation activity provides credit for floodplain land that is protected from development either through ownership by the City, deed restrictions, or easements. Buyouts of properties in the floodplain and City ordinances such as the Watershed Protection Ordinance both contribute points in this category. Additional credit is available under this activity for protecting land that functions as a healthy riparian area and for preserving the connectivity of floodplains within a watershed.

Austin currently receives credit for the higher floodplain management standards we have adopted and enforce. Further strengthening our regulations to achieve more credit presents challenges. There are only a few such standards which we do not currently enforce or could enforce more strongly. The City could adopt a higher freeboard standard. We currently receive credit for requiring the finished floor of a building to be one-foot above the 100-year flood elevation; that requirement could be raised to two or three feet as is the case in many other communities nationwide. Raising the freeboard requirement could conflict with other code requirements such as McMansion, "visitability", and capital view corridors. Additionally, we could lower the threshold for what constitutes a substantial improvement to less than 50 percent of the existing structure value. This could be perceived as placing an undue burden on owners of existing nonconforming uses. It would be more likely for the owners of homes impacted by this change to be required to raise the finished floor of their homes in order to complete interior remodels.

Acquisition and relocation is the activity with the most potential for an increase in credit. This is the area in which the City's buyout programs are credited. Credit under this activity is scored based upon how many structures have been bought out leveraged against how many structures remain within the floodplain in the community. There are two key ways in which the City can increase the credit provided under this activity. The first is to continue to fund buyout programs in areas where buyouts are the most feasible flood mitigation solution. The second is to limit approval of new structures in the floodplain. By way of how the credit is scored, each new structure approved in the floodplain negates the CRS credit earned by a bought out property.

The flood protection activity provides credit for engineered solutions that protect structures from flooding. The Crystal Brook and Creek Bend flood walls are examples of past projects that currently provide the City credit under this activity. The Waller Creek tunnel will also provide credit under this activity when it is completed and operational. The Watershed Protection Department has identified additional projects both funded and unfunded that would decrease flood risk to the public while increasing our credit in CRS. Staff continues to look for opportunities for such flood protection projects during our Capital Improvement Project appropriation each year. Helping to secure funding for such projects is one way to continue to increase Austin's CRS rating.

Impacts of pursuing local options for flood prevention and recovery efforts on the eligibility for federal buyout assistance

The City of Austin's Onion Creek Buyout Project, in conjunction with the US Army Corps of Engineers (Corps), Travis County, the City of Sunset Valley and the LCRA, has more than \$76 million in allocated project costs from both Federal and non-Federal funding. Those costs are applied to, 1) property buyouts, 2) ecosystem restoration, and 3) recreation elements of the project. The City's total cost share is almost \$28 million of which approximately \$23 million is expenditure for the buyout portion of the project.

The federal budget includes an \$11.8 million appropriation for the Onion Creek Buyout Project for Fiscal Year 2014, the President has included a request for \$3.6 million in the federal budget for Fiscal Year 2015, and the project has moved beyond the "new start" procedural barrier. Thus, it is highly probable that the project will be funded in future years, along with other on-going projects of the Corps, until the project is completed.

A significant issue currently unresolved is whether the City will be reimbursed for expenditures beyond the City's allocated share of the project, which has already been exceeded. The projected buyout expenditures by the end of this fiscal year will be over \$45 million, surpassing the City's buyout cost share of \$23 million. Staff is presently working with the Corps on a "project partnership agreement" which may clarify to what extent the City will be reimbursed. We anticipate completing that agreement by the end of August 2014.



MEMORANDUM

TO: Mayor and Council

FROM: Victoria J. Li, P.E., Director
Watershed Protection Department

DATE: August 27, 2014

SUBJECT: Staff Report - Resolution No. 20140515-064 – Investment in flood prevention, protection and preparedness for properties city-wide

On May 15, 2014, Council passed Resolution No. 20140515-064 directing the City Manager to provide fiscal year 2014 – 2015 budget options for investment in flood prevention, protection and preparedness for properties city-wide. The resolution requires a report identifying options including:

- Early warning infrastructure and emergency communication systems,
- Items addressing the rising costs of flood insurance appropriate to Austin such as a deductible sharing program or local flood insurance voucher or tax credit program for low-income households,
- Public education efforts regarding flood risks and flood prevention as well as mitigation and insurance programs available, and
- Improved road signage and warnings at low water crossings and other driver education efforts.

Early Warning infrastructures and Emergency Communication Systems:

Flood Warning System Improvements

The Watershed Protection Department's Flood Early Warning System (FEWS) monitors rain events and works with a variety of other Department's to provide warning to the public of potential flood hazards. FEWS uses many tools to accomplish this task including, rain and stream level gauges, software programs, and field observations. FEWS continually maintains and upgrades its tools in order to improve their ability to warn the public of flood hazards. WPD has identified several options that would improve the City's ability to protect lives and property. The estimated funding requirements for the proposed improvements total approximately \$1,135,000. The individual improvements are listed below along with the estimated costs. The attached Exhibit A provides a more detailed description and the benefits associated with each item.

Improve the Reliability of the Flood Early Warning System (FEWS) Radio Network	\$100,000
Hardening Existing USGS Gauges	\$75,000
Install Additional USGS Gauges	\$100,000
Flood Early Warning System Evaluation Study	\$400,000
Flood Monitoring Software Dashboard Enhancements	\$300,000
Install Additional Traffic Cameras to Monitor Low Water Crossings and Flood Risk Areas	\$150,000
Improve FEWS Back-End Database Server Hardware	\$10,000
Total	\$1,135,000

Addressing the Rising Costs of Flood Insurance:

Council Resolution No. 20140515-064 directed the City Manager to identify options for addressing the rising costs of flood insurance, appropriate to Austin, such as a deductible sharing program, local flood insurance vouchers, or a tax credit program for low-income households.

The options listed above assume the increased costs of flood insurance stem from the recent Biggert-Waters Act of 2012 (BW-12). The Biggert-Waters Act of 2012 intended to phase out flood insurance subsidies for non-primary residences, for business properties and for severe repetitive loss properties where claims payments exceed fair market value. It also required that new policies be issued at full-risk rates under the following circumstances:

- Upon the sale/purchase of a property
- Upon a lapse in insurance coverage
- For substantially damaged/improved
- For properties uninsured as of BW-12 enactment
- As new or revised Flood Insurance Rate Maps are issued (Grandfathered rates planned to be phased out over 5 years)

On March 21, 2014, President Obama signed the Homeowner Flood Insurance Affordability Act of 2014 into law. This Act repeals certain provisions of BW-12, makes additional flood insurance program changes, and leaves some parts of BW-12 intact for older business properties insured with subsidized rates, older non-primary residences insured with subsidized rates, and severe repetitive loss properties insured with subsidized rates. For Austin's flood area residents, the full-risk rates have been shown to be equal or more than mortgage payments for their homes, with some also having been substantially damaged. However, the new Law requires gradual increases to properties with subsidized rates instead of immediate increases to full-risk rates. As FEMA actively analyzes and prioritizes implementation of the new Act, some of its key priorities include: refunds, rates, surcharges, mapping, promoting mitigation and the creation of a new Flood Insurance Advocate.

Deductible Sharing Program

Research indicates that the intent of a deductible sharing program is to encourage flood insurance applicants below a certain income level to seek a high deductible, thus making flood insurance premiums lower and more affordable (means-tested deductible sharing). A means test is an evaluation and determination of whether an individual or family meets criteria for government assistance, based upon whether the individual or family possesses the means to do without that help. Should a flood disaster occur, communities would offer deductible-sharing funds to these policy holders. The City would have to budget or set-aside the deductible-sharing funds on a rolling basis. Raising one's deductible from the typical \$500 to \$1000 will make one eligible for a lower premium; but with approximately 12,000 structures located within the

floodplains of Austin, a significant citywide storm event could cause a severe financial hit to CIP funds that may be better used for “avoidance” strategies or “resistance” strategies to reduce flood risk. These strategies are the only two options that cities have to reduce flood risk. A deductible sharing program is not recommended at this time at the local level. Note that FEMA is still looking at a deductible sharing program for implementation at the federal level so our residents may still be able to benefit from this strategy once FEMA settles on the best affordability framework.

Local Flood Insurance Voucher

This program refers to a new methodology to provide flood insurance vouchers from the federal or local government for flood insurance policy holders whose rates would increase to full-risk rates under the Biggert-Waters Act of 2012. The one trigger in the Biggert-Waters Act of 2012 that was the most troublesome across the country was the trigger to full-risk rates upon the sale of a home or purchase of a new flood insurance policy.

Under a means-tested voucher or rebate program, policy holders would be required to pay a certain portion of the total amount. The University of Pennsylvania (Penn) suggests an amount equal to 5% of the policy holder’s income. The locally subsidized voucher would pay for the difference between the increased flood insurance premiums less the expected flood insurance policyholder’s contribution. This amount can be further reduced if the policyholder provides flood mitigation solutions that would elevate the structure and reduce the flood risk. Penn shows that the voucher amount can be eliminated if low-interest loans can be offered by governments to provide for the mitigation, thus lowering the flood insurance premiums significantly.

Others go further by suggesting that the two programs be tied together: vouchers only provided upon take-up of a low-interest loan to mitigate or elevate the structure above the base flood elevation. Fiscal impacts will result as the City would have to budget for low-interest loan amounts and/or for the cost of the flood insurance vouchers if this is done at the local level only. The City’s most recent study for elevating a slab-on-grade house estimated the cost to be around \$200,000 per structure. When the overall costs of raising structures with contingencies approaches the fair market value, the avoidance strategy of property buyout becomes more feasible. FEMA is currently studying similar affordability measures. Results are expected from that study in December 2014. Staff recommends waiting on the results of that study before moving forward with implementation with any similar programing at the local level.

Tax Credit Program

Under a tax credit program, research discovered State tax credits were given for the cost of flood insurance itself. However, these tax credits were credited against state income taxes, thus would not be applicable in Texas. In addition, homeowners are not eligible to deduct flood insurance costs on federal tax returns, although, landlords can deduct those costs as a business expense. Those who suffered flood damage are eligible to claim casualty losses on their federal tax return.

Staff did identify an example of a local tax credit program in Tennessee. The State of Tennessee enacted legislation allowing for sales tax credit for replacement of household furniture, appliances and automobiles destroyed during a flood disaster. City consideration of a similar program would require a change in Texas state law.

Signage and warnings at low water crossings and other driver education efforts:

Flash flooding is Austin’s most common weather emergency. Since 75 percent of flood fatalities in Texas occur in vehicles and even minor floods can be deadly, it is imperative that residents and visitors to Austin are warned of the dangers that flash floods pose along roads.

Within the City of Austin, there are approximately 400 roadway crossings that would be flooded

during a 100-year flood event. Current signage and warnings include:

- Signs with flashing warning lights at 20 low water crossings
- Automatic barricades at 2 low water crossings (one gate arm pair closes Spicewood Springs Road with 7 low water crossings)
- Staff gauges at 25 locations, and
- "Watch for Water over Road" signs at approximately 40 locations.

As the City annexes land, we may add signage to roadways that are at risk of flooding.

The roadway signage is effective at raising awareness of flood risk and actively indicating risk at roads with flashing light signs and barricades; however, WPD does not rely solely on the signs as a warning mechanism during floods. Field Operations staff also places barricades to close the roads to traffic.

In addition, our public outreach efforts help raise awareness of the risks of flooding as well as alert the public to specific hazards. Our current efforts at driver education are budgeted at \$24,000. Although the FY 2014-15 budget requests an increase to \$73,000, an increase to \$224,000 would allow us to reach significantly more people with the driver safety message. The attached Exhibit B provides a more detailed description of what is covered by the current funding level and what would be included if funding was increased.

Public education efforts regarding flood risks and flood prevention as well as mitigation and insurance programs available:

Everyone in Austin is subject to flood risks posed by flooded roadways, trails, playing near flooded creeks and drainage infrastructure. But the homeless population and those living in floodplains or subject to localized flooding have a greater risk of property damage and personal danger. Public education efforts can help these populations be aware of their risks as well as measures they can take to protect themselves, their families and properties.

Public Education on Flood Risks, Prevention and Insurance (Unfunded \$140,000+)

WPD's outreach to those in floodplains has generally been in association with changes to the floodplain. During the current floodplain mapping efforts, we have sent out postcards/letters, run advertising and sent out news releases to inform residents of changes to the floodplains. When appropriate, we also hold public meetings to explain the changes and how residents may comment or appeal the proposed changes. These efforts have occurred with budget savings from other areas.

WPD could greatly increase public education efforts to those in the floodplain. Although many activities would consist of staff time such as news releases, a web portal specifically for flooding, workshops for real estate agents, other items need to be budgeted. The following activities, estimated at \$140,000, would greatly enhance the outreach to those living in floodplains:

- Postcard to announce ATXFloods Alerts
- Floodplain notification (Note: more than 40% of people living in a floodplain are not aware of it.)
- Flood safety and preparation flyer
- Flyers to be handed out as needed on what to do after a flood, children's safety and building restrictions
- Flood safety videos
- Community meetings
- Social media
- Outreach to real estate agents
- Outreach to the homeless population

A significant portion of the requested funds would be used on a flyer about flood safety to be distributed to all individuals in the floodplain. This flyer would include information on ATXfloods Alerts, sheltering in place, disaster kits, flood insurance and other ways to protect properties. The flyer would be in English and Spanish.

Signage in parks and along trails is another item that should be considered. Such signage would help alert users that the area is subject to flash flooding. However, more research is needed to determine the number of signs, placement and budget.

Please contact Jose Guerrero, Assistant Director, Watershed Protection Department, should you have any detailed questions or concerns at (512) 974-3386 or via e-mail at Jose.Guerrero@austintexas.gov.

Attachments

Cc: Marc A. Ott, City Manager
Sue Edwards, Assistant City Manager
Joe Pantalione, P.E., Deputy Director, Watershed Protection Department
Jose M. Guerrero, P.E., Assistant Director, Watershed Protection Department

EXHIBIT A

Early Warning infrastructure and Emergency Communication Systems Cost Estimates

Item	Description	Cost Estimate
Improve the Reliability of the Flood Early Warning System (FEWS) Radio Network	<p>Accurate flood warning depends on the FEWS receiving timely rainfall and stream level data from many sources, including the City's system, the United States Geological Survey (USGS), and the LCRA. The City's system of more than 140 rain and stream level gauges communicates to our predicted flooding map application via radio transmissions. As our gauge system has grown, the reliability of receiving timely data has diminished. We have made internal modifications to the system to improve performance. However, as our predicted floodplain map application has expanded, we have continued to realize data transmission issues. Improving the FEWS radio network would eliminate the data transmission issues and allow the predicted floodplain map application to produce more reliable flood risk maps.</p> <p>FEWS is currently evaluating the use of the LCRA radio system to transmit data from the City rain and stream gauge network. Once the evaluation is complete, the next steps include completing an inter-local agreement with the LCRA; purchase and installation of new radios for the City's gauges; and purchase of a new computer base station to receive and process the data. The cost identified above is for the purchase and installation of the new radios and the new computer base station. The total cost is about \$400,000 of which a portion is currently funded within the FEWS budget. Annual maintenance costs for the City and operating costs through the LCRA would be funded by the FEWS annual operating budget.</p>	\$100,000
Hardening Existing USGS Gauges	<p>FEWS staff is working with the USGS to "harden" USGS gauges that provide data to the flood warning group. The goal of gauge hardening is to make the gauges more flood resistant so that they continue to operate under more extreme flooding conditions. However, these gauges must monitor water level, which means that equipment has to be installed at the bottom of the creeks. This makes them susceptible to damage from flood debris and bridge failures in extreme storm events.</p> <p>The USGS and City of Austin have a long-term contractual agreement to have the USGS provide full range rating stations (flow and depth monitoring gauges) as well as perform water quality sampling at specified locations within the City. After the Halloween Flood, when the Twin Creeks gauge was damaged and the US 183 gauge stopped reporting, the City entered into a single purchase contract with the USGS to provide "hardening" to four of its gauges, including Onion Creek at US Highway 183; Onion Creek at Twin Creeks Road; Williamson Creek at Manchaca; and Shoal Creek at 12th Street. The USGS has completed this work. The</p>	\$75,000

	supplemental funding would allow additional gauges to be “hardened”.	
Install Additional USGS Gauges	The City and USGS have a long-term contractual agreement to have the USGS provide 29 full range rating stations (flow and depth monitoring gauges) as well as perform water quality sampling at specified locations within the City. This proposal would add three full-range rating stations to supplement the current gauges. These gauges would be installed and maintained by the USGS. The data from these gauges would be used in the predicted floodplain map application to predict flood risks.	\$100,000
Flood Early Warning System Evaluation Study	<p>In 2007, the FEWS group completed an evaluation study to identify system improvements to be implemented. FEWS has implemented many of the recommendations from this study that have enhanced our ability to predict flood hazards and warn the public. Since 2007, technology has evolved significantly and now offers a wide range of choices for computer software and other products that could further enhance the flood warning system in Austin.</p> <p>FEWS proposes to request statements of qualifications from consultants in the flood warning field to prepare an updated evaluation study. We will use the results of this study as a road map for future improvements to our program.</p>	\$400,000
Flood Monitoring Software Dashboard Enhancements	One of the advancements in the FEWS toolbox was the creation of the predicted floodplain map application. This software processes the results of our predicted floodplain models and displays the results on a map that indicates the extent of flooding and the time when that flooding is expected to occur. Our intent is to expand the software to improve the interface for the existing information and to enhance the information that it could provide. An application that combines the data from the various sources and displays them on a map would make it much easier for FEWS personnel to quickly spot and react to potential issues. The application should also include alarms to alert users when certain flood warning levels have been exceeded. This application would preferably be web-based and hosted on a dedicated server for improved speed and reliability. A dashboard system should be developed to provide a more reliable and efficient way to notify FEWS staff of predicted flood hazards.	\$300,000
Install Additional Traffic Cameras to Monitor Low Water Crossings and Flood Risk Areas	Technological advancements in flood warning have significantly improved the FEWS group’s ability to predict flood hazards and warn the public. However, we continue to rely on field observations to verify the data from our gauges. This “boots on the ground” information primarily comes from the Watershed Protection Department Field Operations Division. We also rely on other partnering Departments in addition to citizen reports.	\$150,000

	<p>We currently have several traffic cameras that are part of the Austin Transportation Department's system that allow FEWS to monitor low-water crossings during storm events. With additional funding, we would like to expand our network of cameras on the current system and stand-alone cameras. This would improve our flood warning ability in addition to freeing up field crews to respond to the most critical areas that require roads to be closed. Traffic cameras are an extremely low-cost and quick-to-implement way to dramatically improve the ability of our field crews to cover and barricade flooded roads.</p>	
Improve FEWS Back-End Database Server Hardware	<p>We recommend the purchase of a high-end workstation computer to host historical gauge data and the related applications database (WISKI). Currently this information is hosted remotely in various locations, so the data is difficult to access. This is a low-cost way to improve the security and availability of FEWS data, and facilitates advances in forecast modeling and mapping that would improve FEWS' ability to provide timely and accurate flood warning.</p>	\$10,000
Flood Warning Sirens	<p>A cost for a flood warning siren system is not included since this type of system is not recommended as an option for Austin. FEWS staff has discussed siren systems with vendors and staff in the Homeland Security and Emergency Management Department. With advances in cell phone technology, in particular the Integrated Public Alert & Warning System (IPAWS), we believe that our current approach to warning the public about disasters in general and floods in particular is more effective than warning sirens.</p> <p>If desired, an interdepartmental discussion with emergency personnel (APD, AFD, HSEM) needs to take place regarding the usefulness and operation of a siren system. Sirens are extremely effective in issuing tornado warnings, mainly because there is one action that a citizen needs to take – TAKE SHELTER IMMEDIATELY. However, sirens may not be able to deliver a more detailed message for flood warning, where the difference between the actions to seek shelter or to evacuate is critical. For example, if citizens hear the siren and attempt to evacuate, they may move to a more dangerous situation in their vehicles (the vast majority of flood related fatalities in Texas are in vehicles).</p>	

EXHIBIT B**Signage and warnings at low water crossings and other driver education efforts**

Item	Description	Cost Estimate
Driver Education (Current Budget)	<p>Over the past 12 years, WPD has partnered with other City departments, the National Weather Service, the U.S. Geological Survey, the Texas Floodplain Management Association and other organizations to promote flood safety to drivers and the community at large.</p> <p>The current budget has allowed WPD to use several methods to increase awareness. These methods include the ATXfloods web site, the Save Yourself! Turn Around – Don’t Drown advertising campaign and news conferences, PowerPoint slides for driver education programs, youth education programs and a poster contest, community outreach at weather or science-oriented fairs and events, and miscellaneous promotional items.</p> <p>A 2013 survey of Austin residents indicated approximately 85% have heard the Turn Around – Don’t Drown slogan. Last year, the web site, www.ATXfloods.com, became an important component of the driver education efforts. The web site has already received 686,492 visitors and is regularly used by news media to warn drivers of flooded roads during storms. In addition, WPD runs public safety radio advertisements during storms. Staff also promotes the ATXfloods web site and the ATXfloods Alerts! notification system to warn the public about flooded road hazards. Staff is also working with companies such as Google to have the flooded roadways incorporated onto mapping products that the public uses for route finding.</p>	\$24,000
Driver Education (Proposed FY14-15 Budget)	<p>With an increased advertising budget of \$73,000, which is included in the proposed FY14-15 budget, WPD can continue all the current activities and run two additional campaigns to increase the effectiveness. In some years, these campaigns have occurred with budget savings from other programs.</p> <p><u>Emergency Advertising, \$24,000</u> When storms are imminent, WPD will run radio and mobile ads and increases its presence on social media with flood safety emergency messages. The emergency messages promote the web site, ATXFloods.com, with real-time information about flooded roads and closures. This budget is based on four storms with \$6,000 spent on ads per storm.</p> <p><u>Fall Advertising Campaign, \$25,000</u> WPD will run radio and online ads in the fall about the dangers of driving across flooded roads. The campaign is timed to coincide with the most active period of</p>	\$73,000

	hurricane activity and the beginning of classes at universities with the corresponding influx of new people to the community.	
Driver Education (Unfunded)	According to a recent survey, about 70% of Austin residents prefer to receive flood warnings on the television. However, the current budget is not sufficient for TV advertising. With additional advertising funds, WPD could incorporate all of the activities above and also lengthen the advertising campaigns to approximately 12 weeks, add television advertising, expand social media advertising and explore other innovative advertising such as CapMetro buses, cabs, cinemas, etc. This broadened campaign would reach more than 3 million people with almost 80 million gross impressions.	\$151,000