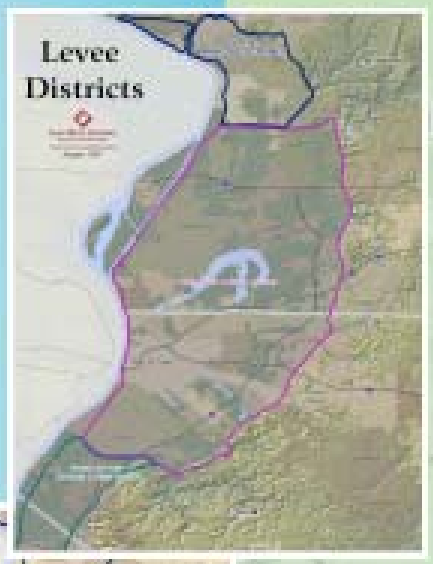

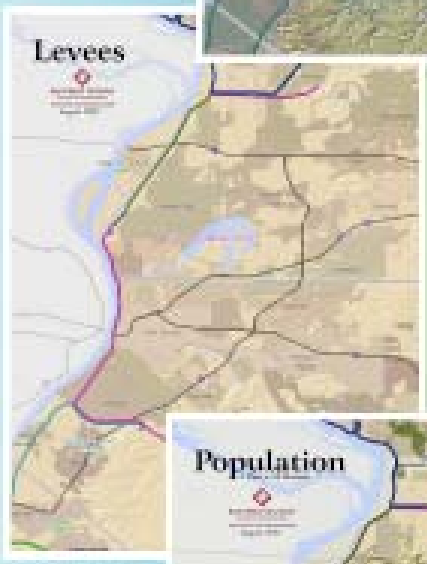

Additional Flood Insurance Costs Resulting from the Federal Emergency Management Agency Flood Insurance Rate Map Modernization Program in the American Bottom

July 2010
Final Report

EAST-WEST GATEWAY
Council of Governments
Creating Solutions Across Jurisdictional Boundaries

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Executive Summary

The Federal Emergency Management Agency (FEMA) has announced its intention to de-accredit the five Mississippi River levees that protect the American Bottom in Southwestern Illinois. One consequence of this deaccreditation is that many residents and businesses located in the region will be required to purchase flood insurance from the National Flood Insurance Program (NFIP). In addition, some lenders may require businesses to purchase "excess flood insurance," or coverage in excess of what can be obtained from the NFIP. Lenders may also require businesses to obtain interruption insurance, i.e., insurance against the interruption of operations.

East-West Gateway was asked to estimate the insurance costs that could result from levee deaccreditation. The total estimate of additional insurance costs that will be paid by residents and businesses in the American Bottom as a result of FEMA's actions is **$50 million** per year.

The estimate of mandated insurance costs required due to FEMA's NFIP program, for residential and commercial insurance will total almost **$18 million** per year.[1]

Estimating potential costs associated with excess and interruption insurance is not a perfect science. However, based on consultations with insurance agents and a survey of businesses, East-West Gateway concluded that a reasonable estimate of additional costs is **$32.5 million** per year. Table 1 summarizes the estimates of potential costs.

Table 1
Summary of Additional Annual Flood Insurance Costs

Residential Property	
Rental and Mobile Homes	$3.2 million
Owner Occupied	$8.3 million
Residential Subtotal	$11.5 million
Commercial Property	
Real Estate	$5.6 million
Other Commercial Property	$0.86 million
Commercial Subtotal	$6.4 million
Total Annual Mandated (NFIP) Insurance Costs	**$17.9 million**
Total Annual Excess and Interruption Insurance Costs	**$32.5 million**
Total Annual Mandated, Excess and Interruption Insurance Costs	**$50.4 million**

[1] Note that these costs reflect the lower rates available if the American Bottom region receives an AR designation. Draft maps of the region recently released by FEMA indicate that the majority of the area will receive an AR designation, in part due to advocacy by local community leaders and officials. In the event that the region receives an AE designation, EWG estimates that the total mandated NFIP insurance costs would exceed $25 million.

Introduction

The Federal Emergency Management Agency (FEMA) has announced its intention to de-accredit the five Mississippi River levees that protect the American Bottom in Southwestern Illinois. Under FEMA's map modernization program, FEMA has issued preliminary digital flood insurance rate maps showing that substantially all of the protected area will be reclassified as a Special Flood Hazard Area (SFHA)[2]. Under federal law, owners of property located within a SFHA are required to purchase insurance from the National Flood Insurance Program (NFIP) if the property secures a loan from a federally regulated lending institution.

In order to estimate the insurance costs, the East-West Gateway research staff separately estimated the impacts on residential buildings and on businesses in the region. For residential buildings, staff estimated the number of homes and rental units that would be required to purchase insurance, and the value of the homes (rental units) to be insured.

For businesses, staff administered a survey of business and property owners, collecting information about the value of mortgages and business personal property.

Because of variables associated with insurance rates applied across a range of individual properties, calculations throughout this report have been made conservatively to account for variation and reach an overall estimate that is reliably predictive.

Example of insurance calculation

Because insurance rates are individualized to properties based on a number of variables, estimates of insurance premiums are used in this report. Below is an example of how insurance premiums are estimated.

Consider a business that has a mortgage on a $750,000 property, and conducts $5 million per year in sales. Insurance rates for business properties are $0.95 per $100 coverage up to $175,000, and $0.30 per $100 for coverage from $175,000 to $500,000.[3] Additional insurance fees of $41 apply to buildings in AR zones.

Based on these rates, the property owner will pay a rate of $0.95 per $100 valuation on the first $175,000. Moreover, the owner is required to purchase insurance on another $325,000 of the property, at a rate of $0.30 per $100 valuation. Added to this will be another $41 in fees, for a

[2] The area is currently considered protected from a base flood (one with a 1% chance of occurring in any year) and is classified as an X Zone, while the new preliminary digital flood insurance maps show the area will be predominantly AR Zone (developed areas) and the remainder AE Zone, both of which are "special flood hazard areas".

[3] These rates come from the National Flood Insurance Program, Flood Insurance Manual, revised October 2009. http://www.fema.gov/business/nfip/manual200910.shtm . The business rates throughout this report assume a non-residential building with a basement but without an enclosure. Different rates apply to different types of buildings.

total of **$2,678.50**. This is the *mandated* annual flood insurance that the business owner will have to purchase, under the NFIP.

The business might want (or be required by its lender) to further insure against catastrophic floods by purchasing "excess insurance" on the remaining $250,000 in property value, and to fully insure against lost sales (assumed for this example to be $5 million) through the purchase of "interruption insurance." The business owner would purchase insurance on the open market – estimates are that this insurance costs $1 per $100 of coverage for both types of policies, resulting in **$52,500** in *additional* annual insurance premiums.

Residential Buildings

Summary of insurance costs in residential buildings

Table 2 shows that owners of residential buildings in the American Bottom face mandated annual insurance costs of about $11.5 million (calculation based on AR status).

Table 2
Total Mandated (NFIP) Annual Insurance Costs for Residential Buildings

Rental and mobile homes	$3,174,626
Owner-occupied	$8,292,895
Total	**$11,467,521**

The following steps were used to arrive at this estimate: First, the number of affected structures was estimated, along with market values. Second, we calculated the insurance payments required for each type of home.

Third, we adjusted our total mandated NFIP insurance costs to reflect that only about 60% of properties have mortgages. This is a conservative figure based on Census data. However, it is important to recognize the dynamic nature of the housing market. As houses are placed on the market and buyers obtain new mortgages, it is possible that the number of households with mortgages will rise. In this case, aggregate annual insurance payments would rise.

Note: only 25 residences in the American Bottom region were in Monroe County, and it was not possible to determine if these were rental units or if they were owner-occupied. For purposes of this study, they were treated as though all 25 were owner-occupied.

Owner-Occupied Homes

In total, almost 17,000 home-owning households will be required to purchase flood insurance in the event of levee deaccreditation. The average premium would be about $493, for an estimated total of about $8.3 million, see Table 3.

Table 3
Mandated (NFIP) Insurance Costs to Homeowners
(AR designation)

	Estimated Insurance Costs
Total Mandated Insurance	$8,292,895

Methods and Data

Following is a summary of the steps involved in calculating the above estimates.

Step 1. Estimate Owner-Occupied Units in the American Bottom region:

The first step was to estimate the number of owner-occupied units in each county. The primary source was the parcel files from each of the three counties. Estimates derived from parcel files were compared to 2000 Census numbers to assess validity.

Census estimates were derived from Census block groups. Block group geography does not precisely match the boundaries used by FEMA in the American Bottom. For Madison and St. Clair Counties, block groups are small and numerous enough that the discrepancy in boundaries was slight. For Monroe County, the block groups extend far beyond the affected area, rendering Census numbers less useful for the task of estimating owner-occupied units. Thus, in Table 4, Census numbers are not reported for Monroe County.

In Monroe County, the parcel file indicated that there are 25 single-family homes. Since this is a fairly small number compared to the other counties, it was assumed that each of these 25 is an owner-occupied unit. In Madison County, owner-occupied parcels are identified in the parcel database, making it easy to estimate the number of owner-occupied homes.

There was no owner-occupied field in the St. Clair County database, so the following method was used to estimate the number of owner-occupied homes.

There were 20,070 parcels with a land use code of "0040," which corresponds to single-family. Of these, almost exactly half of the parcels had the same address in the "site address" and the "owner address" fields.

To double-check those records where “site address” and “owner address” differed, 100 records were selected at random from the records with different addresses in the two fields. A closer review of these 100 records indicated that 35 of the 100 records were in fact the same, but appeared to be different because of misspellings, inconsistent uses of abbreviations, or inconsistent use of street suffixes.

From this we concluded that 35% of the parcels that appeared to have different addresses in the site and owner fields were in fact owner-occupied. Adding the records with identical

addresses to 35% of the non-matching records resulted in an estimate of 13,502 owner-occupied units in the St. Clair portion of the affected area. This was remarkably close to the Census figure of 13,194.

Table 4 shows the estimated number of owner-occupied homes in the American Bottom region. For St. Clair and Madison Counties, Census numbers are presented to show that estimates derived from the parcel files appear to be reasonable.

Table 4
Owner-Occupied Homes in the American Bottom

	Parcel	Census
Madison	17,482	16,179
Monroe	25	
St. Clair	13,502	13,194
Total	**31,009**	**29,373**

Step 2: Estimate Number of Households Required to Purchase Insurance:

The only households required to purchase flood insurance are those where the property secures a loan from a federally regulated lending institution. A property owner who has paid off her mortgage will not be required to purchase insurance. Thus, a critical step was to estimate the number of households with an outstanding mortgage.

The U.S. Census and the American Housing Survey (AHS) were used to obtain this estimate. According to the U.S. Census, 56% of owner-occupied units in the Madison County portion of the affected area have outstanding mortgages. In Monroe, the figure was 62%, and 52% for St. Clair. The resulting number of estimated households with mortgages is shown in Table 5. AHS indicates that about 60% of households across the region hold mortgages, and that this is fairly consistent across the region.

To account for mortgage status, we used the 60% adjustment factor from AHS. As noted above, future turnover in the housing stock may well increase the percentage of households with mortgages. Thus, 60% is a conservative estimate of the percentage of households that will be affected over time.

Step 3. Estimate Premiums:

Interviews with insurance experts revealed that lenders are likely to require a home's replacement value, as indicated by its market value, in coverage. Insurance rates for owner-occupied single-family residential property are $0.89 per $100 of coverage up to $60,000 of coverage, and $0.30 per $100 for coverage over $60,000. Also included are $41 for Federal Policy fees and Increased Cost of Compliance fees.

Using these formulas annual rates were estimated for each home in the affected area. For each county, estimated premiums were summed, and then multiplied by the percentage of households requiring coverage to arrive at the numbers shown in Table 5.

Table 5
Summary of Annual Mandated (NFIP) Costs to Homeowners

	Madison	Monroe	St. Clair	Totals
Number of Households Affected	9,790	16	7,021	16,827
Average Annual Premium	$587	$724	$361	$493
Total Annual Premiums	**$5,746,730**	**$11,584**	**$2,534,581**	**$8,292,895**

Renter-Occupied Residential Structures

Owners of residential rental structures in the affected area will be required to pay approximately $3.17 million in insurance premiums each year. Following is a description of the steps used to arrive at this estimate.

Step 1: Estimate number of multifamily structures by number of units and county:

The 2000 US Census was used to estimate the total number of affected structures. In 2000 there were nearly 19,000 occupied rental units. Data on tenure by units in structure was downloaded for each block group whose center point was located in the American Bottom. The Census Bureau offers counts of rental units by structure for the following classes of structure: single unit, two units, 3-4 units, 5-9 units, 10-19 units, 20-49 units and 50+ units.

For multifamily structures, occupied and vacant units were added, and then divided by the midpoint of the classification range to obtain an estimate of total structures by number of units. For example, in Madison County there were 1,054 occupied units in structures with 5 to 9 units, and 407 unoccupied units. These were added to obtain an estimate of 1,461 units available for rent in structures with 5-9 units. This number was then divided by 7 (midpoint between 5 and 9) to obtain an estimate of 209 5-9 unit structures in Madison County.

NFIP has established insurance rates for the following categories of structures: single family, mobile home, 2-4 family and other residential. Thus, the estimates of units were aggregated to conform to the occupancy classes used by NFIP. Table 6 shows the estimated number of structures in each occupancy class[4]:

Step 2: Simulate insurance payments for rental units in the parcel file:

The parcel files contain a field for total assessed value, which represents approximately one third of estimated market value. This field was used to estimate annual required insurance payments for rental structures. A separate analysis was performed for each of the occupancy classes listed in Table 6.

Table 6
Estimated Structures by Number of Rental Units

	Madison	St. Clair	Total
Single Family	3,321	5,334	8,655
Mobile Home	379	661	1,040
2-4 Family	1,107	920	2,026
5+ Family	274	315	589
Total	**5,081**	**7,230**	**12,311**

***Renter-Occupied Single-Family**:* To select a sample representing renter-occupied single-family structures in St. Clair County, a database query was used to extract single family parcel records in which the owner's ZIP code differed from the site ZIP code. Although this sample is not identical to the universe of rental houses, it can be stated with high confidence that virtually all of the cases selected are examples of single family homes that are not currently occupied by the owner. For Madison County, the parcel file made it possible to select single-family homes that are not owner-occupied. Again, there are reasons why this sample may not be identical to the universe of rental houses, but the records selected are very likely to be single-family homes that are not owner-occupied.

For each selected record in each county, the market value calculation was used to obtain an estimate of the insurance premium that would be required if the structure were required to obtain coverage up to the market value. It was assumed that all single-family homes have basements[5].

[4] Methods note: We were concerned that the housing stock might have changed significantly since the 2000 Census. Moreover, cross-checking against county-level parcel data was not always possible. For instance, the St. Clair County parcel data file does not indicate the number of units in multifamily structures, so there is no way to determine the relative numbers of 2-4 family structures and larger structures. Madison County breaks down multifamily dwellings as follows: 2, 3, 4, 5 and 6-999. This makes it possible to reach a valid comparison for 2-4 family units. The comparison between the parcel file and the Census resulted in an estimate of 1025 2-4 family structures from the parcel file, and 1042 2-4 family structures from the Census. This supports the hypothesis that the housing stock today is broadly similar to that which was in place in 2000.

[5] Homes without basements can obtain insurance for $0.05 less per hundred dollars of coverage.

Mandated insurance was calculated using the following rates: $0.89 per $100 for the first $60,000 of coverage and $0.30 per $100 for the next $190,000 of coverage. Included in the insurance costs are Increased Cost of Compliance fees of $6 as well as Federal Policy Fees of $35.

Table 7 shows average estimated market value for rental single-family homes in each county, as well as estimated annual insurance costs.

Table 7
Estimated Flood Insurance Rates for Renter-Occupied Single-Family Structures

	St. Clair	Madison
Mean Market Value	$32,915	$46,000
Average Annual Insurance Cost	$326	$400

***Mobile Homes**:*

Both St. Clair and Madison Counties have codes for mobile homes in their parcel files, so it was possible to select records for analysis for both counties. Table 8 shows estimates for average market value and estimated insurance rates for mobile homes in each county.

Insurance rates for mobile homes are: $0.78 per $100 for the first $60,000, and $0.38 per $100 for coverage from $60,000 to $250,000. ICC and federal policy fees totaling $41 are also included in the cost estimates provided in Table 8.

Table 8
Estimated Flood Insurance Rates for Mobile Homes

	St. Clair	Madison
Mean Market Value	$29,563	$30,071
Average Annual Insurance Cost	$266	$269

***Renter Occupied Multi-Family**:*

The St. Clair County parcel file did not distinguish between 2-4 family structures and 5+ family structures. These designations are necessary for determining insurance rates. The Madison County file allowed for the selection of 2-4 family structures.[6]

[6] Another complicating factor is that Public Housing Authorities (PHA) are prevalent in the rental market in the affected area in St. Clair County. In the parcel file, 1,196 residential rental structures are owned by PHAs, with only 252 coded as privately owned residential rental. PHA owned properties are not assessed.

Census data provided verification as to whether it would be reasonable to assume that multi-family structures in Madison County are representative of multi-family structures in St. Clair County. The median year of construction for rental structures was 1958 in St. Clair County, and 1962 for Madison County. The median rent was $442 in Madison County and $421 in St. Clair County. Thus, although rents are somewhat higher in Madison County, the characteristics of rental structures in the two counties were deemed to be similar enough to conclude that it would not distort estimates to use Madison County parcel data to estimate the value of multi-family structures throughout the AR zone.

The average market value for 2-4 family structures in Madison County is estimated at $73,905. For structures with five or more units, the average market value was estimated at $562,466. Since data is unavailable for similar structures in the St. Clair portion of the American Bottom region, we use these estimates for all multi-family residential structures.

Insurance rates for residential rental property with 2-4 units are: $0.89 per $100 of coverage up to $60,000 of coverage, and $0.30 per $100 for coverage over $60,000. Insurance rates for residential rental property with 5+ units are: $0.95 per $100 of coverage up to $60,000 of coverage, and $0.30 per $100 for coverage over $60,000.

For all calculations, Increased Cost of Compliance fees and federal policy fees totaling $41 have been added.

Applying these rates to the average market values of multi-family structures yields the estimates provided in Table 9 below. Since FEMA regulations require insurance only up to $250,000 for residential structures, we assumed that no structure would be required to obtain coverage in excess of this amount[7]. Given this assumption, we estimate that structures with 5 or more residential units would pay an average of $1,387 per year.

Table 9
Estimated Flood Insurance Rates
For Multi-family Residential Structures

	2-4 family structures	5+ family structures
Mean Market Value	$73,905	$562,466
Average Annual Mandated Insurance	$557	$1,387

[7] This assumption could, potentially, lead to an underestimation of total insurance costs. It is possible that a lender might require a larger property to obtain secondary insurance from a private provider, which would increase costs. Thus, the assumption of a $250,000 limit will yield a conservative estimate.

Step 3: Reconcile with Census Estimates and Adjust for Structures Without Mortgages:

To obtain an estimate of total costs that would be required if all rental structures were required to purchase flood insurance, the average rates derived for each occupancy class were multiplied by the Census estimates shown in Table 6.

Not all rental structures will be required to purchase insurance. Only properties which secure a loan from a federally regulated lending institution would be subject to the requirement. Thus, it is necessary to adjust the estimate to account for properties not subject to the NFIP insurance mandate.

We were unable to find any information in housing literature to indicate the percentage of renter-occupied structures that have mortgages. However, the American Housing Survey found that about 60% of owner-occupied structures in the St. Louis area have outstanding mortgages, and that this figure applies fairly consistently throughout the region (see single-family estimates). We therefore adjusted for mortgage status by assuming that 60% of rental structures in the American Bottom region have outstanding mortgages. (For reasons outlined above, 60% is a conservative estimate; the percentage of households affected by insurance requirements may rise over time.)

Table 10 shows total estimated payments for each occupancy class in each county, assuming 60% of structures are subject to a mandatory flood insurance purchase requirement.

Table 10
Total Estimated Insurance Payments Adjusted for Mortgage Status

	Madison	St. Clair	Total
Single Family	$797,040	$1,043,330	$1,840,370
Mobile Home	$61,171	$105,496	$166,666
2-4 Family	$369,959	$307,464	$677,423
5+ Family	$228,023	$262,143	$490,166
Total	**$1,456,193**	**$1,718,433**	**$3,174,626**

To recap, we estimate that mandated flood insurance costs for residential rental property totals just under $3.2 million per year.

It is worth considering that some of the added cost of insurance will likely be passed along to renters, while some of the cost will be borne by property owners. To the extent that some renters might not be willing or able to pay additional rent, some rental housing owners operating at the margin may withdraw units from the market. This could potentially result in

fewer available units, higher rents, and some level of abandonment. Without a detailed econometric analysis of rental housing demand curves, it is impossible to say what combination of rent increases and abandonment of units may occur.

Businesses and Commercial Buildings

We estimate that businesses will face mandated insurance costs of more than $6.4 million. See Table 11.

Table 11
Summary of Mandated (NFIP) Insurance Costs to Businesses
(AR Designation)

	Estimated Insurance Costs
Total Mandated Insurance	$6,455,864

In addition, businesses are exposed to significant potential additional insurance costs. While it is unlikely that businesses in the affected area will fully insure themselves using "excess flood insurance" or "business interruption insurance," we estimate a potential annual insurance premium costs in excess of $30 million.

Methods and Data

Following is a summary of the steps involved in calculating these estimates.

Step 1: Conduct survey of affected businesses:

Step 1.1 – Develop list of businesses

A list of 7,564 business addresses in the affected area was compiled using two separate sources (parcel data came from parcel files, and business establishment data from a commercial database). Budgetary considerations precluded sending a questionnaire to all these addresses, so we randomly selected 3,689 addresses. We manually reviewed this list and deleted 402 duplicate records. A total of 3,287 questionnaires were mailed. Three hundred sixty one (361) surveys were returned unopened due to incorrect mail addresses, resulting in a net sample size of 2,926. With 458 responses, this implies a response rate of 15.6%. Table 12 summarizes the data associated with the mailing:

Table 12
Summary of Mailing Data

7,564 records (including potential duplicates)
6,739 records (estimated, after duplicates are removed)
3,689 sampled records
402 duplicates in sample (10.9% duplication rate)
3,287 questionnaires mailed
361 bad addresses
Net mailing: 2,926
Responses: 458
Response rate (responses / net mailing) = 15.6%

Step 1.2 – Develop questionnaire

The questionnaire was developed to generate two critical pieces of data for each business location. First, we wanted to determine whether the business or property owner would be required under FEMA regulations to purchase flood insurance. Second, we asked for the total value of the real property (land and buildings) and the total value of the business personal property (inventory, equipment, etc.).

Some categorization information was requested – the general type of business activity, and the number of employees at that location. Because we were asking for detailed financial information, we were careful to not ask questions that might be used to identify the survey respondents. Such data might have been useful for analysis of the results, but might also have decreased participation in the survey. Surveys were mailed on January 27th.

Step 1.3 – Collect questionnaires

Participants could respond to the survey in one of two ways. The paper questionnaire itself was distributed as a self-mailer with pre-paid postage: participants could simply fold up the survey, tape it shut and put it in the mail. Or, participants could complete the survey on-line – a link to the survey was provided in the cover letter.

In all, as of February 22, we received 458 responses to the survey: 19 were completed on-line, and 439 were received in the mail. Another 27 have been received since February 23rd.

Step 2: Aggregate responses/calculate insurance costs:

Step 2.1: Calculate required insurance burdens for each respondent

Building coverage insurance is required for buildings that have mortgages. “Basic insurance” is required for the first $175,000 and “additional insurance” for the next $325,000. In all, FEMA requires insurance for the first $500,000 of business mortgages.

In addition, FEMA requires that, if a business has a federally insured loan (SBA, USDA, etc.), then it is also required to insure up to $500,000 of contents (business personal property, such as inventory or equipment).

Rates used for calculations were:

	Basic	Additional
Mortgage	$0.95/	$0.30
Contents	$0.97/	$0.43

These rates are per $100 market value of the property. In addition, we added a flat fee $41 for insurance, which combines a $35 “federal policy fee” and an “increased cost of compliance” fee of $6.

2.2: Aggregating to the entire affected area

To estimate total mandated insurance costs, we first determined the total amount that would be required from the survey respondents.

We received responses from 458 businesses, out of an estimated 6,739 unique (non-duplicate) records. That comes out to 6.8% of all business owners in the affected area. Assuming our responses are representative of the total population, we can take the calculated total insurance costs for our sample, divide it by 6.8%, and arrive at an estimate of the total insurance costs for all businesses and property owners in the area. Table 13 provides total costs for the sample, and estimates for all businesses in the affected areas.

Table 13
Mandated (NFIP) Insurance Costs to Businesses

	Sample	**All businesses**
Mortgage	$380,492	$5,595,463
Business Property	$58,507	$860,401
Total	$438,999	**$6,455,864**

Interruption and Excess Flood Insurance

The foregoing has analyzed anticipated costs associated with the purchase of insurance from the National Flood Insurance Program (NFIP). It should be noted that there are two additional categories of insurance costs that will primarily be borne by the largest industrial and commercial establishments in the affected area.

Excess flood insurance is insurance purchased from private companies to cover losses that exceed NFIP's $500,000 coverage limit. For example, if a firm wishes to insure $900,000 of property, it will buy $500,000 in coverage from NFIP, and an additional $400,000 in excess insurance.

Interruption insurance protects firms against risks associated with interruptions of business operations due to natural disasters or other events. For example, if a factory produces $100 million in annual sales, the owner of that factory may wish to purchase insurance coverage in the amount of one year's output to guard against catastrophic loss.

Not all businesses that will purchase insurance will purchase the full amount of excess flood insurance or interruption insurance. If they were to insure at least half of their annual sales, however, we estimate annual insurance premiums of more than $32 million.

Methods and Data

Insurance agents consulted in the preparation of this report indicated that the premium charged for $100 of coverage would be about the same for excess flood insurance and interruption insurance. The reason is that the probability of an occurrence that causes damage in excess of $500,000 would be about the same as the probability of an occurrence that interrupts business operations. For this reason, it is logical to consider the two types of coverage together, and to assume similar insurance rates.

In general, it is reasonable to expect that coverage required for interruption of operations will be far greater than excess insurance coverage. For example, parcel records for an industrial facility in St. Clair County were compared with sales revenue data from a commercial database. The business database indicated that the facility produced between $150 million and $200 million in annual sales. The parcel records for St. Clair County indicated that the same facility was comprised of several parcels that had a total assessed valuation of about $4 million. Since assessed value is a third of estimated market value, the value of these parcels can be estimated at about $12 million, an order of magnitude smaller than the annual sales produced by the facility. Thus, if the managers of this facility chose to purchase interruption insurance coverage to cover a potential loss of one year of operation, the amount of coverage would be more than ten times greater than the excess flood insurance coverage.

The insurance industry professionals consulted in the preparation of this report indicated that excess and interruption insurance is much more expensive than basic insurance available from the NFIP. Only a few companies such as Lloyd's of London, Chubb and AIG have traditionally offered this kind of insurance. The agents cautioned that it is very difficult to quote a typical rate. Much depends on the type of business, the amount of deductibles, and the amount of coverage desired. Still, two concrete examples of policies written for firms in floodplains revealed that rates can exceed $1 per $100 of coverage for these types of policies.

To arrive at an order-of-magnitude estimate of potential insurance costs borne by large firms in the American Bottom, a commercial database was used to estimate the number of establishments in this region with annual sales revenue in excess of $10 million. Table 14 summarizes the number of firms by annual revenues:

Table 14
Establishments by Revenue

Annual Sales	Number of Establishments
$10 - 20 million	55
$20 - 50 million	44
$50 - 100 million	9
$100 - 500 million	9
$500 million - 1 billion	1

To estimate the amount of coverage that would be required to insure against loss of one year of sales, the midpoint of the values in the "annual sales" column was multiplied by the number of establishments. To insure that the largest firm was not significantly different from the midpoint, the record for that firm was extracted from the business database; it turned out that its annual sales were slightly greater than $750 million. By this method, the total amount of sales generated by these firms was estimated at nearly $6.5 billion.

There is little data available to indicate how much of annual revenue would be covered by interruption insurance for a typical firm. Also unknown is the amount of contents insurance that would be obtained by a typical firm. However, one CEO volunteered that his company insures assets in an amount slightly greater than his company's annual revenue.

If we infer from this example that a company's insurable assets will be roughly equal to one year of revenue, then it is possible to make the following conservative calculations: If the combined annual revenue for the largest firms is $6.5 billions, and if these firms have an equal amount in insurable contents, then the total value of one year's revenue and insurable assets will be about $13 billion. Not all firms will insure against loss of assets or against interruption of business. Those firms that do insure will differ in the amounts of coverage purchased. If we assume that a typical firm will insure one quarter of the combined value of assets and annual revenue, then the total amount of coverage purchased would be about $3.25 billion. Using the $1 premium per $100 of coverage described above, this would result in an estimate of annual insurance costs of approximately $32.5 million.

Since completing the initial draft of this study in April 2010, East-West Gateway has received confidential communications from two large companies that have already seen insurance rates increase as a result of uncertainty over FEMA's potential deaccredidation. Including insurance for structures, contents and interruption, these businesses reported increases in insurance costs in a range between 0.55% and 0.79% of annual revenues. Multiplying the lower amount (0.55%) by the $6.5 billion figure cited above results in an estimate of about $35 million in added annual costs. This confirms that the $32.5 million figure cited in the initial draft of this report is an appropriate, even conservative, estimate.

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Appendix: Potential Impact of FEMA Grandfather Rules

Flood zones are geographic areas that FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map (FIRM). The type of zone designated on an area's FIRM corresponds to the probability of of flooding in the area.

Even within a single zone, rates may vary significantly for identical structures. In the low-risk X zone, there is a large difference between Preferred Risk Policy (PRP) rates and standard rates. Homes eligible for X zone PRP rates will enjoy lower premiums than for X zone standard rates.

The process of map modernization sometimes causes an area's zone to be changed. For example, most homes in the American Bottom are now considered to be in an X zone, indicating an area of low to moderate risk. If levees are deaccredited, many of these same homes will be reclassified as lying in either an AR (restoration) or an AE zone, described as "special flood hazard areas." As noted above, one result of the map change would be to require property owners in areas protected by the levees to purchase flood insurance. The region has applied for an AR zone designation while it is in the process of upgrading levees. If the application is granted, then policy holders will pay lower insurance premiums. If the application is not granted, then policy holders will be required to pay higher AE zone rates in the event of deaccreditation.[1]

Under FEMA grandfather rules, a policy holder who purchases insurance before a map change is allowed to remain, for rate-setting purposes, in the zone that was in effect prior to remapping. Thus, a home-owner who purchases flood insurance today will be rated as Zone X, and this home-owner will be allowed to continue paying X zone rates even after the map change. However, policy holders are not allowed to retain preferred rates after remapping. Thus, after a map change, an individual that pays X zone PRP rates today will have to pay X zone standard rates upon renewal of the insurance policy.

Considering the foregoing discussion, the use of the term "grandfather" when it comes to flood insurance rates may be misleading . It is important to understand that grandfathering does not mean that an individual's rates will be frozen. Rather, after a map change, rates are frozen only for the remainder of the current policy year. The zone will remain frozen after the first year, but rates will still go up, sometimes significantly, in two ways. First, after the first year, policy holders lose their "preferred" rates, and begin paying "standard" rates. Second, standard X zone rates themselves may increase over time.

This appendix considers the potential effect of grandfathered rates under two scenarios. The first scenario assumes that the AR designation is granted. The second scenario assumes that the AR designation is not granted, and that the American Bottom is reclassified as an AE zone.

[1] On July 15, 2010, the U.S. House of Representatives passed H.R. 5114, the Flood Insurance Reform Priorities Act of 2010. The bill contains provisions authored by Representative Jerry Costello that would prevent mandatory purchase requirements for flood insurance from taking effect for five years. The provisions also phase in flood insurance rates over an additional five years.

The AR Zone Scenario

Following is an example of how the rules might play out for a hypothetical home-owner in the American Bottom: Assume that levees are deaccredited, and the American Bottom becomes an AR zone, as of a certain date. A policy purchased the day before the new map goes into effect will be considered to be in an X zone for rate-setting purposes. For the first year, the home-owner will pay preferred rates. After one year, when the policy is renewed, the home will continue to be in an X zone, but will now pay standard rather than preferred rates. AR zone rates are identical to X zone standard rates. Thus, *after the first year, there would be no difference between the grandfathered rates and the AR zone rates.*

Table A-1 shows potential average rates paid by single-family, multi-family and commercial policy holders under the AR zone scenario. An average home owner *who buys insurance the day before a map change* will pay $243 for the first year of coverage. An average home owner who waits until the day after the map change to buy coverage will pay $493 the first year. Thus, buying before the map change will save an average home owner about $250 during the first year.

After the first year, though, the grandfathered rates will have no effect. The higher $493 rate will apply to both the grandfathered and non-grandfathered policy holders.

Table A-1: Average Insurance Costs for Grandfathered and Non-Grandfathered Rate Payers, AR Zone Scenario

	PRP Rates (Available for up to 1 year after map change for pre-existing policies)	**Grandfathered Rates (Available after the first year for pre-existing policies)**	**AR Zone rates (Available to individuals forced to buy insurance after map change)**
Homeowners	$243	$493	$493
Renters	$218	$430	$430
Business	$911	$959	$959

The AE Zone Scenario

As noted above, if FEMA rejects the region's application for an AR zone designation during the period of levee repair, then the region will become an AE zone if levees are deaccredited. Table A-2 shows how grandfathered rates could save policy holders money in this scenario.

Using the hypothetical households described above, an average home owner who purchases insurance *the day before the map change* will pay $243 for the first year of coverage. The home owner who waits until the day after the map change will pay $610 during the first year, a

difference of $367. After the first year, the average grandfathered rate increases to $493. Thus, after the first year in this scenario, the difference between the grandfathered rate and the non-grandfathered rate is about $117 per year.

Table A-2: Average Insurance Costs for Grandfathered and Non-Grandfathered Rate Payers, AR Zone Scenario

	PRP Rates (Available for up to 1 year after map change for pre-existing policies)	Grandfathered Rates (Available after the first year for pre-existing policies)	AE Zone rates (Available to individuals forced to buy insurance after map change)
Homeowners	$243	$493	$610
Renters	$218	$430	$503
Business	$911	$959	$1,674

Comparison of Total Costs

Table A-3 shows total costs to the regions under each of the scenarios described above.

If everyone in the region purchased flood insurance *the day before a map change*, the total cost to the region would be $11.8 million in the first year. If everyone in the region waited until the day after the map change, the cost to the region would be $17.9 million in the first year under the AR zone scenario. Thus, if everyone in the region purchases insurance at the optimal time, the grandfather rule could potentially save the region about $6 million in the first year. After the first year, the grandfather rule would have no effect, under the AR zone scenario.

If the AR zone designation is denied, then the grandfather rule could save the region a significant amount of money. In this case, the AE scenario, the grandfather rule would save the region about $13.5 million (the difference between $25.3 million and $11.8 million) in the first year, and about $7.4 million ($25.3 million minus $17.9 million) each year thereafter.

Table A-3: Preferred, Standard/AR and AE Rate Policy Comparison

	Preferred Rate	Standard/AR Rate	AE Rate
Homeowners	$4.1 Million	$8.3 Million	$10.3 Million
Renters	$1.6 Million	$3.1 Million	$3.7 Million
Business	$6.1 Million	$6.5 Million	$11.3 Million
Total Annual Mandated (NFIP) Insurance Costs	$11.8 Million	$17.9 Million	$25.3 Million

Potential cost savings associated with the grandfather rule suggest that in the event of levee deaccreditation, the region would benefit from a proactive program aimed at encouraging well-timed insurance purchases by affected property owners.

Examples

The costs cited above assume a cost minimization strategy on the part of home owners. That is, the costs reported in Table A-3 rest on the assumption that a home-owner will only pay for insurance that is required by federal law, and will not buy any more insurance than is necessary to fulfill the mandate.

This assumption produces a conservative estimate, but it is important to note that some may wish to purchase more insurance than is required by federal law. These individuals could face higher cost increases if they choose to maintain their current coverage after the map change.

A couple of examples may clarify the choices faced by property owners with different preferences in risk management. A home owner who wishes to purchase $100,000 coverage for her home, and $40,000 for her contents will currently pay an annual PRP premium of $287. If she wishes to maintain this package of coverage after the map change, her current rates would stay in effect for a maximum of 1 year. After that, her rate would increase to $1,100 per year.

Another home owner currently carrying $100,000 in structure coverage and $40,000 in contents coverage might, after the map change, decide to drop contents coverage, and only purchase $100,000 to insure her structure. In this case, her annual premium would only increase to $695.

Not all individuals are cost minizers. Some, based on their own tolerance for risk, will choose coverage amounts that exceed federally mandated coverage. This individuals, particularly those who choose to insure their contents, could incur higher costs than those who choose only to purchase the minimum amount. The risk minimization assumption produces conservative estimates, but it is important to note the additional burden that will be borne by individuals who need or want to insure contents or to purchase more structural coverage than is required.

The grandfather rule could potentially save policy holders significant amounts in the first year of coverage. But after the first year, the grandfather rule would provide no advantages over an AR zone. Grandfathered rates would save policy holders significantly under an AE zone scenario. But the grandfathered rates would still impose a considerable cost.