Albany/Dougherty County Flood Hazard

Mitigation Plan

September 23, 2014

Prepared by:

Planning and Development Services
City of Albany
Dougherty County

With assistance from:

Southwest Georgia
Regional Commission

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CHAPTER ONE
INTRODUCTION

Flood Mitigation Plan Objectives

The Albany Dougherty Flood Mitigation Plan 2014 has three major objectives:

1. To provide local governments with a focused planning tool for reducing losses due to flooding.

2. To meet Federal Emergency Management Agency (FEMA) planning requirements to qualify for Flood Mitigation Assistance funding for projects that will reduce losses.

3. To meet Community Rating System (CRS) planning requirements for Category C repetitive loss communities (those with 10 or more repetitive loss properties that have not received mitigation) and thereby maintain the good standing of the National Flood Insurance Program (NFIP) in the City of Albany and Dougherty County.

These objectives are complementary and over-lapping and represent another step forward for these local governments that have taken actions in the past to protect citizens and property from flood damage.

Albany and Dougherty County have a record of at least 37 years of activity in flood mitigation. Floodplain management ordinances are conscientiously enforced to guide construction in hazard areas. The City of Albany passed its first floodplain management ordinance on August 9, 1977; Dougherty County acted on April 3, 1978. Revisions followed in April 1992 and February 1992, respectively, with an additional revision being adopted by the County in 1999. Major revisions were adopted by the City and County in 2009 to comply with the updated 2009 Flood Insurance Rate Map (FIRM). Having an approved floodplain management ordinance is required in order for property owners to purchase insurance from the NFIP.

Participation in the CRS since 1992 (County) and 1993 (City) has provided property owners the opportunity to receive reduced rates for this insurance. In addition, the Albany Dougherty Comprehensive Plan 2005 includes goals designed to protect citizens and property from natural hazards. The Albany Dougherty Zoning Ordinance supports these goals. The Albany Dougherty Pre-disaster Mitigation Plan includes planning for flood events and the Emergency Management Agency actively instigates policies and programs to educate and protect citizens. The Flood Mitigation Plan is an opportunity to coordinate activities and set priorities for the community.

The Flood Mitigation Assistance Program provides funding to States and communities for measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured houses, and other structures insured under the NFIP. In addition to funding for plan development, project grants for acquisition and demolition or relocation are available to NFIP-participating communities with a flood mitigation plan in place. Previously, funds for these types of projects were available in the Hazard Mitigation Grant Program (HMGP) which is activated only following a Presidential disaster declaration. Albany and Dougherty County participated in HMGPs following flood events in 1994 and 1998 resulting in the removal of many structures from flood hazard areas. This plan can make the option available to willing property owners without another disaster event.

Dougherty County began participating in the Community Rating System program on December 14, 1992 with the City of Albany following on December 15, 1993. The program requires certain activities designed to reduce losses due to flooding and to educate the public about flood insurance and flood danger. Participation automatically provides a reduced rate of 5% for flood insurance. Furthermore, with additional activities, more rate reductions are possible. In 2009, Dougherty County's rating improved from Class 7 to Class 6, which earned Dougherty County property owners a 20% discount in flood insurance premiums. The same year, the City of Albany's rating improved from a Class 9 to a Class 8, which qualifies for a 10% discount. The improvements were due mainly for adoption of a Flood Hazard Mitigation Plan and the provision of technical advice and assistance to property owners. Both Albany and Dougherty County are Class C communities under the CRS, indicating that there are more than ten (10) repetitive loss properties remaining in each jurisdiction. (A more detailed discussion of repetitive loss properties is found in Chapter 3: Risk Assessment). Class C communities are required to have a plan for reducing this inventory.

Description of Planning Area

The Albany Dougherty Flood Mitigation Plan covers the City of Albany and the unincorporated area of Dougherty County. Dougherty County is located in southwest Georgia and is entirely within the Coastal Plain province. The County is largely on the Dougherty Plain, an area of karst topography which has a direct effect on the flood hazard in this location. The County covers approximately 336 square miles.

Dougherty County was created December 15, 1853, from Baker County as Georgia's 103rd county. Portions of Worth County were later added to Dougherty County in 1854 and 1856. Albany is the only city in the county. Albany was founded in 1836 and incorporated on December 27, 1838, less than three years before the first recorded flood. At the time of the 2010 census, the population of Dougherty County was 94,565, and Albany was 77,434. About 82% of the county's population lives in the urban area.

The County is bisected by the Flint River, running north to south through the city. Approximately 22.85% of the City's area lies within the 100-year floodplain, the majority of which is in the river corridor. Portions of the floodplain are highly developed with residential, commercial and industrial land uses, including public facilities.

In the unincorporated area, just over 38% of the land area is in the 100-year flood zone. Again, the river corridor accounts for much of this acreage. Significant flood hazard areas are also found in sparsely populated western Dougherty County where wetlands are critical recharge areas for the Floridian aquifer and important wildlife habitat.

CHAPTER TWO
PLANNING PROCESS

This flood mitigation planning process began in 2008 when the Federal Emergency Management Agency (FEMA) announced that grants were available to support the completion of a plan. Certain grant funds for mitigation projects would be tied to a jurisdiction's having an approved Flood Mitigation Plan.

The National Flood Insurance Program (NFIP) also included a planning component in their Community Rating Service (CRS) requirements. This specific component applies to jurisdictions that have more than ten (10) repetitive loss properties (described in detail in Risk Assessment, Chapter 3). Both the City of Albany and Dougherty County meet this threshold and therefore must produce a plan. The Albany Dougherty Pre-disaster Mitigation Plan includes a Flood Hazard section which was approved as meeting this requirement by CRS previously. Sections of PDM plan will be updated by this project.

Participation of City and County

Planning and Development Services, a department that serves both city and county, successfully completed the application process for planning funds and qualified for financial support to produce the first Flood Hazard Mitigation Plan, which was adopted by both jurisdictions in 2009. In consultation with Georgia Emergency Management Agency, it was agreed that one plan would cover both jurisdictions. The 2009 Flood Hazard Mitigation Plan and the 2014 Five-Year Update to the Albany Dougherty Flood Hazard Mitigation Plan are in accordance with FEMA guidelines and with the requirements of the NFIP/CRS program.

A steering committee was formed with representatives of the following organizations whose responsibilities intersect with flood issues. Departments from both the City and County participated, including those whose jurisdictions include both entities. Organizations represented were:

- City of Albany Engineering Dept., Civil Eng. Division
- Code Enforcement Department
- Emergency Management Agency of the Albany Fire Department
- Planning & Development Services, GIS
- Planning & Development Services, Planning and Zoning
- Public Works Department (Dougherty County)
- Public Works Department (City of Albany)
- Dept. of Community & Economic Development (City of Albany
- Flood Review Board (Joint City and County)

In addition to the departments represented on the steering committee, significant contributions were made by staffs of the Dougherty County Tax Department and of the Water, Gas & Light Commission.

On April 8, 2014, a Memorandum of Understanding was signed between Dougherty County and the Southwest Georgia Regional Commission (RC). The agreement gives the RC the responsibility for producing the Flood Mitigation Plan at the direction of the committee and in cooperation with staff and others.

Steering Committee meetings were held on:

- May 29, 2014
- September 11, 2014

Assignments for updated information were handed out to various members of the committee at this meeting.

The steering committee meeting was supplemented by many consultations among staff members and with the RC during the planning process. Members of the committee provided information and documentation, reviewed the document and were an integral part of developing the plan as it was presented to the Boards of Commissioners.

Public Meetings were held to present information and to receive comments on the plan on:

- August 25, 2014 from 4-6 p.m. in The Candy Room at 125 Pine Ave, Albany, GA
- September 22, 2014 at 10 a.m. in Room 100 of the Government Center
- September 23, 2014 at 6:30 p.m. in Room 100 of the Government Center

Appendix 1 contains agendas, lists of attendees at the steering committee meetings, list of planning committee members, and copies of display advertisements for the public meetings.

Coordination with Other Plans

As part of this planning process, pertinent sections of the Pre-Hazard Mitigation Plan were updated and appear either in the body of this report or in the Appendix of this plan:

- Flood Mitigation Strategy and Recommendations (IV. Mitigation Strategy)
- Albany Dougherty Hazard Frequency Table
- Albany Stormwater Management Plan
- Dougherty County Stormwater Management Plan
- GEMA Worksheet #4 Inventory of Assets
- GEMA Worksheet #5 PDM Critical Facility and Critical Infrastructure Inventory Assets (III. Risk Assessment, B. Specifics of Flood Risk, 3. Critical Facilities)

The Albany Dougherty County Comprehensive Plan 2005-2025 addresses Natural Resources in Vision, Goals and Policies. The following goals from the Comp Plan are reflected in Proposed Mitigation Actions of this plan:

Goal 5: Regulate development in floodway and floodplain to protect citizens and property from natural hazards and to preserve the quality of surface water and groundwater.

Goal 6: Protect from development the Flint River Corridor and the Kinchafoonee Creek Corridor by acquisition, conservation easement, and other methods.

No conflicts between the two plans have been identified.

Both the City of Albany and Dougherty County have floodplain management ordinances. There are few differences between the two, the most obvious being the difference in freeboard requirements (the County requires 3’ above base flood elevation; the city, only 1’). The FMP recommends that the City adopt the same standard as the County.

The Albany Dougherty Zoning Ordinance is in the process of being updated. This document will be monitored by staff and by the FMP steering committee members for consistency with the Flood Mitigation Plan.

Adoption of Plan

The draft plan was presented in work sessions to the City and County Boards of Commissioners for their comments, discussion and suggestions. Public hearings at both boards provided additional opportunities for input from Commissioners and the public prior to presentation for vote. The dates for the public hearings and ordinance adoption of the plan by the City and County Commissions are as follows:

Albany Board of City Commissioners:

- September 23, 2014 – Public Hearing
- September 23, 2009 – Adoption of Albany Dougherty Flood Hazard Mitigation Plan

Dougherty County Board of Commissioners:

- September 22, 2014 – Public Hearing
- September 22, 2014 – Adoption of Albany Dougherty Flood Hazard Mitigation Plan

Copies of the public hearing notices and adopted ordinances are located in Appendix 2.

CHAPTER THREE
RISK ASSESSMENT

Existing Flood Hazard (City Of Albany and Dougherty County)

Flooding is the most prevalent hazard in the United States. The first flood on record in this area, in 1841, devastated much of Albany, Dougherty County, Georgia, affecting nearly all of the residents. Since that date, according to records of the United States Geological Survey (USGS), there have been a total of 108 flood occurrences where Flint River stages were recorded at depths greater than 20 feet (the National Weather Service Flood Stage at the river stage station on the Flint River in Albany). Table 3.1 shows the higher stages, beginning in 1926.

Date	Flood Stage (ft)
3/25/1897	32.40 ft
4/21/1925	37.84 ft
4/24/1928	29.40 ft
3/5/1929	31.50 ft
3/10/1929	33.20 ft
3/20/1929	34.40 ft
4/15/1936	29.00 ft
3/27/1942	26.70 ft
1/22/1943	31.60 ft
3/26/1944	31. 20 ft
4/3/1944	28.40 ft
4/17/1944	26.50 ft
4/2/1948	27.50 ft
12/4/1948	31.50 ft
5/8/1953	26.30 ft
4/7/1960	30.80 ft
3/3/1961	29.00 ft
12/31/1964	31.10 ft
3/7/1966	34.70 ft
4/2/1970	30.70 ft
3/9/1971	31.00 ft
3/21/1975	30.32 ft
1/29/1978	27.20 ft
2/26/1979	26.10 ft
3/23/1990	30.93 ft
3/5/1991	25.83 ft
7/11/1994	43.00ft
2/23/1995	22.45 ft
3/13/1996	23.56 ft
3/11/1998	36.92 ft
3/30/2005	32.33 ft
4/4/2009	31.66 ft

Table 3.1 Flood stages

Data from the National Weather Service located at http://water.weather.gov. *NOTE: On January 11, 2011 the flood stage was changed to 26ft. replacing the previously established 20ft.*

In 1994, rainfall in the upper portions of the Flint River basin (as far north as Atlanta) caused the flooding in Albany; Dougherty County, Georgia after Tropical Storm Alberto struck the Florida panhandle with maximum sustained winds of 60 miles per hour. On July 4, as the center of the storm deteriorated over Columbus, Georgia, a cold front pushed through Alabama and southwestern Georgia from the northwest, producing warm, moist air and unstable weather resulting in heavy prolonged thunderstorms. Rainfall in some parts of Southern Georgia totaled 27 inches. The flood crested in Albany at 23 feet above flood stage.

Portions of Albany are low areas surrounded by higher areas characterized as "Flood Zone D" by the Federal Emergency Management Agency (FEMA). These low areas received flood damage when floodwaters flowed through road cuts and into sewers. In some instances, floodwaters were seen flowing out of manholes and storm grates in these isolated low areas. This situation was created by the height of floodwaters forcing the water through the sewers with significant power.

More than 9,000 acres of land was flooded in the City of Albany and approximately 4,700 structures were flooded. Nearly 28% of these structures had more than five feet of water above grade. Some had more than 15 feet of flooding. Although the flood affected all land use categories in the City, it did the most damage to residential properties. The Washington Homes Housing Complex was destroyed, displacing 140 families. Floodwaters spared the central business district, but commercial and office uses along Oakridge Drive, Radium Springs Road, Newton Road, Slappey Drive, and Palmyra Road were damaged. Public facilities damaged included the Turner Golf Course, Henderson Gym, Chehaw Park, the Civic Center, a fire station, and city cemeteries. While most industrial uses were spared, several local manufacturers experienced some physical damage. Some industries experienced a significant drop in production due to the inability of employees to get to work because of bridge closings and damage to the employees' homes.

The community facilities impacted to the greatest extent by the flood of 1994 were the facilities of the Dougherty County School System and Albany State University. Six schools of the Dougherty County School System were physically damaged by the flood. Minor damages occurred at Northside Elementary and Monroe High School. Four schools, Flintside Elementary; Martin Luther King, Jr. Elementary; Coachman Park Elementary; and Martin Luther King, Jr. Middle Schools suffered major damage and were determined by FEMA to have suffered "substantial damages", were demolished and rebuilt in locations out of the floodplain. The University System of Georgia engaged the services of the firms of John Portman and Associates, and Sasaki and Associates to prepare a recovery plan for the Albany State University campus. Replacement buildings were located out of the floodplain. Minor damage was received by the Albany Technical College due to low level flooding of several buildings.

In March of 1998, rains over a three-day period caused the Flint River to peak at 37 feet, 17 feet above flood stage. Although much less severe than the1994 event, this flood still caused major damage and disruption to the community. More than 11,000 residents evacuated their homes. Having learned from the 1994 flood, citizens acted to protect their lives and belongings.

Floods in 1994 and 1998 resulted in six deaths plus additional injuries. Loss of property and crops surpassed $666,000,000.

Increased flow in the Flint River causes not only over bank flooding, but also flooding by the movement of water through cavities in the limestone bedrock that underlies Dougherty County. This water may surface in sinkholes that are prevalent in the area. Flood waters also back up in canals and waterways designed to move storm water to the river during normal rains.

Probability of Future Events

Probability of future flood events is calculated using the Albany Dougherty Hazard Frequency Table. Flood data has been updated through 2014, reflecting 117 years of history. This translates to a historic frequency percentage chance per year of 27.35%. (See updated table in Appendix 3).

The table is generated by FEMA and its use is required in disaster mitigation planning. However, information has not been located about the factors which make an event a "flood". FEMA's website offers this: "The simple definition of a flood is an excess of water on land that is normally dry." This definition, although succinct, offers no technical guidance.

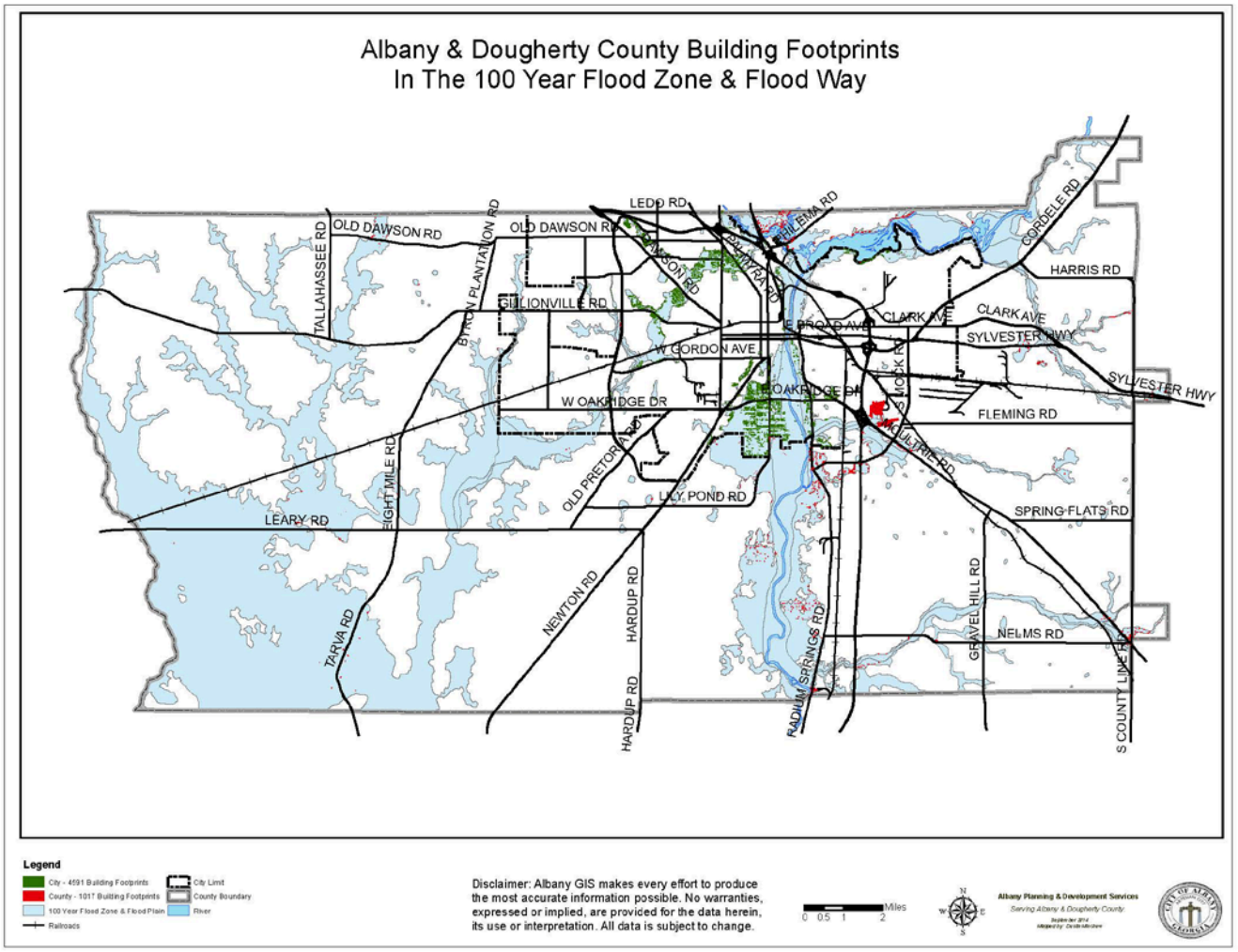
River gauge levels were 34.72' (1966), 43.0' (1994) and 36.92' (1998) respectively for the three highest flow events the time period reported. These are also the events that are generally recognized in the community as floods. The 1994 event was catastrophic while the other two were less severe. Even those less severe events had significant effects, including evacuations, interruption of services and damage to structures.

In Appendix 3, see historic USGS Peak Streamflow data for the Flint River gauge at Albany.

Specifics of Flood Risk

<u>Vulnerable Structures</u>

Map 3.1 on the following page shows the locations of structures in 100-year flood zone in the City of Albany and Dougherty County. Symbols represent residential and commercial properties within the city limits and in the unincorporated county. The map is based on the current Flood Insurance Rate Map approved September 25, 2009 and on property information (fair market value of improvements) from the Dougherty County Tax Department in the spring of 2013. The map and the table below were produced by GIS personnel in the Planning and Development Services Department.



Map 3.1
Building Footprints in the 100 Year Flood Zone & Flood Way

The Inventory of Assets (Worksheet 4) from the Predisaster Mitigation Plan has been updated, calculated for city and county separately and is found in the Appendix 4.

Jurisdiction	Number of Structures In Flood Zone	Total Value of Structures In Flood Zone
City of Albany	4,591	$172,771,191
Dougherty County	1,017	$ 60,958,326
Total	**5,608**	**$233,729,517**

Table 3.2: Number & Value of Structures in Flood Zone

These numbers confirm that a great deal of development has taken place within the flood hazard zone in these jurisdictions, the majority of it residential. Much development took place long before the advent of Flood Insurance Rate Maps and local Floodplain Management Ordinances. Some of the more vulnerable properties were removed because of flood damage in 1994 and 1998, and specifically because of the

Hazard Mitigation Grant Program and Community Development Block Grants. Within the city limits, 216 structures were bought out and demolished. Deeds contain restrictive covenants, dictated by FEMA, that prevent the property from being redeveloped. In the county, 84 properties were mitigated under the same conditions. In addition, more than 500 structures were acquired and demolished in the city with Community Development Block Grant funds. And redevelopment of these properties must be in compliance with the Floodplain Management Ordinance which reduces hazard vulnerability of structures.

The Inventory of Assets (WS 4) confirms that the greatest number and the greatest value of structures that are vulnerable to flood damage in both city and county are residential properties.

Critical Facilities

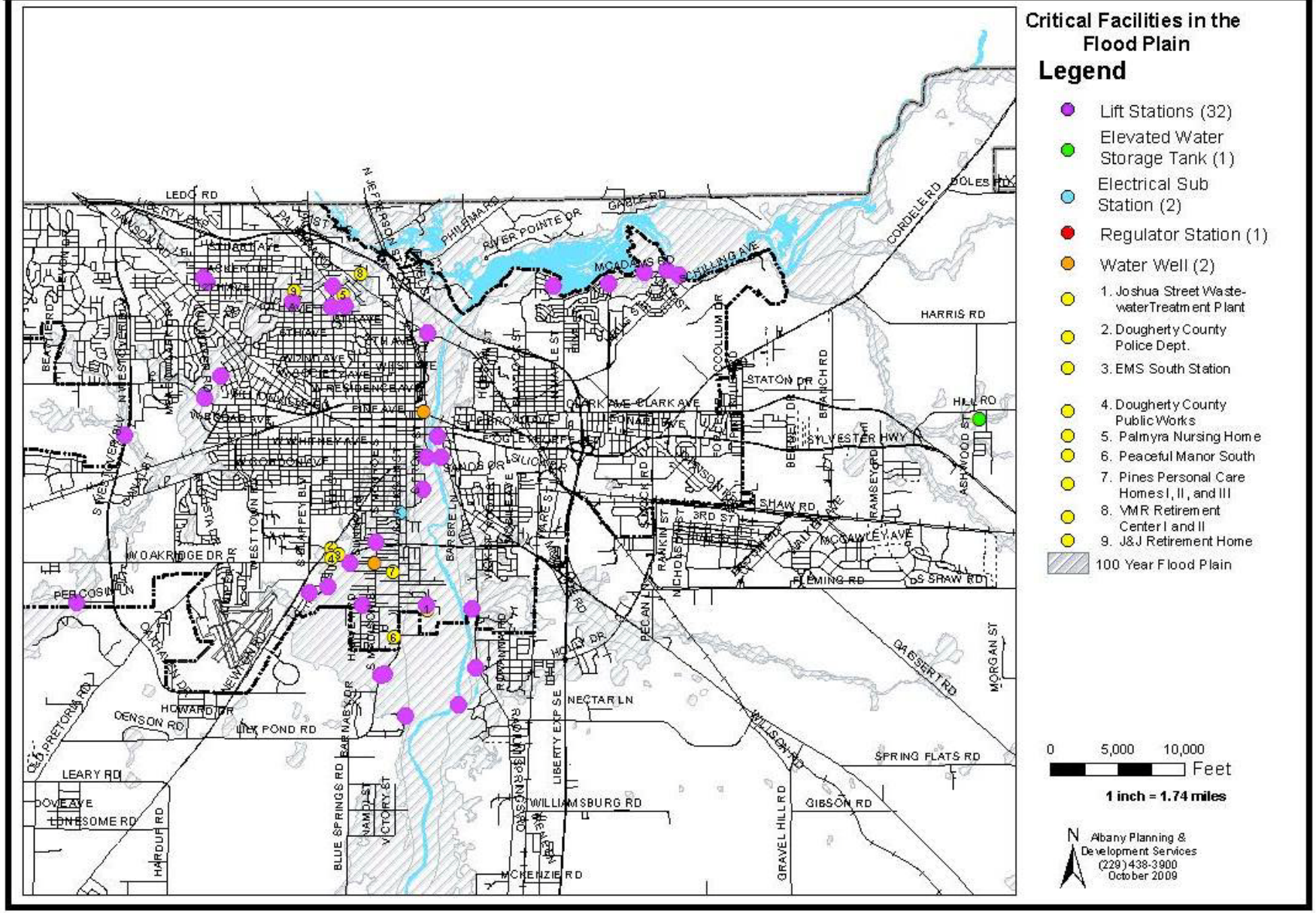
The inventory of critical facilities in Albany and Dougherty County includes forty-seven (47) locations in the flood hazard zone. Facilities were originally identified in the Albany Dougherty Pre-disaster Mitigation Plan, Worksheet 5. The list of those located in the flood hazard zone has been updated for this document. General locations are shown on the following page on Map 3.2**,** Dougherty County, GA Critical Facilities:

- Joshua Street Wastewater Treatment Plant
- Dougherty County Police Dept.
- EMS South Station
- Dougherty County Public Works
- Palmyra Nursing Home
- Lift Stations (28)
- Stormwater Stations (4)
- Elevated Water Storage Tanks (1)
- Electrical Sub Stations (2)
- Regulator Station (1)
- Water Wells (2)
- Housing for the elderly (4)

The majority of these sites are utilities: sanitary and storm water lift stations, electrical substations, water wells and storage tanks. When threatened by rising water, these facilities would be shut down and would require post-flood maintenance and sanitizing.

Pumps that were replaced after the 1994 flood were replaced with dry pit submersible pumps. Only power cables would be damaged if flooded. In some cases, control panels might be damaged should they be submerged. The estimate for repairs for all stations in a 100-year event is $300,000.

Dougherty County, Georgia
Critical Facilities in the Flood Hazard Zone



Map 3.2

Table 3.3: Critical Facilities in Flood Zone
(Facilities and their replacement/repair costs where available)

	Facility	Address	Replacement/ Repair Value	Contents Value
1	Palmyra Nursing Home	1904 Palmyra Rd.	$1,532,000 (FMV)	
2	Dougherty Co Public Works	2108 Habersham Rd. & 2038 Newton Rd.	300,000 (FMV)	55,000
3	Dougherty Co Police Dept.	2106 Habersham Rd.	642,000 (FMV)	31,000
4	EMS South Station	2040 Newton Rd.	300,000 (FMV)	10,000
5	Waste Water Treatment Plant	Joshua St.	100,000 (repair)	
6	Lift Station #6	437 Harmon Ave		
7	Lift Station #11	Zachery Ave (west)		
8	Lift Station #19	College St. on ASU campus		
9	Lift Station # 22	Radium Springs Rd. @MCLB canal, w. of canal		
10	Lift Station # 23	MacEwen @ Radium Springs Rd.		
11	Lift Station # 24	End of Skywater Blvd.		
12	Lift Station # 25	500 S. Front St.		
13	Lift Station # 26	225 College Dr.		
14	Lift Station # 27	Southeast end of Riverside Cemetery		
15	Lift Station # 44	2301 Whispering Pines Rd.		
16	Lift Station # 36	2301 Whispering Pines Rd		
17	Lift Station # 45	MLK Jr. Dr., across from R. Cross Park		
18	Lift Station # 49	540’ E Catalina/Beachview		
19	Lift Station # 56	Approx. 505’ e. of Randolph & Habersham		
20	Lift Station # 61	E. of Sweetbrier Rd.		
21	Lift Station # 65	End of N. Skyland Dr.		
22	Lift Station # 68	McAdams at golf clubhouse		
23	Lift Station # 69	E. of McAdams		
24	Lift Station # 91	SE corner Habersham/Forsythe		
25	Stormwater Sta.	W side MLK, Jr. Dr., 1283’ NE of Southgate		
26	Stormwater Sta.	Joshua St. canal		
27	Elevated Water Storage Tank #10	417 Oakwood St.	$ 750,000	

28	Electrical Sub #10	1500 Martin Luther King, Jr. Dr.	$ 906,000 (replace)	
29	Electrical Sub # 9	2135 Gillionville Rd.	$ 906,000 (replace)	
30	Regulator Station #2	Palmyra Rd.	$12,000 (replace)	
31	Water Well #7	220 N. Front	$ 55,080	
32	Water Well #20	630 Zachary	$ 116,640	
33	Peaceful Manor South	2905 Martin Luther King, Jr. Dr.		
34	Pines Personal Care Homes I, II, and III (3 structures)	2121 Martin Luther King, Jr. Dr.		
35	VMR Retirement Center I and II (2 structures)	560 16th Avenue (aka 566 16th Ave)		
36	J&J Retirement Center	1214 Whispering Pines Rd.		

The facilities listed below are located within the bounds of the 100-year flood hazard zone. However, damages in a 100-year event would be limited due to factors such as elevation of the facilities and flood control gates.

Table 3.4: Critical Facilities in Flood Zone (Protected)

	Facility	**Location**
1	Lift Station # 1	13th Ave. & Hoover St.
2	Lift Station # 2	Lakeview Rd. & Valencia Dr.
3	Lift Station # 3	2149 Gillionville Rd.
4	Lift Station # 7	619 Johnny Williams Rd.
5	Lift Station # 28	1801 Palmyra Rd.
6	Storm Station # 31	901 11th Ave.
7	Lift Station # 54	2000 Palmyra Rd.
8	Lift Station # 81	Approx 754 ‘ N. of Upland Ct. On Westover Blvd.
9	Storm Station # 84	End of Percosin Lane
10	Lift Station # 88	Approx. 400’ SE Dawes Ave.
11	Lift Station # 100	Turner Field

The **Joshua Street Wastewater Treatment Plant** was built in the early 1960s, before Flood Insurance Rate Maps for Albany and Dougherty County were approved. The operation of the plant was interrupted by the flood of 1994.

Following that event, the City’s Public Works Department completed flood-proofing retrofits to reduce vulnerability to flood damage at the facility, to allow the facility to operate at higher water levels and to expedite returning to normal operation in the event that flood waters caused a break in service. Pump stations located near the river were retrofitted with submersible pumps. These pumps operate normally in a dry environment but are also capable of operating when submerged. Main pumps in the plant are also submersible. The plant is vulnerable to shutdown at the approximate level of a 100-year event.

Loss of power is another possible cause of interruption of service at the Joshua Street Plant. Currently, there are two separate electrical feeds into the plant providing alternative sources of electricity.

Palmyra Nursing Home, a 200+ bed long-term care facility, is less vulnerable to flooding than it was at the time of the 1994 flood because of the construction of the Hogpen Ditch flood control structure, discussed in Chapter 4, Mitigation Actions, Past and Present.

Dams and Flooding

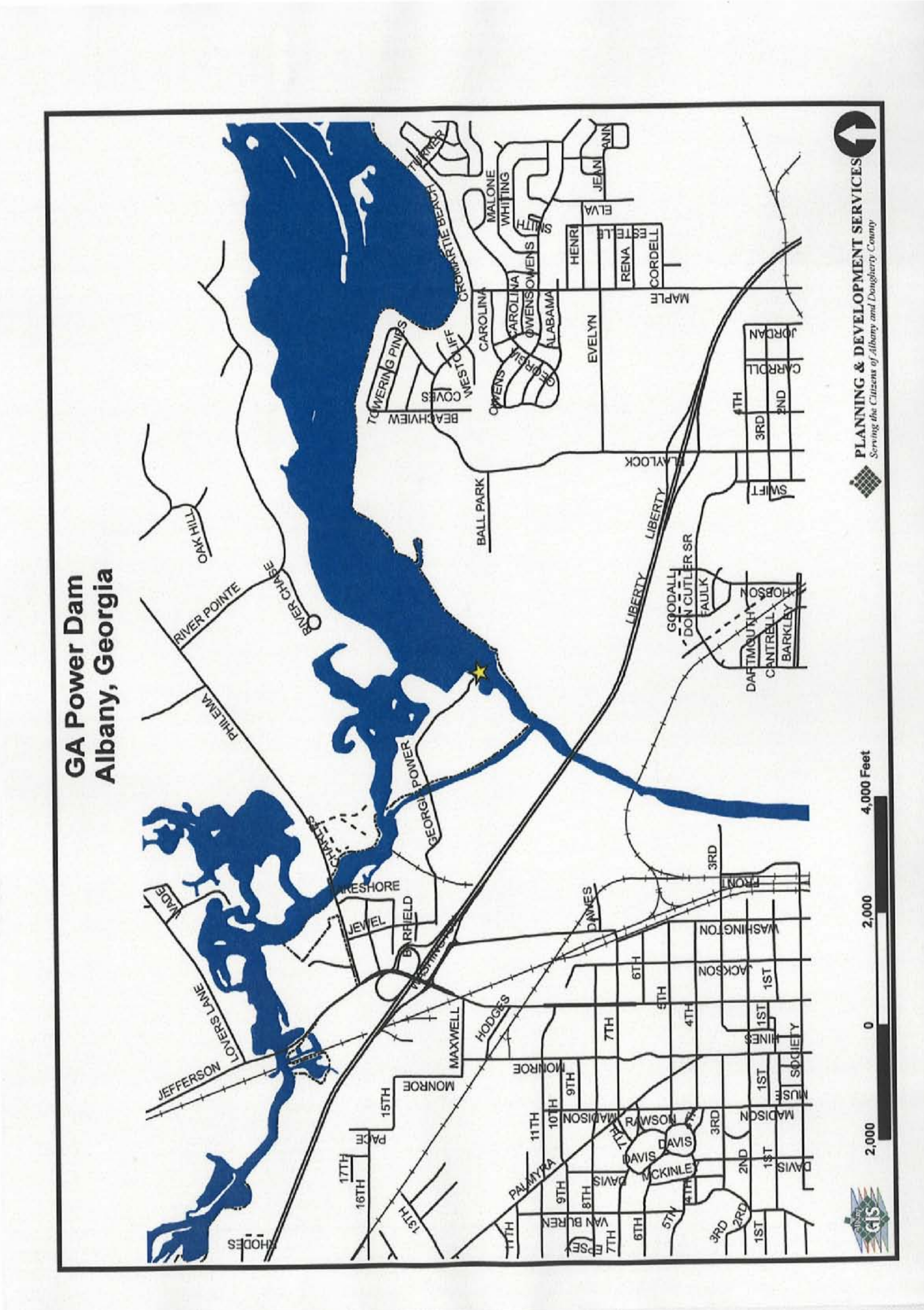
The National Inventory of Dams is maintained by FEMA and the US Army Corps of Engineers. A dam is included in the National Inventory of Dams if:

1. It is a High or Significant hazard potential class dam or,

2. It is a Low Hazard potential class dam that exceeds 25 feet in height AND 15 acre-feet storage or,

3. It is a Low Hazard potential class dam that exceeds 50 acre-feet storage AND 6 feet height.

The only dam listed for Dougherty County is the Muckafoonee Creek Dam (NID ID 83023) on Muckafoonee Creek (convergence of the Muckalee and Kinchafoonee Creeks) and the Flint River. It is also known as the Lake Worth Dam and, most commonly, the Georgia Power Dam (see Map 3-3: Georgia Power Dam for location). The dam was completed in 1906, with an NID height of 42.0 feet. It is rated as having a high downstream hazard potential in the event of failure or misoperation of the dam or facilities and is required to have an Emergency Action Plan (EAP). The EAP is on file at the Albany Emergency Management Agency, Albany Fire Department. Inspection is by the Department of Energy's Federal Energy Regulatory Commission.


GA Power Dam
Albany, Georgia
PLANNING & DEVELOPMENT SERVICES
Serving the Citizens of Albany and Dougherty County
2,000
0
2,000
4,000 Feet

Map 3.3

Repetitive Loss Properties

Repetitive loss properties are those that are currently insured and for which two or more National Flood Insurance Program losses (occurring more than ten days apart) of at least $1000 each have been paid within any 10-year period since 1978. Other properties that may have been damaged repeatedly, and were not insured, are not considered in these calculations. Many properties that had no flood insurance in 1994 were appropriately insured at the time of the 1998 event.

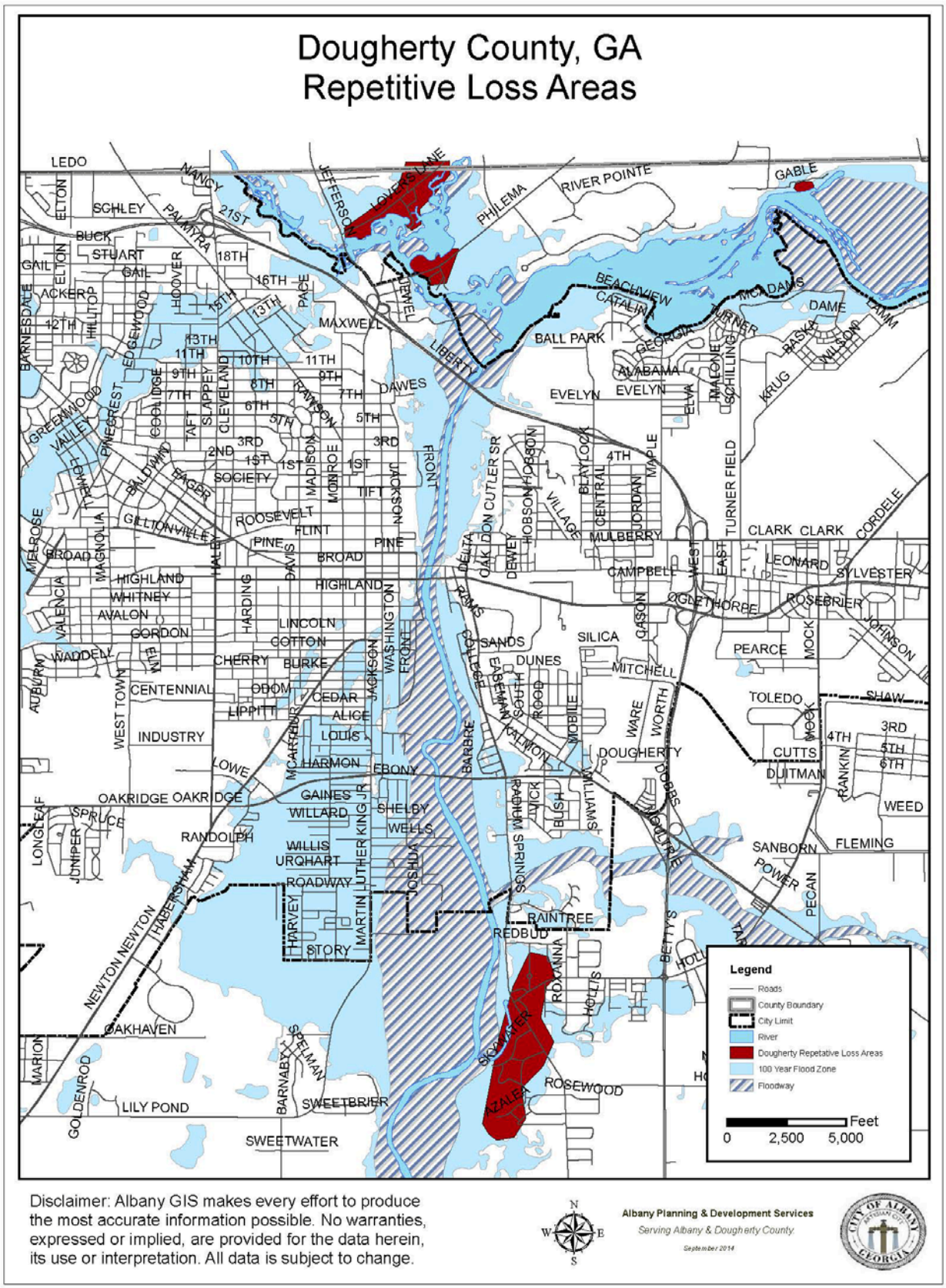
Map 3.4 Dougherty County and Map 3.5 City of Albany show repetitive loss areas in the City of Albany and Dougherty County.

Dougherty County

FEMA and the NFIP report that unincorporated Dougherty County has thirty-nine (39) repetitive loss properties. Of these, thirteen (13) have been mitigated according to 12-31-2011 data. This is an increase of three (3) properties since 6-30-2008 data reporting. Mitigation for these thirteen (13) properties includes eight (8) by acquisition and demolition, one (1) by private demolition, and four (4) by elevation. Of the twenty-six (26) remaining RL properties, seventeen (17) were insured at the time of the NFIP report of 12-31-11. For the remaining eleven (11) properties listed as uninsured, nine (9) are now listed as mitigated. There are two properties listed as unmitigated and uninsured.

The 26 properties are found mostly in two neighborhoods known to be vulnerable to flood damage. North of the Liberty Expressway, eighteen (18) properties are near Lake Chehaw and the Georgia Power Reservoir, collectively referred to here as Lovers Lane. Seven (7) of the remaining are found in the southern county, east of the Flint River, in the Radium Springs neighborhood. One (1) property is located on the east border of the county near Piney Woods Creek. The Radium properties are affected by over bank flow of the Flint and by rising groundwater which finds a conduit to the surface in the sinkholes that are common in the area. There is a direct connection between river level and groundwater level in the karst topography of the Dougherty Plain.

There were 464 active flood insurance policies within the County as of December 31, 2011. Between 1978 and 2011, there were 308 claims. (NFIP Report of December 31, 2011)


Dougherty County, GA
Repetitive Loss Areas
Legend
Roads
County Boundary
City Limit
River
Dougherty Repetative Loss Areas
100 Year Flood Zone
Floodway
Feet
0
2,500
5,000
Disclaimer: Albany GIS makes every effort to produce the most accurate information possible. No warranties, expressed or implied, are provided for the data herein, its use or interpretation. All data is subject to change.
Albany Planning & Development Services
Serving Albany & Dougherty County
September 2014

Map 3.4

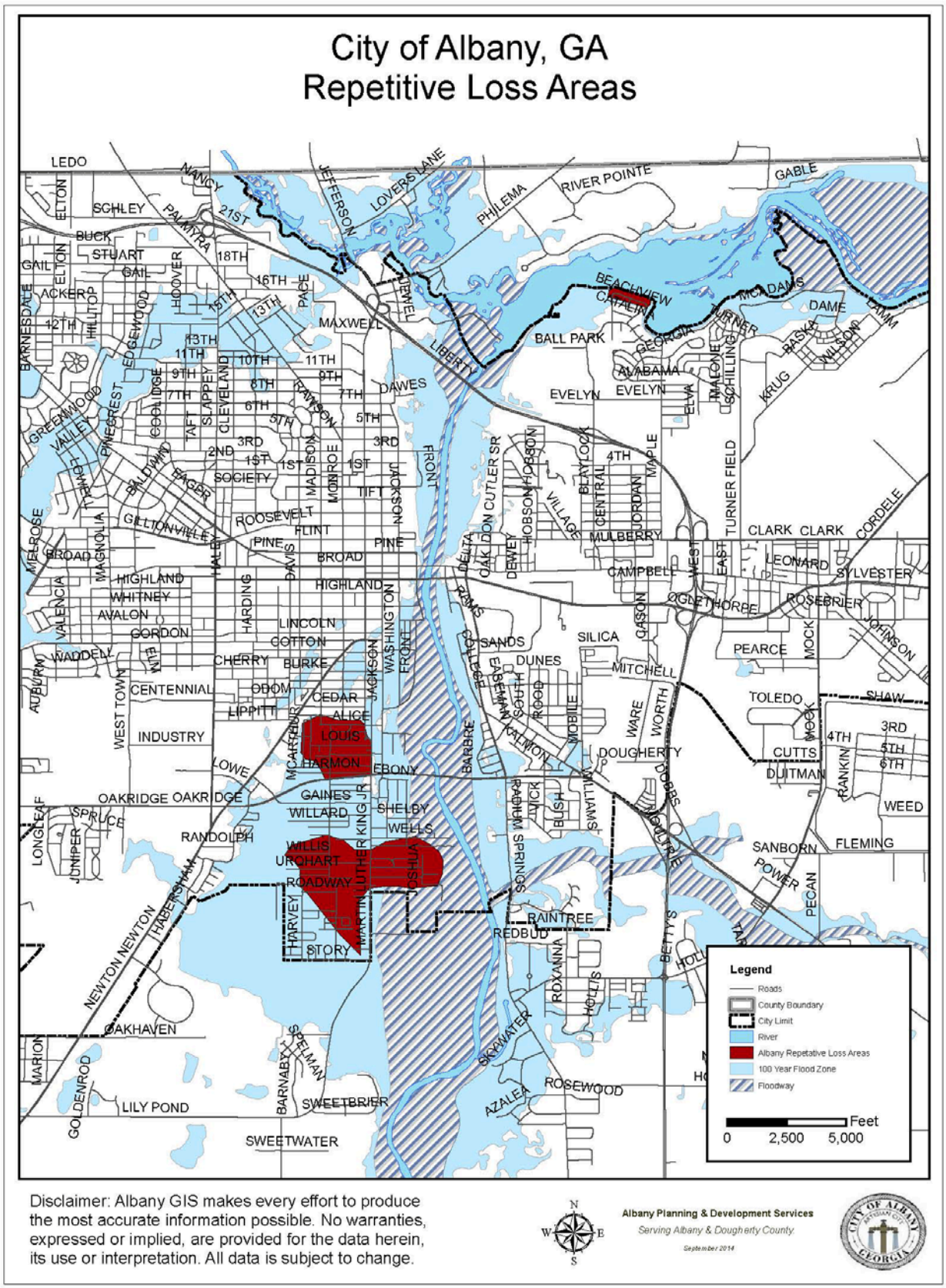
City Of Albany

Within the City of Albany, FEMA and NFIP list forty-two (42) repetitive loss properties. One has been mitigated by acquisition and demolition, one is listed in error and has been reported for correction, and the location of one cannot be confirmed.

Of the remaining thirty-nine structures, twenty-six (26) were insured at the time of the NFIP report of 12-31-11 and thirteen (13) were not.

Most of these properties are located in south Albany, west of the Flint River and east of Newton Road. Four (4) are on the southern shore of the Georgia Power Company Reservoir, an area referred to here as Beachview. One outlier property is the victim of a localized drainage situation and another is vulnerable to over bank flow east of the Flint.

There were 1,488 active flood insurance policies within the City as of December 31, 2011. Between 1979 and 2011, there were 851 claims. (NFIP Report of December 31, 2011)


City of Albany, GA
Repetitive Loss Areas
Legend
Roads
County Boundary
City Limit
River
Albany Repetative Loss Areas
100 Year Flood Zone
Floodway
Feet
0
2,500
5,000
Disclaimer: Albany GIS makes every effort to produce the most accurate information possible. No warranties, expressed or implied, are provided for the data herein, its use or interpretation. All data is subject to change.
Albany Planning & Development Services
Serving Albany & Dougherty County
September 2014

Map 3.5

Potential Flood Depths: Albany and Dougherty County

The USGS Flood Model (described in detail in Mitigation Actions, Past and Present) calculates depth of water above grade at different flood levels. The model includes the repetitive loss areas in south Albany (east of Newton Road, extending north from the City limits. The map on the following page shows that, at the USGS stream gauge height of a 100-year flood event, the area would experience water depths of 0-5 feet above grade. No other repetitive loss areas are covered by the model.

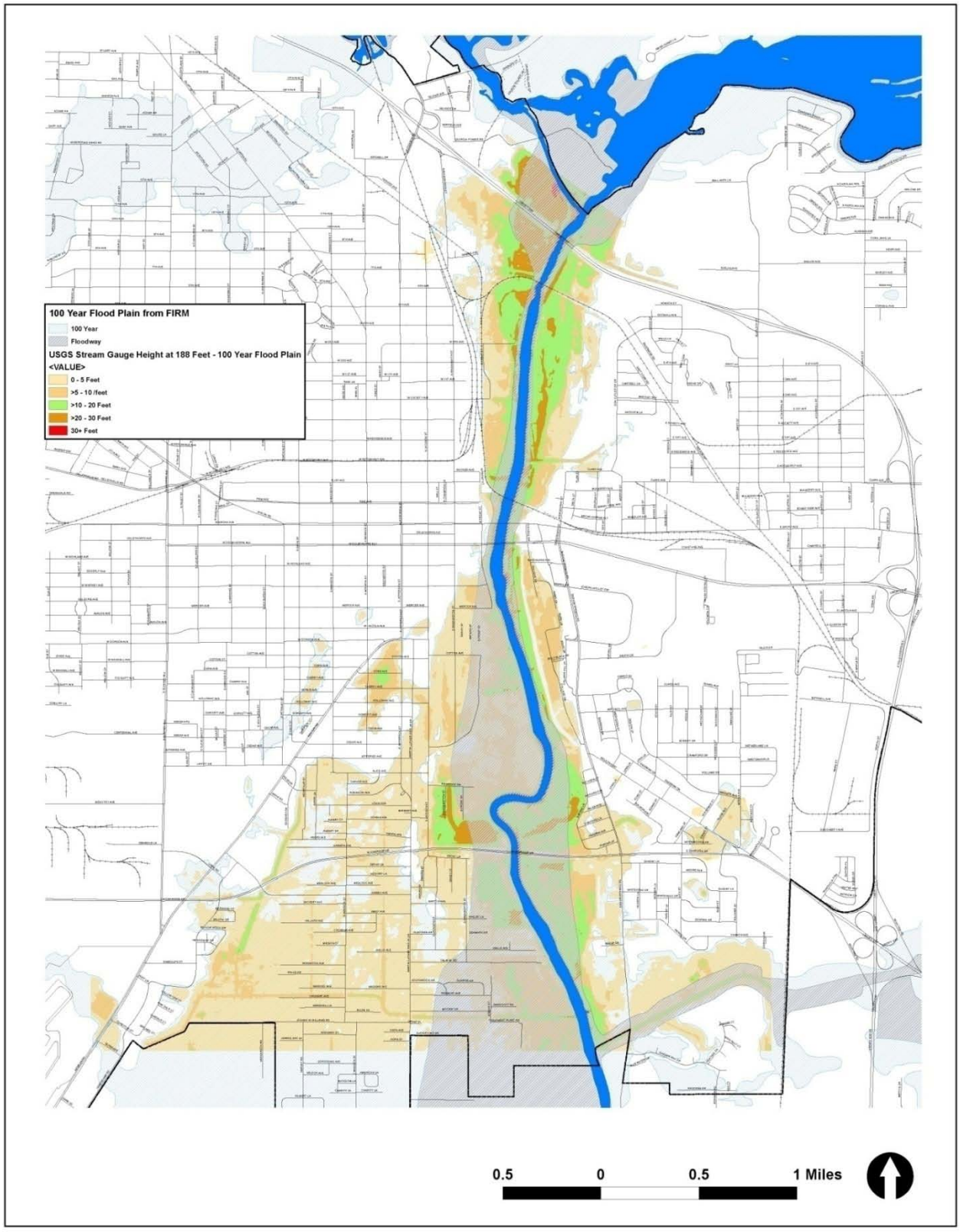
Another repetitive loss area in the city is Beachview, located on the south shore of the Georgia Power Reservoir. In the county, Lovers Lane and Radium Springs neighborhoods are repetitive loss areas. Lovers Lane is north of Lake Chehaw and east of Jefferson Street in the north county and Radium Springs is south of the city limits, east of the Flint River.

For these areas, a different set of data is available for use in predicting flood depths. At the time of the 1994 event, FEMA sponsored a county-wide surveying project to record the extent of the flood. The resulting data set of more than 3,750 location points includes address, construction information, the depth of water above grade and depth of water above the first floor of structures affected by the flood, plus additional facts. By selecting the addresses in each of the neighborhoods listed in Table 3-5 below, the minimum and maximum depths above grade were determined. These figures were then adjusted by (-3) to reflect the difference in the depth of the 1994 flood and a 100-year event. The historic data is maintained by Albany Dougherty GIS Department.

Table 3.5: Potential Flood Depths

Repetitive Loss Neighborhood	1994 Depth > Grade (Min)	1994 Depth > Grade (Max)	100 - Year Potential Depth (min)	100 - Year Potential Depth (max)
Lovers Lane (Dougherty County)	3 ft	10 ft	0 ft	7 ft
Beachview (City of Albany)	1 ft	11 ft`	0 ft	8 ft
Radium Springs (Dougherty County)	1 ft	11 ft	0 ft	8 ft

USGS Stream Gauge Height



Map 3.6

Development Trends

Development trends in a particular locality are affected by many factors, among them population, general economic conditions, regulations, social history, community profile, and geography of the area.

There are jurisdictions in this country where no residential or commercial development is allowed in flood hazard zones. Obviously, this is a most effective mitigation strategy, albeit not a practical one for the entire jurisdiction. As the Inventory of Assets shows (Appendix 4), there is considerable existing development in floodplain areas in Albany and Dougherty County, particularly residential development that took place before local floodplain regulations were enacted.

Local government has taken advantage of Federal programs that help finance purchase of flooded properties from willing sellers (discussed in Section Mitigation Actions, Past and Present, IV (B)) and, in some instances, prevent redevelopment of those lots. However, many home owners in flooded areas faced the financial reality that proceeds from a buyout would not be sufficient for the purchase of homes in non-vulnerable locations. This has resulted in the preservation of neighborhoods changed by events and where future development is more closely controlled by floodplain management regulations.

Large areas of flood hazard zone in the Flint River Corridor have been taken out of the development picture by Greenspace and Rivercare 2000 programs (discussed in Mitigation Actions, Past and Present, IV (B)).

<u>Residential Developments</u>

Although residential development has slowed with the general slowdown of the economy, activity is still taking place in different areas of the City and County.

The most popular subdivisions in home-building stage in these jurisdictions are located in areas outside the flood hazard zones, many in the northwestern county. Localized drainage issues are dealt with in subdivision design and engineering.

Some development is taking place in flood hazard areas. At the end of 2011, a developer completed a three-phased housing project in south Albany; a Letter of Map Amendment Based on Fill was issued for all three phases. The first phase consisted of 56 attached townhouse units; the second phase consisted of 40 attached townhouse units; and the third phase consisted of 19 duplexes (38 units). This project is designed to help meet the critical need for affordable housing. Other residential development in south Albany has taken place on in-fill lots within existing single-family subdivisions. Construction was subject to the City of Albany Floodplain Management Ordinance in effect at that time.

Other residential development in flood hazard zones is in response to the widespread interest in living in waterfront locations. Development has taken place on the northern shore of the Georgia Power Co. Reservoir in the northern county (unincorporated). Although most of the subdivision and the roads are not in the flood zone, some homes on the lake shore are. Homes were constructed in compliance with the County's Floodplain Management Ordinance.

Also in the same area, an apartment complex was built in 2002 on waterfront property. In 2011, another phase of this complex added 48 units, which were constructed in compliance with the County Floodplain Management Ordinance. A requirement of the County Floodplain Management Ordinance, adopted in

2009, requires that new roads and access facilities that serve residential buildings containing more than two-family units, must be elevated to a minimum of one foot above the base flood elevation.

Commercial

Following the 1994 flood, an ambitious plan for downtown development was adopted. The plan included buildings to house government entities, Riverfront Park and Greenways Trail along the Flint River, the Flint RiverQuarium, hotel and other locations for commercial development. One goal was to showcase the river with development of recreational areas where there was vulnerability to flooding and to maintain and redevelop downtown locations outside the flood hazard zone.

A visitor to downtown Albany today finds the expansive Riverfront Park on the west bank of the Flint, adjoining the RiverQuarium. The paved Riverwalk, for bicycling and walking, extends from Veterans Park, south of Oglethorpe Boulevard, north to Philema Road. The Park and Riverwalk have been subjected to a couple of minor flooding events. Recovery efforts were limited to clean-up, as designed. A bonus is that clearing and contouring for the park and trails promotes faster movement of flood waters through the river corridor.

Recent development of retail and service businesses has been concentrated in areas outside the flood hazard zone in the northwest area of the city. A large project (Wal-Mart Shopping Center) recently built in east Albany is also outside the flood zone.

Summary

Some development is taking place within flood hazard zones but there is no major pressure.

The development process, administered by Planning and Development Services, includes determination of flood zone status and compliance with the regulations relating to those zones. Design to minimize exposure is encouraged, in addition to requiring compliance.

As the time since the last serious flood increases and memories fade, it becomes more critical to maintain educational efforts about the effects of flooding. Educated citizens, in addition to well-informed developers and builders, are an effective flood mitigation tool. Their actions drive the development market.

CHAPTER FOUR
MITIGATION STRATEGY

Mitigation strategy is based on the results of risk assessment, national, state and local goals and actions designed to move local governments toward these goals.

Flood Mitigation Goals

Flood mitigation goals have been established and approved by the Federal Emergency Management Agency and by the Georgia Emergency Management Agency. Flood mitigation goals established by the City of Albany and Dougherty County are consistent with these goals and with existing local planning documents. The goals focus on current local circumstances and priorities.

National Goals

The United Nations designated the 1990's as the International Decade for Natural Disaster Reduction (IDNDR). In response, the U.S. Congress passed a resolution naming the 1990's the "United States Decade for Natural Disaster Reduction." FEMA articulated these mitigation goals that guide national programs authorized and funded by Congress:

- to substantially increase public awareness of natural hazard risk so that the public demands safer communities in which to live and work
- to significantly reduce the risk of loss of life, injuries, economic costs, and destruction of natural and cultural resources that result from natural hazards.

Georgia Goals

On April 9, 2008, the Georgia Emergency Management Agency announced that FEMA had approved the 2008 Georgia State Hazard Mitigation Strategy (GHMS). The Strategy identifies risks and vulnerabilities to multiple hazards and further identifies goals, objectives and actions to address them. It provides a comprehensive framework for statewide disaster mitigation actions and will serve as a guide for local governments.

In Chapter 1.4 of the GHMS, three general mitigation goals are listed:

1. Reduce human vulnerability to hazard events;
2. Reduce the loses associated with hazard events;
3. Reduce the people and property of Georgia's overall exposure to hazard events.

Objectives needed to implement these goals are:

1. Increase coordination between local, state, and federal agencies in pre-disaster planning and post-disaster recovery;
2. Increase awareness of hazard mitigation among state agencies, local governments, private sector, and general public;
3. Implement a broad range of programs and projects that promote the state's comprehensive mitigation strategy;

4. Improve the state's comprehensive strategy with periodic analysis to determine the effectiveness of program management and local and state mitigation projects, planning and initiatives.

City of Albany and Dougherty County Goals

Local goals must be consistent with national and state goals. Furthermore, they should be broad enough to encourage a range of activities and should involve both the local governments and the public. Findings in the Risk Assessment portion of the planning process are addressed by the general goals and by the specific mitigation actions. The Flood Mitigation Steering Committee recommended the following goals to guide mitigation activities:

1. Reduce losses due to flooding in Albany and Dougherty County;
2. Increase the public's knowledge of flood hazards, flood insurance and actions that individuals can take in planning for protection and recovery.
3. Maintain and strive to improve the status of Albany and Dougherty County in the National Flood Insurance Program.

Under the umbrella of these goals, specific mitigation actions are recommended. They are discussed in the Proposed Mitigation Actions.

Mitigation Actions: Past and Present

The fact that the first recorded flood in this area occurred in 1841confirms that floods have been a part of Albany throughout its history. The purpose of this Flood Mitigation Plan is to provide a guide to the community to reduce damage and loss caused by these events. The community has a long record of facing this challenge. This section describes some of the mitigation actions that Albany and Dougherty County already have in place that reduce vulnerability to damage or provide vital information needed in making decisions. It is upon this base of accomplishments that future efforts will build. There is no claim that this list is comprehensive.

Floodplain Management Ordinances

The City of Albany passed its first Floodplain Management Ordinance on August 9, 1977; Dougherty County acted on April 3, 1978. Revisions followed in April 1992 and February 1992, respectively, with an additional revision being adopted by the County in 1999. The latest revisions to the Albany Floodplain Management ordinance occurred in 2009 and 2012; Dougherty County approved revisions to its ordinance in 2009 and additional amendments in 2013.

The Ordinances are consistently enforced by the Department of Planning and Development Services. This enforcement assures that, when building permits are issued, elevation regulations and other requirements are met when structures are located in the 100-year floodplain, thus affording the structures a measure of protection from damage by flood. Construction in the floodway, legal in limited circumstances, is actively discouraged and must meet stringent engineering requirements in order to obtain permits.

National Flood Insurance Program/Community Rating System

Dougherty County began participating in the Community Rating System program on December 14, 1992 with the City of Albany following on December 15, 1993.

The program requires certain activities designed to reduce losses due to flooding and to educate the public about flood insurance and flood danger.

Participation automatically provides a reduced rate of 5% for flood insurance. Furthermore, with additional activities, more rate reductions are possible. In 2009, Dougherty County's rating improved from Class 7 to Class 6 and at the same time the City of Albany increased from a class 9 to a class 8. The improvements were due mainly for development and adoption of a Flood Hazard Mitigation Plan and the provision of technical advice and assistance to property owners. The Class 6 rating earned Dougherty County property owners a 20% discount in flood insurance premiums, while the City of Albany's Class 8 rating earned a 10% discount in flood insurance premiums. Both Albany and Dougherty County are Class C communities under the CRS, indicating that there are more than ten (10) repetitive loss properties remaining in each jurisdiction. (A more detailed discussion of repetitive loss properties is found in Chapter Three: Risk Assessment). Class C communities are required to have a plan for reducing this inventory. This plan is designed to meet this requirement.

Hazard Mitigation Grant Programs: Buyouts

The flood of 1994, the most serious flood event recorded here, has an estimated probable recurrence interval of 200-300 hundred years. It is often referred to locally as a 500-year event. It brought the reality of the threat of flood damage to residents. It also created a response that exceeded any previous recovery efforts. There were new tools available to aid in recovery. In 1988, the Robert T. Stafford Disaster Relief and Emergency Assistance Act amended the Disaster Relief Act of 1974. The Stafford Act included the oft-quoted Section 404, which established the Hazard Mitigation Grant Program. In 1993, following the disastrous flooding of the Mississippi River, Section 404 was amended to increase both the amount of HMGP funds available and the Federal cost-share. Just as important, the amendment also encouraged the use of property acquisition, with demolition, and other non-structural flood mitigation measures. This became known as the "buyout" program and was made available to Albany and Dougherty County when the area was declared a Federal disaster area in 1994. Response was strong to the opportunity for buy-out of damaged properties. Had the program not been so new and, consequently, its instigation slow, additional property owners would have applied for this assistance. Local jurisdictions also obtained Public Assistance grants through FEMA for infrastructure repairs/replacement and projects to help reduce flood hazards.

According to "Mitigation Success Stories in the United States" (Edition 4, January, 2002, see Appendix 5), a publication of the Association of State Floodplain Managers, the HMGP program following the 1994 flood avoided damages from the March 1998 flood. Of the properties acquired in the buyout program in unincorporated Dougherty County, 19 would have also flooded in 1998. Using FEMA's benefit-cost software, it was determined that the losses avoided exceeded the original investment. Damages avoided were estimated at $4.6 million; the original investment, not including demolition, was $3.8 million.

HMGP buyouts following disaster declarations in 1994 and in 1998 totaled 216 in the City of Albany and 84 in unincorporated Dougherty County. Two (2) of these structures in the County were relocated to sites outside the flood hazard area. In addition, five (5) residences in the County were elevated with financing from this program.

The HMGP program requires that the deeds of purchased properties contain restrictive covenants that preclude the properties being built on. Thus they become part of the local inventory of protected greenspace. Georgia Emergency Management Agency conducts periodic inspections to assure that the conditions of the deeds are being met.

Community Development Block Grant

The City of Albany is the recipient of funding from the Department of Housing and Urban Development. Under the Community Development Block Grant program, more than 500 flooded structures were purchased and demolished. The goal of this program was to provide adequate housing so these properties were not subject to the non-development deed restrictions. Some of the properties have been redeveloped to provide improved housing options in the area. Since redevelopment did meet the requirements of the Floodplain Management Ordinance, these structures are less vulnerable to flood damage than the housing they replaced. Additional families were relocated to new, CDBG-funded housing outside the flood hazard zone. CDBG funds also matched Federal funds for the construction of flood control structures.

The City of Albany's CDBG Flood Hazard Mitigation Program is funded by federal funds awarded through the U.S. Department of Housing and Urban Development (HUD). The Department of Community & Economic Development (DCED) is authorized by the City to administer the housing program and is responsible for executing all program activities in compliance with 24 CFR Part 92, policies and procedures, and other applicable state, federal, and local regulations.

The CDBG Flood Hazard Mitigation Program (FHM Policies & Procedures can be viewed in Appendix 9) is designed to assist eligible low and moderate income households or households located within low to moderate income census tracts within the City of Albany, Georgia City limits to alleviate hazardous risks associated with flooding and seek to reduce annual flood insurance premiums to eligible households. The program will not elevate an existing structure. The program utilizes funding provided by the U. S. Department of Housing & Urban Development (HUD) Community Development Block Grant Program (CDBG) for flood mitigation measures such as installing foundation vents, backfilling excavated areas within the foundation, and relocating equipment and machinery (i.e. HVAC systems) above the established base flood elevation for the property as determined by the Flood Insurance Rate Map (FIRM). Per Federal regulation 24 CFR 570.202 (b) - CDBG funds may be used to finance rehabilitation activities and related costs through the use of grants, loans, loan guarantees, interest supplements, or other means for buildings and improvements.

Major Storm Water Management Projects

Major mitigation projects have been completed since the flood events of 1994 and 1998 that reduce the vulnerability of certain basins to flood damage. Flood control structures have been constructed in the areas of Hogpen Ditch, Joshua Street Canal and Southgate Canal.

Hogpen Ditch

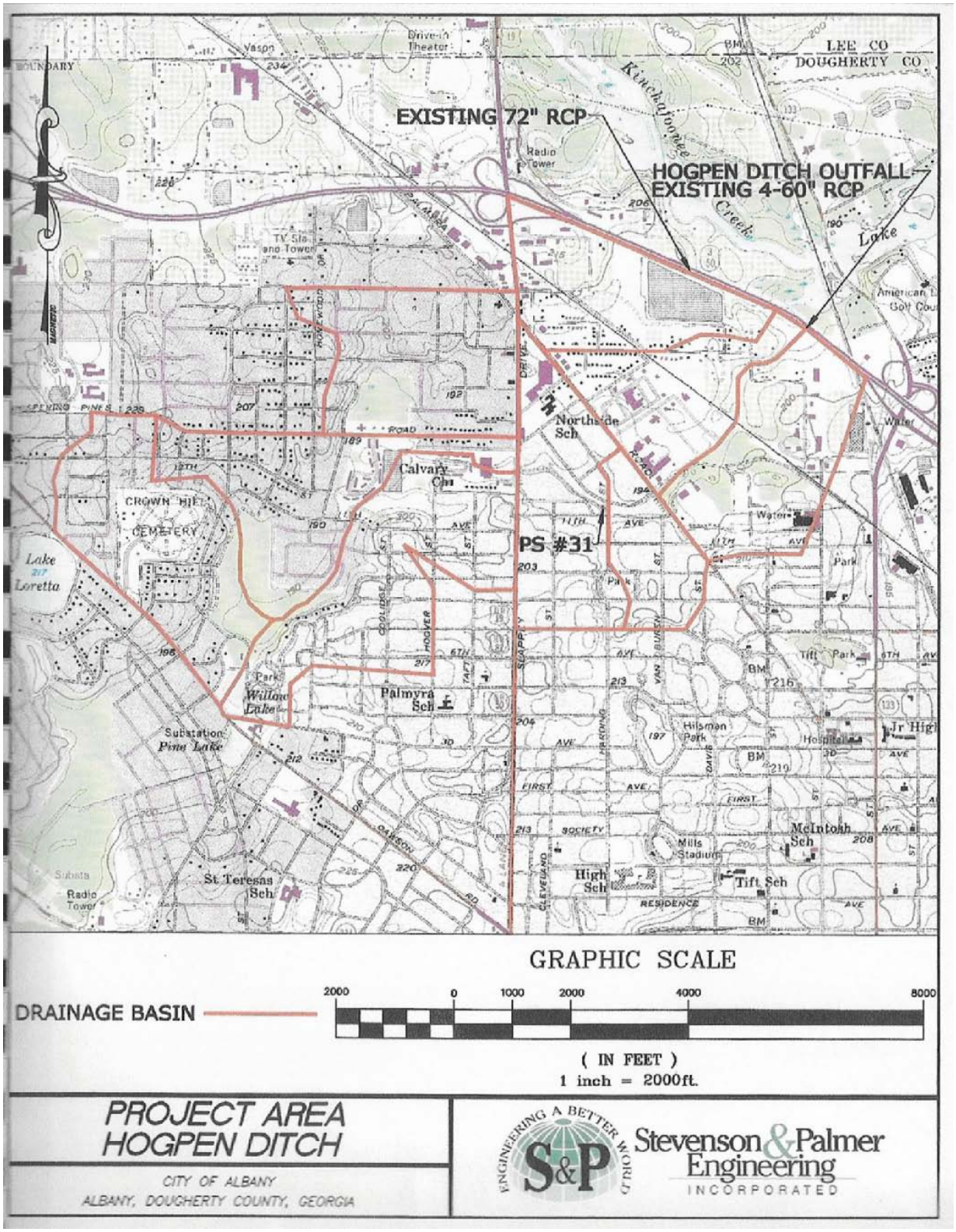
Hogpen Ditch is a drainage ditch in northwest Albany that drains approximately 410 acres. (Map 4.1). The ditch outfall is the Kinchafoonee Creek west of the Georgia Power dam and reservoir. The Liberty Expressway is parallel to Kinchafoonee Creek between the developed areas and the creek. The Expressway's location and its elevation provided protection up to the 100-year flood elevation for the road.

However, backwater flooding occurred in 1994 through two culvert locations and the Expressway overpass of the Norfolk Southern Railroad, overtopping the road at a vertical sag between the two culverts. Flood depths ranged from one to five feet along the Hogpen Ditch, flooding approximately 410 acres south of the expressway. 1,795 structures including 47 businesses, 11 churches, Palmyra Medical

Center, Palmyra Nursing Home and Storm Water Pump Station 31 were flooded. Road closures included Liberty Expressway, Slappey Boulevard Palmyra Road and residential collector and arterial streets.

A feasibility study of a flood control project for this area was authored by Stevenson & Palmer Engineering, Inc. of Albany. It proposed installing gate structures at each of the culvert locations under the Expressway to prevent tail-water flooding. Localized flooding was predicted during periods of prolonged rainfall and infiltration when the gates are closed. To prevent this flooding, a pump structure would move accumulations of local runoff. The proposal was based on recommendations in the USACE 205 study of the affected area.

The project as proposed prevents flooding for approximately 410 acres, 2 critical care facilities mentioned above, residential and commercial areas and major arterial roads up to the level of a 500-year flood, provided proper maintenance of the mitigation structures is maintained.
The Hogpen Ditch project was constructed with close out in 2005. Reduction in flood vulnerability for the areas outlined on the map is not reflected in current FIRM map.



Map 4.1

Joshua Street Canal and Southgate Canal

Joshua Street Canal and Southgate Canal are located in south Albany on the west side of the Flint River. (See Map 4.2). Each of these canals drains about 2.7 square miles (5.4 sq. miles total). Each receives

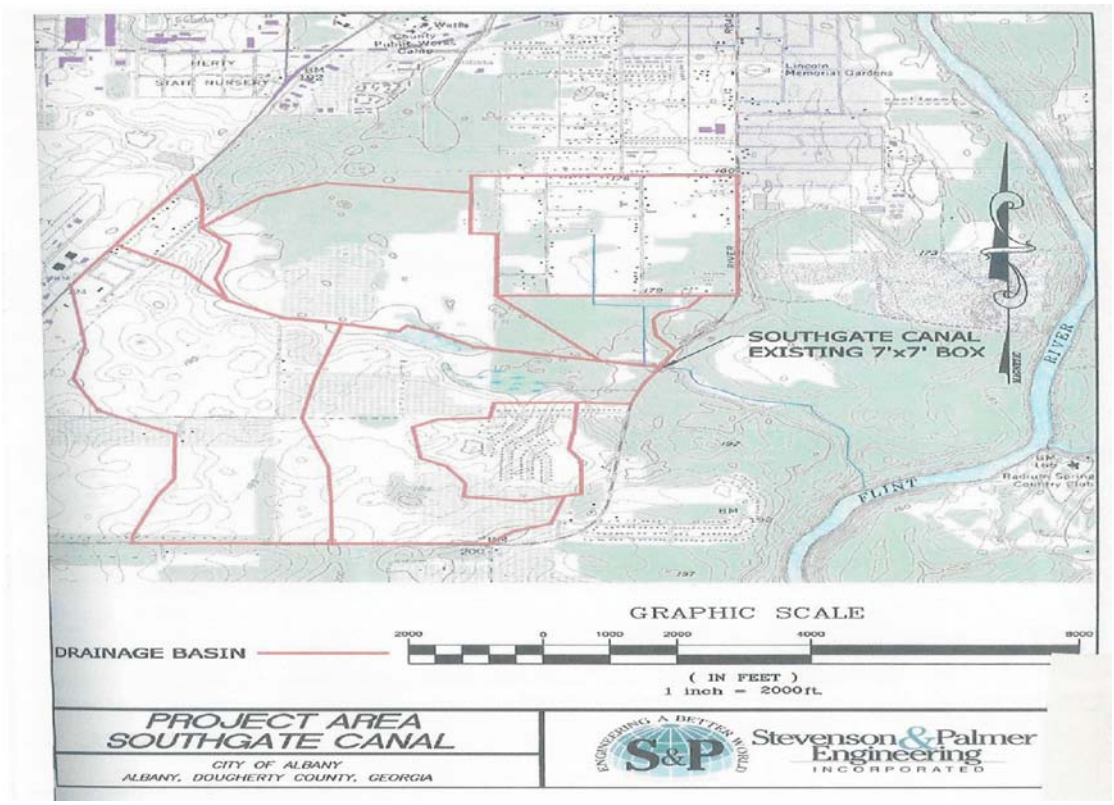
drainage from other local canals and outfalls into the Flint River. It is when the Flint reaches flood stage that water begins to move back into the canals and into the areas they were designed to drain. The drainage areas for both canals are separated from the river by a low ridge that should protect the area up to the 50-year event. However, a low spot in the vertical profile of Martin Luther King, Jr. (MLK) Blvd at the Southgate Canal allowed flooding during the 10-year event.

The feasibility studies for these projects were also authored by Stevenson & Palmer Engineering, Inc. in Albany. The projects are designed to provide protection from the 10 to 50-year event by adding gates to the culverts under MLK for the Southgate Canal and under Joshua Street from the Joshua Canal. Pump structures were proposed to prevent problems caused by localized flooding from heavy rain, runoff and infiltration.

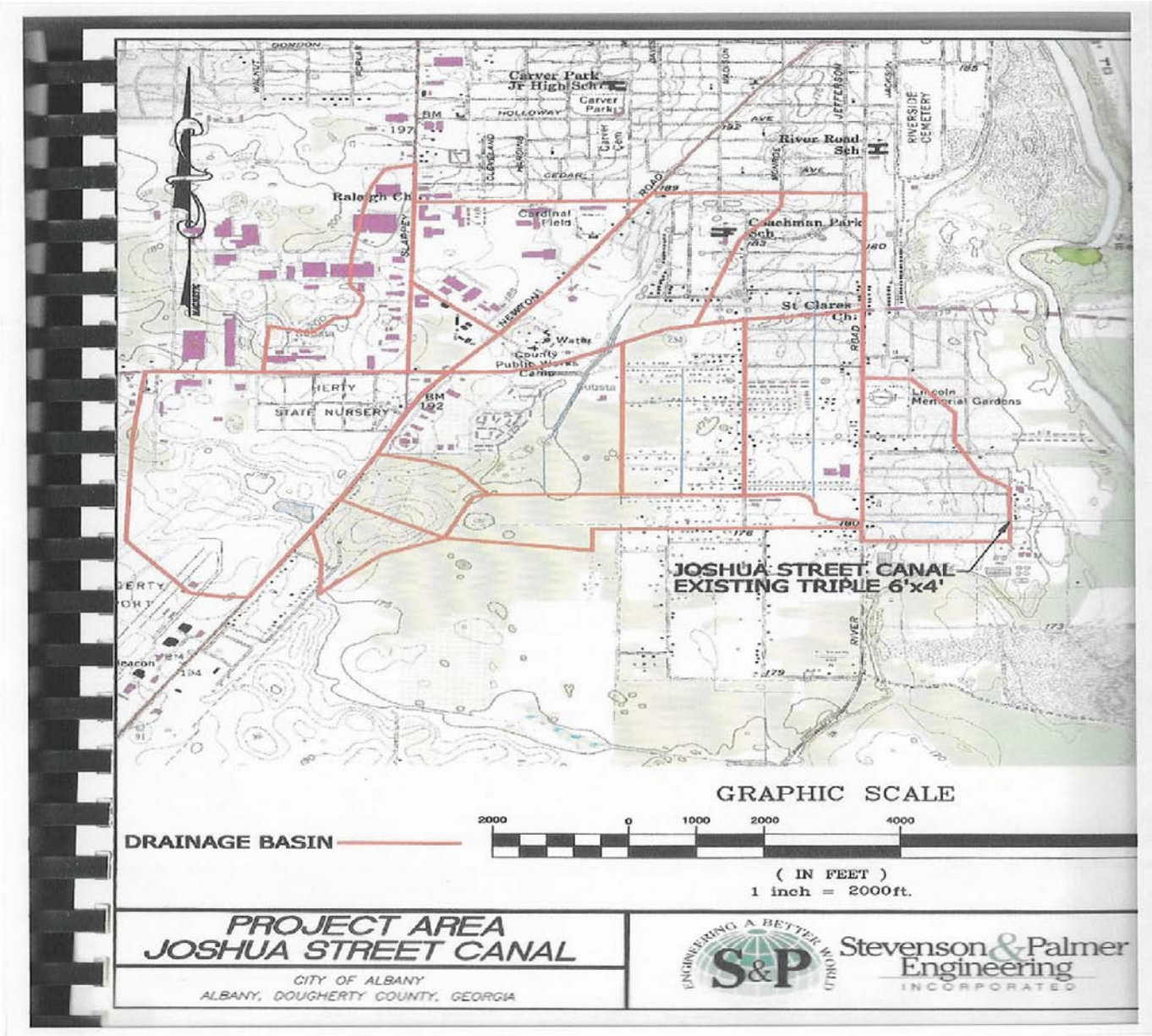
In 2001, these areas, which were flooded in 1994 and 1998, contained 1848 residential properties, 12 businesses, and 17 religious facilities.

Above the level of the 50-year event (180.0 MSL at the gauge), the area will flood from the river, west to Newton Road.

The flood control structures were completed in 2005. The added protection that they provide is <u>not</u> reflected on the current FIRM map, which was approved in October 2001, or on the proposed revised map.



Map 4.2A



Map 4.2B

Other

During this same period, a feasibility study was also conducted in the Holloway Outfall area. The area is east of Slappey Boulevard between Oglethorpe Boulevard and Jefferies Road on the west side of the Flint River. This is another area where there is backflow through the outfall pipe when river level rises. The pipe is submerged at 14.2 feet (flood state is 20 feet). A gate prevents this backflow but also prevents drainage from local rainfall and from incursion of river water through the karst topography. Storm water lift stations cannot operate properly when the outfall drainage is closed. At the time of the feasibility study in 2001, the area contained more than 700 residences plus other structures. However, the upgrades needed to provide protection up to a 50-year event did not meet cost/benefit requirements for FEMA assistance and the project was rejected.

Standard Storm Water Management Practices

The City of Albany and Dougherty County have extensive systems for the management of storm water. The relatively flat topography of the area means that gravity alone will not convey storm water. Systems of curb and gutter with catch basins, drainage ditches, easements, holding ponds and canals are designed to collect storm water and move it eventually to the Flint River. Eighteen storm water pumping stations located throughout the city assist in moving water from holding areas.

City and County Public Works Departments maintain the systems, including keeping drainage ways clear. Street sweepers remove material that would otherwise wash into catch basins. Community-wide efforts, led by Keep Albany Dougherty Beautiful, are made to control litter and to prevent materials other than storm water from entering the drainage system. One project involves placing medallions on catch basins to remind citizens that everything that goes into the basin ends up in the river. Code Enforcement officers use warnings and ticketing to prevent yard maintenance workers from blowing debris into the streets. The efforts contribute to keeping the catch basins clean so that storm water can flow freely instead of backing up to cause localized flooding.

Flint River Corridor Protection from Development

Actions to protect the Flint River corridor began in the late 1990s. Dougherty County was included in a state program called Rivercare 2000, proposed by Governor Zell Miller. The objective of the program was protection of river corridors with resulting maintenance of water quality and habitat. The Department of Natural Resources purchased thirteen (13) parcels of land bordering the Flint River in Albany and Dougherty County.

When Governor Roy Barnes proposed the Georgia Greenspace Program in 2000, Dougherty County was judged eligible to participate by virtue of its current population. The focus of the program was to protect water quality in the State of Georgia. The City of Albany and Dougherty County agreed to participate in a one-jurisdiction program. The proposal that was developed and approved by the State listed the types of properties which would be sought for acquisition and protection from development. The program provided about $500,000 for the acquisition of Flint River corridor and wetlands properties. Some of the properties purchased with these funds provide sites for the Riverwalk and the Greenways Trail on the west bank of the Flint, starting downtown and continuing north to Philema Road.

Additional funding was sought in the Special Purpose Local Option Sales Tax (SPLOST V) referendum in 2004. $535,000 was approved in that vote by the citizens. As of 2014, $465,607 has been spent for land acquisition. Grants have been sought and received from the Fish and Wildlife Service (North American Wetlands Conservation Act grant) and from the Georgia Land Conservation Program. The latter is a program initiated by Governor Sonny Perdue, continuing conservation efforts of previous administrations. In addition, parcels have been given to the County for preservation, with use restrictions included in the deeds.

The cumulative effect of these efforts is that approximately 2234 acres of Flint River corridor and wetlands in Albany and Dougherty County will not be developed and therefore will preclude flood damage on these properties. Table 4-1 shows acreage acquired and Map 4-3 illustrates the location of the properties.

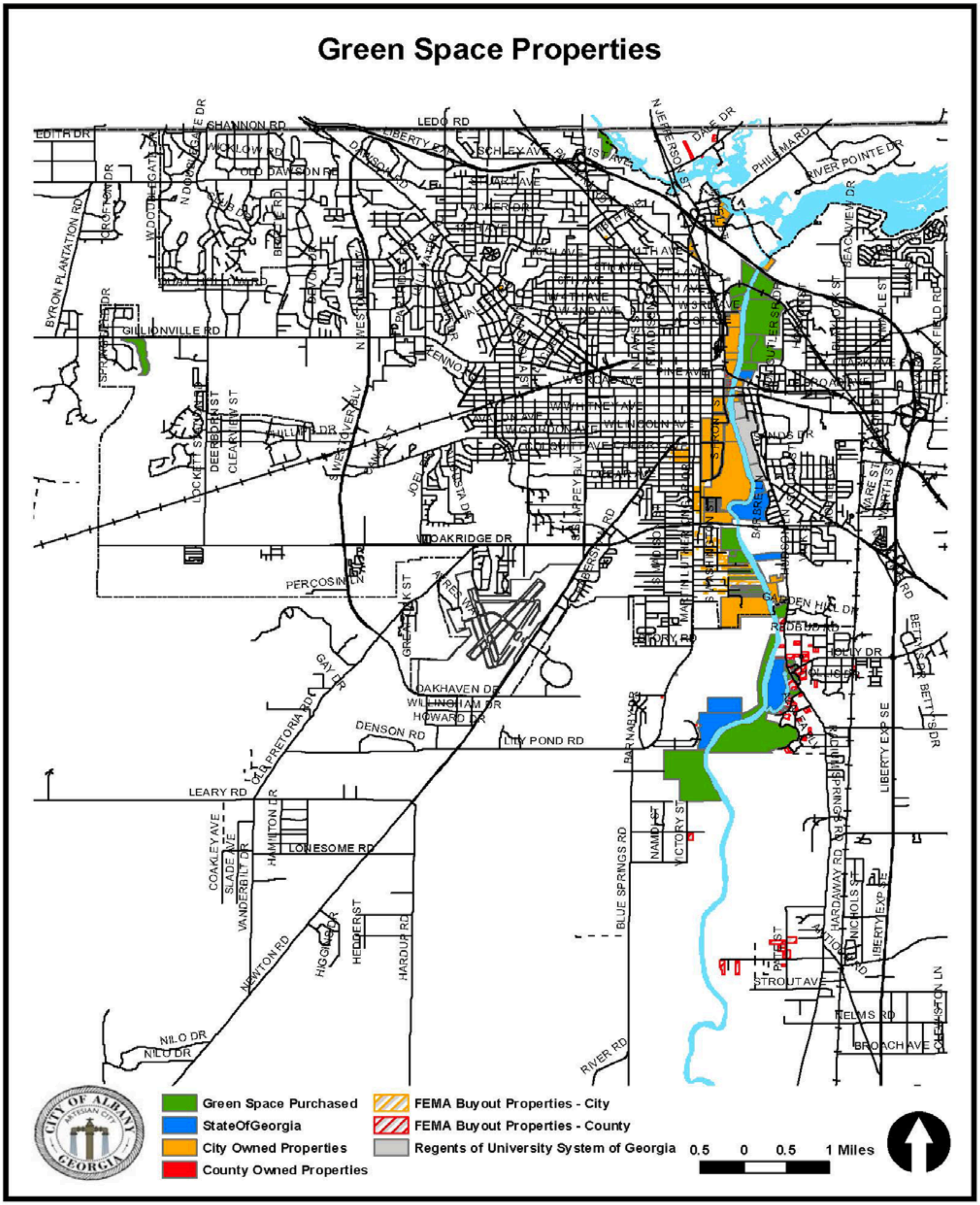
Additional protected properties with significant floodplain acreage (not included in Table 4.1) include 4,173 acres in Chickasawhatchee Swamp in southwestern Dougherty County. This is a portion of the

15,105 acre tract previously owned by St. Joe Paper Company, purchased by The Nature Conservancy and then sold to the State of Georgia. The property is the second largest wetlands area in Georgia and one of the largest remaining intact freshwater swamps in the Southeast. The Nature Conservancy laid out the terms of protection. The State of Georgia also owns the Albany Nursery, 295 acres east of Tallahassee Road, which is protected as a Georgia Heritage Preserve. Privately owned land, about 3,000 acres with major wetlands acreage in the western county, is held in a perpetual conservation easement which precludes additional housing development on the tract which continues to be farmed.

Protected Property Method of Acquisition	Acreage
Green Space Purchased	934.14
State of Georgia	340.69
City Owned Properties	618.32
County Owned Properties	30.97
FEMA Buyout Properties – City	81.84
FEMA Buyout Properties – County	123.57
Regents University System of Georgia	104.72
TOTAL	2234.25

Table 4.1: Protected From Development

Other river corridor properties are publicly owned and managed, including the campus of Albany State University, where a major relocation of facilities took place after the campus was heavily damaged in 1994. Riverfront Park, including Turtle Grove, Veterans Park and the historic Riverside and Oakview cemeteries are also found in the river corridor.


Green Space Properties
Green Space Purchased
StateOfGeorgia
City Owned Properties
County Owned Properties
FEMA Buyout Properties - City
FEMA Buyout Properties - County
Regents of University System of Georgia
0.5 0 0.5 1 Miles
CITY OF ALBANY
ARTESIAN CITY
GEORGIA

Map 4.3

Albany-Dougherty County Cooperative Water Resources Program

The City of Albany, Dougherty County, and the U.S. Geological Survey (USGS) are involved in a potential three-phase flood mapping project, referred to by the USGS as the Albany-Dougherty County Cooperative Water Resources Program. Locally, it is known as the USGS Model Project.

In Phase I, a 2-dimensional hydrodynamic model was developed to predict the impact of flooding at various river stages. The model delineates incremental one-foot flood depths along approximately 4.6 miles of the Flint River as it flows through Albany. These zones correspond to gauge heights at the USGS Albany gauge from about 180 feet (the 10-year recurrence interval flood) through 193 feet (the peak elevation for Tropical Storm Alberto in 1994). The model can be used in assessing needs and planning for specific flood levels, such as transportation effects and evacuation needs. A 2005 report summarizing Phase I of the project is found in the Appendix 6.

Phase II of the Program continues work with the model and entails the following:

1. Incorporating the impact of the development of the Riverwalk on the western bank of the Flint.
2. Using the model to assess proposed channel improvements, such as
    a) Removing the man-made island-peninsula below Oglethorpe Bridge
    b) Improving river flow at the Oakridge Bridge
    c) Cutting an overflow path across the oxbow north of Oakridge Bridge
    d) Adding overflow pipes beneath the Oakridge Bridge
3. Using the model to help develop a new Digital Flood Insurance Rate Map (DFIRM) for Albany and Dougherty County, to be certified by FEMA.
4. Facilitate discussions with other agencies (GA Dept. of Transportation, railroad companies, e.g.) as needed if changes involving their facilities seem warranted.
5. Assess impacts of upstream development of Albany's flood flows and participate in seeking solutions to problems.

The cost of the Program is shared between the USGS and the local governments. For Phase II, USGS is providing $75,000, Albany $37,500 and Dougherty County $37,500 for a total of $150,000.

The hydrodynamic model provides a method to test the efficacy of proposed channel improvements, helping the local governments make sound decisions about which ones, if any, to pursue.

Work is near completion on Phase II.

Levee Proposals – US Army Corps of Engineers (USACE)

Following the 1994 flood, discussion began about trying to reduce vulnerability to flood damage in south Albany with a levee. A detailed chronology of that investigation is beyond the scope of this plan. However, the US Army Corps of Engineers conducted investigations that included valuation of properties that would be afforded protection (for cost/benefit analysis), studies of various locations for a levee and a Section 205 Environmental Study.

Cost/benefit analysis produced a result greater than 1.0, meaning that the cost of the project would be greater than the value of the property being protected. In addition, the proposal generated a great deal of opposition from down-stream residents, the local scientific community and others.

The Dougherty County Commission went on record opposing the expenditure of additional funds to study the idea. The proposal is dormant at this time.

Emergency Warning Systems

In addition to providing information and instruction to citizens on emergency preparedness, the Emergency Management Agency also manages warning systems to alert residents of impending hazardous situations.

Sirens

Outdoor warning sirens are an effective way to alert a large number of people in the shortest possible time. Albany utilizes a Whelen Siren System of 14 sirens with an effective radius of one mile located throughout the City of Albany (Appendix 7). The system is designed to provide an alert when there is imminent danger of a severe thunderstorm or tornado. However, voice instructions are not always heard clearly. Sirens are located at:

1. Cochran Avenue & Emily Street
2. 12th Avenue & Edgewood Lane (Homewood)
3. Oakridge Drive & Willie Pitts Jr. Road
4. Perth Court & Alberson Drive
5. Thornton Drive & Massey Drive
6. East Highland Avenue & Radium Springs Road
7. Blaylock Street & Evelyn Avenue
8. 5th Avenue & North Madison Street
9. Warrior Court (end)
10. R. A. Krug Avenue & Schilling Avenue
11. Westgate Drive and Westover Boulevard
12. Porter Avenue & Grace Avenue
13. Oglethorpe Blvd. & Lenox Street
14. 14 South Slappey Boulevard & Gordon Avenue

CodeRED Weather Warning

In the spring of 2008, the local Emergency Management Agency launched CodeRED, a high-speed telephone emergency notification service. County officials have the ability to deliver pre-recorded emergency telephone notification information messages to targeted areas or to the entire county at a rate of up to 60,000 calls per hour.

The CodeRED system is designed to deliver severe weather warnings to resident's telephones within seconds after being issued by the National Weather Service. The polygon-based system uses headings and speed of weather systems to target the areas to receive warnings.

NOAA Weather Radios

The EMA also runs an emergency readiness campaign encouraging Dougherty County residents to purchase NOAA Weather Radios as part of the emergency notification system.

Updating Flood Insurance Rate Maps

FEMA updated the FIRM maps in 2009 which increased the total area within the 100 year floodplain slightly.

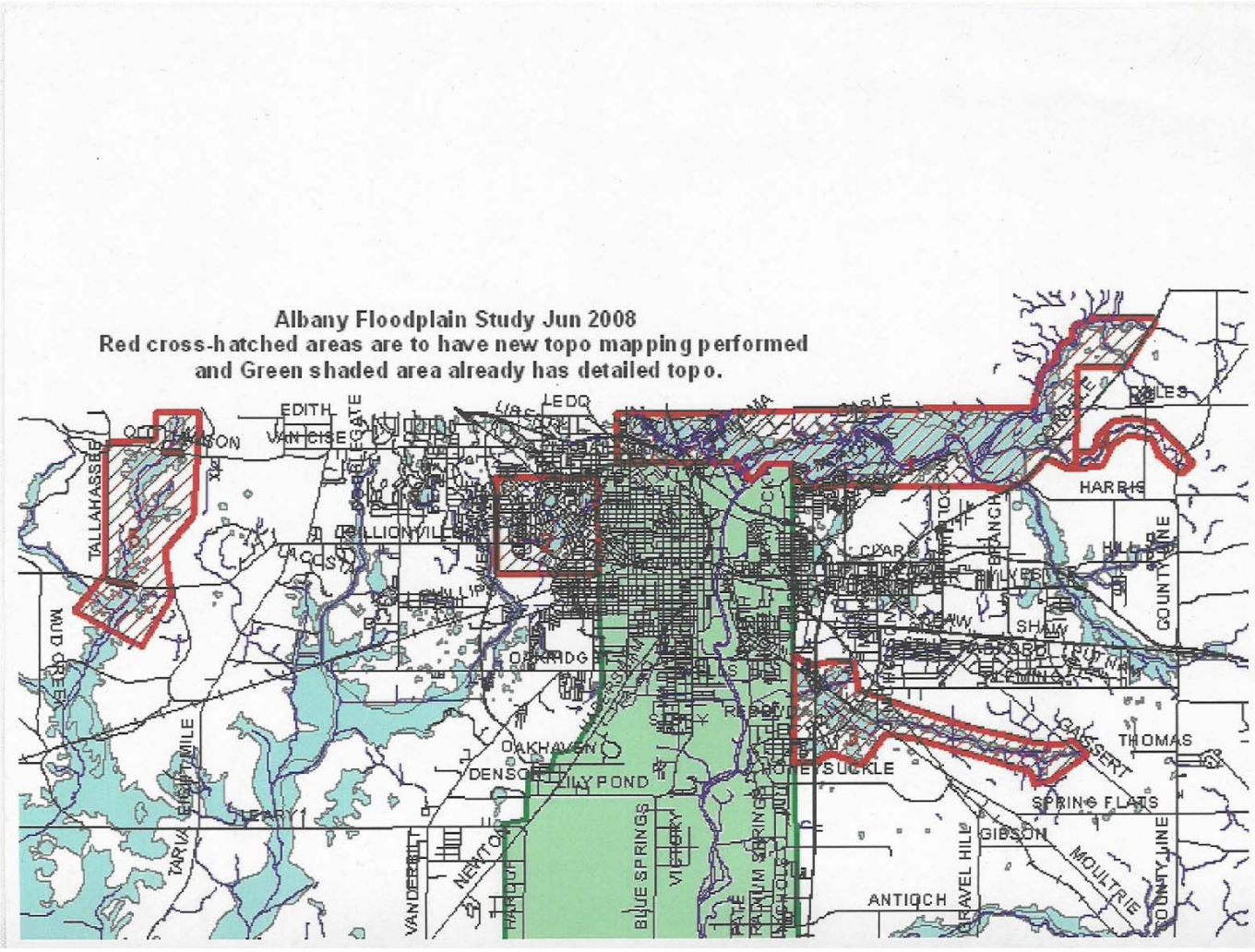
The City of Albany is the recipient of funds to support floodplain work by the USA Corps of Engineers in areas designated as "Unnumbered A Zones" on the current FIRM. These areas are identified as flood hazard zones with no established base flood elevations.

The CoE proposed the following:

a. Create elevation contours for 5 areas (illustrated on Map 4.4: Corps of Engineers Proposal) covering over 19,000 acres. The topography data will be accurate to approximately 2' contours based on the aerial imagery provided by city/county aerial photography. New data will be edge matched to existing contour data.
b. Redelineate the floodplain boundaries for the newly contoured areas.
c. Determine the 100-year flood elevations on Kiokee Creek from just below Hwy 234 (Gillionville Road) upstream to the County Line.

The Kiokee Creek proposal was later withdrawn from the plan.

Corp of Engineers Proposal



Map 4.4

Mitigation Actions: Proposed

The previous discussion illustrates that Albany and Dougherty County have been aggressive in their efforts to mitigate flood damage in their jurisdictions. Programs have been approved and executed, options studied, policies enforced and citizens educated. However, there are other opportunities for improving the safety of our residents and for reducing damage due to flooding.

Proposed activities are consistent with the national, state and local goals outlined previously in this section.

<u>Priorities</u>

Risk assessment (Worksheet #4 in Appendix 4) confirmed that residential structures represent the greatest number and greatest value of any category subject to flood damage. Therefore, actions that impact residential areas and that improve the safety of residents are emphasized.

Four of the ten recommended actions are on-going projects, timing for two others depends on outside entities, and completion dates are suggested for four others.

The steering committee agreed that its recommendations should be practical and achievable, not a pie-in-the-sky wish list. Therefore, emphasis is on actions which move Albany and Dougherty County toward their goals without major expenditures at this time. It is particularly important in the current economic environment to identify projects that fit this need. Some proposals would take advantage of known grant resources. Others require staff time and would be supported by departmental budgets. No major engineering projects are proposed at this time although evaluations in preparation for future projects are recommended. This will position local government well when the economic situation improves. If studies that are currently underway or proposed (# 5 and #9), result in recommendations requiring major funding, these would be addressed as the plan undergoes yearly review. Even though no structured cost/benefit analysis was conducted in setting priorities, costs were a critical factor in developing recommendations. As this plan is updated, other needs may be identified that require a different approach.

Recommendations

Top priorities are actions that remove existing structures, particularly residences, from flood hazard zones

1. Apply for Flood Mitigation Assistance funds to make the buyout option available to willing owners of properties vulnerable to flood damage in the City of Albany and Dougherty County. Repetitive Loss properties would be top priority.

The most direct method of protection from flood damage, reducing flood insurance claims and promoting health and safety of citizens is to remove structures and residents from areas vulnerable to flooding. Hazard Mitigation Grant Programs have proved their effectiveness. FMA funds present an opportunity for both the City and County to reduce the number of Repetitive Loss properties.

In the county, the current fair market value (as reported by the Tax Office) of repetitive lost properties (unmitigated) ranges from about $60,000 to $178,000. In one neighborhood where previous residents have participated in a buyout, average value of RL properties is about $94,000.

In the city, the tax value of repetitive loss properties varies widely, ranging from about $30,000 to about $100,000 dollars.

Total project costs will depend on the amount of grant funds made available each year. If we were able to purchase two homes in each jurisdiction in a year, costs are estimated to be $ 200,000 for the county and $140,000 for the city.

2. Maintain the 3-foot freeboard requirement in effect for Dougherty County since 1999. (Freeboard is the elevation of the finished floor above the level of the 100-year flood required for new construction.) Propose that the City of Albany amend its Floodplain Management Ordinance to adopt this standard.

Enforcing the requirement in the unincorporated area has provided evidence of its effectiveness in reducing damages, in addition to reducing the cost of flood insurance for property owners.

3. Continue diligent enforcement of building codes and floodplain management regulations to maximize property protection and safety of residents and to maintain the good standing of the city and county with the National Flood Insurance Program.

    a. Develop policies to prevent non-compliance after original construction is completed (i.e., converting lower levels to living quarters and other illegal actions)

Post-construction changes present a special challenge to enforcers of building codes and floodplain management regulations. One scenario involves the conversion of garage space to living space. Living space may have been elevated a few feet at the time of construction to comply with regulations while the carport or garage is legally at grade. If this space is later enclosed and converted to living space, without required permits and without elevation, then the structure is not in compliance.

Another scenario involves a home that is elevated eight or more feet at construction. Regulations allow the at-grade space to be used for parking or for storage, but not as living space. If a homeowner converts the space to living space after final approval of original construction, the structure is not in compliance.

NFIP has instituted steps to identify these situations and to impose penalties on violators. If a local government chooses not to cooperate in addressing the problem, it could ultimately lose of the right to flood insurance for all residents. Therefore, policies will be developed to keep Albany and Dougherty County in compliance with regulations.

4. Continue to protect from additional development properties that are vulnerable to flood damage. Flint River corridor properties and other wetlands are priorities. Protection can be accomplished by

    a. Property acquisition by
        i. Additional SPLOST funds
        ii. Grants from other sources
        iii. Donations by property owners
    b. Conservation easements
    c. Maintaining and strengthening regulations regarding construction in the floodway.

Properties in both city and county are currently protected and both may benefit from future actions.

5. When the final report is received from Phase II of the USGS 2-dimentional model study of the Flint River corridor, carefully assess the resulting recommendations. Take action as indicated. Include the results in review of this document.

Funding issues and scheduling will be addressed during assessment of recommendations.

6. Increase the level of citizen education on flood issues in Albany and Dougherty County.

Subjects to be stressed are:

    a. The facts about flood insurance
    b. Citizens' responsibilities for storm water management, including information about keeping drainage ways clear of obstructions and growth and keeping materials other than storm water out of storm drains.

c. Individual and family preparedness for natural disasters.

NFIP compliance requires activities to keep citizens informed about flood issues. Many citizens are well informed about flood issues due to local history and to ongoing educational programs. However, memories of flood experience fade and new residents move into the area, making these efforts crucial to maintaining public safety.

7. Continue to maintain and refine warning systems to provide timely, accurate information to citizens of the City of Albany and Dougherty County, thus promoting public safety.

Emergency Management Services took advantage of the availability of grant funds to institute the Code Red notification system. As other technological advances in this field are made, we will be ready to evaluate their usefulness in this area. Code Red system covers both city and county.

8. In preparation for the next SPLOST referendum and other funding opportunities, identify needed storm water management projects to be included in infrastructure work in city and county. Include analysis of the need for additional back-up power generation for the Joshua Street Waste Water Treatment System.

Plan Accessibility, Management, Review and Updating

Accessibility

The approved Albany Dougherty Flood Mitigation Plan will be available to the public digitally and in hard copy.

- The plan will be posted on the website of Planning and Development Services (www.albany.ga.us, follow links to the department).
- A copy of the plan will be available at the Dougherty County Public Library.
- Copies will be available in Planning and Development Services.

Management, Review and Updating

Planning and Development Services, which serves both the City of Albany and Dougherty County, is responsible for the administration of Flood Plain Management Ordinances for both jurisdictions. The department is also the official repository of Flood Insurance Rate Map information and is responsible for preparing for and responding to audits by NFIP/CRS. Therefore, this department will have overall responsibility for tracking progress on Flood Mitigation Plan actions and for assuring that reviews and evaluations take place as scheduled.

Proposals will be managed according to the following plan:

Table 4.2: Entities Responsible for Proposed Actions

FLOOD MITIGATION ACTIONS	RESPONSIBLE ENTITY & TIME HORIZON
Action 1: FMA grant funds for buyouts	
Lead Department	Planning & Development Services
Time Horizon	Set by GEMA guidelines; apply when eligible
Cost	Staff time. Average cost per structure County $98K, City $70K
Action 2: 3' Freeboard Requirement for City	
Lead Department	Planning & Development Services (Zoning)
Others	Commissioners of City and County, Flood Review Board
Time Horizon	2015-2016
Cost	Staff, Commissions and Board time; ads $300
Action 3: Floodplain Management Enforcement & Policy Development	
Lead Department	Planning & Development Services (Building Insp)
Others	Flood Review Board,
Time Horizon	2014-2018
Cost	Staff Time
Action 4: Protect vulnerable properties from development	
Lead Department	Planning & Development Services
Others	Citizens Greenspace Advisory Committee, Commissioners of City & County, Flood Review Board, City Engineering, County Public Works
Time Horizon	On-going
Cost	TBD; support by grants, SPLOST, gifts
Action 5: Flint River Flood Model Recommendations	
Lead Department	City of Albany Engineering
Others	Planning & Development Services (GIS), Dougherty Co. Engineering, City & County Commissions
Time Horizon	TBD (final report needed)
Cost	TBD (depends on report)
Action 6: Citizen Education on Flood Issues	
Lead Department	Planning & Development Services

Others	City & County Engineering, EMA
Time Horizon	On-going
Cost	Staff Time, Publications. Budgeted expense of $1000 for Dept.
Action 7: Warning Systems	
Lead Department	Emergency Management Agency
Time Horizon	On-going
Cost	TBD. Dependent on innovations that become available. Grants may be an option to support costs.
Action 8: Manage storm water, prepare for SPLOST	
Lead Department	City and County Public Works
Time Horizon	On-going; SPLOST project est. $2 million (City)
Action 9: Analyze Need for JSWWP Backup Power	
Lead Department	City of Albany Public Works
Time Horizon	2015-2017
Cost	TBD
Action 10: Assist Low & Moderate Income census tracts to alleviate hazard risks associated with flooding and seek to reduce annual flood insurance premiums	**NEW**
Lead Department	City of Albany Community & Econ. Dev. Department
Time Horizon	2015-2019
Cost	TBD

Mitigation action proposals are assigned to specific departments with target dates for completion (**Table 4.2**). The projects will be incorporated in each assigned department's own goals and in performance goals for appropriate employees. The City's Strategic Planning system provides a framework for setting goals for departments and for coordinating priorities. Performance Pro is an employee evaluation system used to set goals and measure progress. By including action items in the existing systems, progress will be monitored for departments and for responsible employees.

Proposals involving Dougherty County departments will be coordinated with the County Administrator's office and County's project management system.

Reviews, which will also be monitored by the systems described above, will be scheduled to meet the NFIP/CRS requirements of the yearly audit and the 5-year update. (Requirements are outlined in NFIP/CRS Coordinator's Manual, Section 510 Floodplain Management Planning). The 5-year update schedule also coordinates with the requirement for updating the Albany Dougherty Pre-disaster Mitigation Plan.

The first yearly review should be completed by September 15, 2015, in order to meet the CRS yearly audit due date, October 1, 2015. Representatives of organizations on the Steering Committee will

comprise the review committee, chaired by Planning and Development Services Director or a representative of the Director. Items to be included in the evaluation of projects are as follows:

- Have projects been accomplished on time, or has progress been made as scheduled?
- If progress has not been made,
  - Identify road block(s) and how to remove them or
  - Determine if the project is still an appropriate mitigation method
- Have changed circumstances created new opportunities for mitigation?
- Have organizational or personnel changes created a need for changing assignments?
- Are NFIP/CRS requirements being met by this plan?
- Have new grant opportunities been identified that would support mitigation goals?
- Is the Plan still consistent with other plans approved by the City and County?

By incorporating the Plan into existing management systems and timing review and evaluation to coordinate with NFIP/CRS audits, administration of the Flood Mitigation Plan should be efficient and effective.

APPENDIX 1

Flood Hazard Mitigation Plan Committee Agenda
Thursday, May 29, 2014 at 10:00 A.M.
Central Square Complex • 240 Pine Avenue • Room 380
Albany, GA 31701

1. Introduction of Process
2. Five-Year Update
3. Tentative Time Table
4. Comments & Questions
5. Adjournment

Albany/Dougherty County Flood Hazard Mitigation Plan Committee Meeting

September 11th, 2014

240 Pine Ave. 3rd floor conference room

Agenda

1. Welcome Back

2. Review Draft FHMP

3. Open Discussion

4. What's Next?

5. Adjourn

Flood Hazard Mitigation Meeting
Sign-In Sheet

5/29/2014
10 am
Planning & Development Services Dept.
240 Pine Ave

Please enter NAME, TITLE, EMAIL

1. JEFF HUGHES, SEWER SUPT, jhughes@dougherty.ga.us
2. Kyle Turner DCPW stormwater kyturner@dougherty.ga.us
3. JEREMY BROWN DCPW ENGINEERING, jebrown@dougherty.ga.us
4. JIM VAUGHTY ALBANY DOUGHERTY EMA/911
5. PAUL FORGEY DIRECTOR PLANNING & DEV
6. Carolynn Segers Planner - Planning & Dev; csegers@albany.ga.us
7. Robert Carter Code Enforcement rcarter@albany.ga.us
8. John Hudgens Engineering
9. Mary Ruth Planning & Development
10. Bruce Maples Engineering kmaples@albany.ga.us
11. Randy Weathersby Planning/GIS rweathersby@dougherty.ga.us
12.
13.
14.
15.
16.
17.
18.
19.

Meeting Sign In Sheet

Date: September 11, 2014 Facilitator: Steve O'Neil

Location: 240 Pine Ave. 3rd Floor Conference Room

	Name	Agency/Organization	Title	Phone #	Email Address
1	John Hudgens	COA - Eng Dept	Capital Dev Super	883-6955	jhudgens@dougherty.ga.us
2	Randy Weathersby	Planning/GIS	GIS Manager	438-3925	rweathersby@dougherty.ga.us
3	Ken Breedlove	COA - Eng Dept	Signal Eng	883-6955	kbreedlove@dougherty.ga.us
4	PAUL FORGEY	P & D			
5	Shelena Hawkins	DCED	Director	483-7670	shawkins@dougherty.ga.us
6	JEREMY BROWN	DOUGHERTY CO. PW	PROJECT ENGINEER	430-6120	jebrown@dougherty.ga.us
7	Kyle Turner	Dougherty Co. PW	Stormwater Management Tech	430-6120	kyturner@dougherty.ga.us
8	Teasey Hester	DKI			
9	BJ Jackson-Burton	DCED	Housing Coord.	483-7694	bjackson@albany.ga.us
10	Bruce Maples	COA - Eng	Dir.	883-6955	bkmaples@albanyga.us
11	Mike Tibbs	Code Enf.	Dir	431-3275	mtibbs@albany.ga.us
12	TOD LANIER	FLOODPLAIN MANAGEMENT BOARD	CHAIR	438-0572	tlanier@lanier-engineering.com
13					
14					
15					
16					

PLANNING (STEERING) COMMITTEE MEMBERSHIP

Name	Position	Department/Agency
Jeff Hughes	Sewer Superintendent	City Public Works
Kyle Turner	Storm Water Management Tech.	Dougherty County Public Works
Jeremy Brown	Project Engineer	Dougherty County Public Works
Jim Vaught	Deputy Director	Emergency Management
Paul Forgey	Director	Planning & Development Services
Carolynn Segers	Planner	Planning & Development Services
Mary Teter	Planning Manager	Planning & Development Services
Randy Weathersby	GIS Manger	Planning & Development Services
John Hudgens	Capitol Develop. Superintendent	City Engineering
Bruce Maples	Director	City Engineering
Ken Breedlove	Signal Engineer	City Engineering
Shelena Hawkins	Director	Community & Economic Development
BJ Jackson – Burton	Housing Coordinator	Community & Economic Development
Robert Carter	Chief Code Enforcement Officer	Code Enforcement
Mike Tilson	Director	Code Enforcement
Tod Lanier	Chairperson	Flood Review Board

albanyherald.com

SUNDAY, AUGUST 10, 2014

NOTICE OF PUBLIC MEETING

The Planning & Development Services Department, City of Albany, will hold a public meeting to receive public comments regarding the five-year update of the Flood Hazard Mitigation Plan for Albany Dougherty County Georgia.

The meeting will be held on Monday, August 25, 2014
4:00 P.M. to 6:00 P.M.
Riverfront Resource Center, Candy Room
125 Pine Avenue

A copy of the current plan is available for review at Planning & Development Services, 240 Pine Avenue, Suite 300, Albany GA, (229) 438-3901 or www.albany.ga.us . (Click the following links: City Government, City Departments, Planning & Development, Ordinances & Regulations).

As set forth in the Americans with Disabilities Act of 1990, the City of Albany/Dougherty County does not discriminate on the basis of disability in the admission or access to or treatment or employment in its programs or activities. Mr. Bryan Bartholomew has been designated to coordinate compliance with the non-discrimination requirements contained in section 35.107 of the Department of Justice Regulations. Information concerning the provisions of the Americans with Disabilities Act, and the rights provided there, is available at the office of Human Resources.

The City of Albany will assist citizens with special needs given proper notice (7 working days). Any requests for reasonable accommodations required by individuals to fully participate in any open meeting, program, or activity of the City of Albany, Georgia should be directed to Paul Forgey, AICP, 240 Pine Avenue, Suite 300, Albany, Georgia, 31701, (229) 438-3901.

Albany/Dougherty County Public Hearing
Update Flood Hazard Mitigation Plan
August 25, 2014
4:00 p.m.
Candy Room, Albany, GA
Sign-In Sheet

Name	Address
1. Randy Weathersby	City of Albany
2. PAUL FORSEY	
3. Mary A. Tuttle	
4.	
5.	
6.	
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8.	
9.	
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APPENDIX 2

NOTICE OF PUBLIC HEARING

The Board of Commissioners of the City of Albany will hold a public hearing to discuss the approval of the Flood Hazard Mitigation Plan Update for Albany, Dougherty, County Georgia.

The hearing will be held on Tuesday, September 23, 2014 at 6:30 P.M., 222 Pine Avenue in Room 100.

As set forth in the Americans with Disabilities Act of 1990, the City of Albany does not discriminate on the basis of disability in the admission or access to or treatment or employment in its programs or activities. The Human Resources department has been designated to coordinate compliance with the non-discrimination requirements contained in section 35.107 of the Department of Justice Regulations. Information concerning the provisions of the Americans with Disabilities Act, and the rights provided there, is available at the office of Human Resources.

The City of Albany will assist citizens with special needs given proper notice (7 working days). Any requests for reasonable accommodations required by individuals to fully participate in any open meeting, program, or activity of the City of Albany, Georgia should be directed to Paul Forgey, 240 Pine Ave., Ste. 300, Albany, Georgia, 31701, (229) 438-3901.

NOTICE OF PUBLIC HEARING

The Dougherty County Board of Commissioners will hold a public hearing to discuss the approval of the Flood Hazard Mitigation Plan Update for Albany, Dougherty County Georgia.

The hearing will be held on Monday, September 22, 2014 at 10:00 A.M., 222 Pine Avenue in Room 100.

As set forth in the Americans with Disabilities Act of 1990, Dougherty County does not discriminate on the basis of disability in the admission or access to or treatment or employment in its programs or activities. Michael McCoy, County Administrator's Office, has been designated to coordinate compliance with the non-discrimination requirements contained in section 35.107 of the Department of Justice Regulations. Information concerning the provisions of the Americans with Disabilities Act, and the rights provided there, is available at the County Administrator's Office.

Dougherty County will assist citizens with special needs given proper notice (7 working days). Any requests for reasonable accommodations required by individuals to fully participate in any open meeting, program, or activity of Dougherty County, Georgia should be directed to Paul Forgey, 240 Pine Ave., Ste. 300, Albany, Georgia, 31701, (229) 438-3901.

A RESOLUTION
ENTITLED
A RESOLUTION APPROVING AND ADOPTING THE FIVE-YEAR UPDATE TO THE ALBANY DOUGHERTY FLOOD HAZARD MITIGATION PLAN; REPEALING RESOLUTIONS OR PARTS OF RESOLUTIONS IN CONFLICT HEREWITH; AND FOR OTHER PURPOSES.

WHEREAS, this Commission previously approved the Albany Dougherty Flood Hazard Mitigation Plan; and

WHEREAS, the Albany Dougherty Flood Hazard Mitigation Plan ("Plan") provides for three objectives: (1) providing local governments with a focused planning tool for reducing losses due to flooding; (2) meeting Federal Emergency Management Agency planning requirements to qualify for Flood Mitigation Assistance funding for projects that will reduce losses; and (3) meeting Community Rating System planning requirements for Category C repetitive loss communities (those with ten or more repetitive loss properties that have not received mitigation) all as part of joining the National Flood Insurance Program ("NFIP"); and

WHEREAS, in order for Dougherty County to continue in the NFIP, the Counties Plan must be updated; and

WHEREAS, it would be in the best interest of the citizens of Dougherty County to adopt the updated Plan as recommended by Planning and Development Services Department.

NOW THEREFORE, BE IT RESOLVED by the Board of Commissioners of Dougherty County, Georgia and it is hereby resolved by Authority of same as follows:

SECTION I The updated five year Albany Dougherty Flood Hazard Mitigation Plan is hereby approved and adopted.

SECTION II A copy of the updated Plan is attached hereto and incorporated herein by reference as fully as if set forth verbatim.

SECTION III All Resolutions or parts of Resolutions in conflict herewith are hereby repealed.

This the 22nd day of September, 2014.

BOARD OF COMMISSIONERS OF
DOUGHERTY COUNTY, GEORGIA

BY: _____
Jeff Sinyard, Chairman

ATTEST:

_____

AN ORDINANCE 14-122
ENTITLED
AN ORDINANCE APPROVING AND ADOPTING THE FIVE-YEAR UPDATE TO THE ALBANY DOUGHERTY FLOOD HAZARD MITIGATION PLAN; REPEALING PRIOR ORDINANCES IN CONFLICT AND FOR OTHER PURPOSES.

WHEREAS, this Commission approved the Albany Dougherty Flood Hazard Mitigation Plan by Ordinance 09-117 adopted on April 28, 2009; and

WHEREAS, the Albany Dougherty Flood Hazard Mitigation Plan ("Plan") provides for three objectives: (1) providing local governments with a focused planning tool for reducing losses due to flooding; (2) meeting Federal Emergency Management Agency planning requirements to qualify for Flood Mitigation Assistance funding for projects that will reduce losses; and (3) meeting Community Rating System planning requirements for Category C repetitive loss communities (those with ten or more repetitive loss properties that have not received mitigation) all as part of joining the National Flood Insurance Program ("NFIP"); and

WHEREAS, in order for the City of Albany to continue in the NFIP, the City's Plan must be updated,

WHEREAS, it would be in the best interests of the citizens of the City of Albany to adopt the updated Plan as recommended by Planning and Development Services Department,

NOW, THEREFORE, BE IT ORDAINED by the Board of Commissioners of the City of Albany, Georgia and it is hereby ordained by authority of same:

SECTION 1. The updated five year Albany Dougherty Flood Hazard Mitigation Plan is hereby approved and adopted.

SECTION 2. A copy of the updated Plan is attached hereto and incorporated herein by reference as fully as if set forth verbatim.

SECTION 3. All ordinances, or parts of ordinances, in conflict herewith are repealed.

Dorothy Hubbard
MAYOR

ATTEST:

Sissy Kelly
CITY CLERK, Asst.

Adopted: 9/23/14

Introduced By Commissioner: R. Mariette
Date(s) read: Sept. 23, 2014

APPENDIX 3

Albany Dougherty
HAZARD FREQUENCY TABLE

Hazard	Number of Events in Historic Record	Number of Years in Historic Record	Number of Events in Past 10 Years	Number of Events in Past 20 Years	Number of Events in Past 50 Years	Historic Recurrence Interval (years)	Historic Frequency % chance/year	Past 10 Year Record Frequency Per Year	Past 20 Year Record Frequency Per Year	Past 50 Year Record Frequency Per Year
Hurricane Surge - Cat 1	0	59	0	0	0	0.00	0.00	0	0	0
Hurricane Surge - Cat 2	0	59	0	0	0	0.00	0.00	0	0	0
Hurricane Surge - Cat 3	0	59	0	0	0	0.00	0.00	0	0	0
Hurricane Surge - Cat 4	0	59	0	0	0	0.00	0.00	0	0	0
Hurricane Surge - Cat 5	0	59	0	0	0	0.00	0.00	0	0	0
Hurricane Wind	1	59	1	1	1	59.00	0.02	0.1	0.05	0.02
Floods*	32	117	2	6	15	3.66	27.35	0.2	0.3	0.3
Wildfire	0	59	0	0	0	0.00	0.00	0	0	0
Earthquake	0	59	0	0	0	0.00	0.00	0	0	0
Tornado	17	59	5	7	16	3.47	0.29	0.5	0.35	0.32
Thunderstorm Wind	90	59	28	57	90	0.66	1.53	2.8	2.85	1.8
Hail	40	59	16	31	40	1.48	0.68	1.6	1.55	0.8
Drought	1	59	1	1	1	59.00	0.02	0.1	0.05	0.02
Extreme Heat	0	59	0	0	0	0.00	0.00	0	0	0
Snow & Ice	0	59	0	0	0	0.00	0.00	0	0	0
Landslide	0	59	0	0	0	0.00	0.00	0	0	0
Dam Failure	0	59	0	0	0	0.00	0.00	0	0	0
HazMat Release (fixed)	0	59	0	0	0	0.00	0.00	0	0	0
HazMat Release (trans)	0	59	0	0	0	0.00	0.00	0	0	0
Radiological Release	0	59	0	0	0	0.00	0.00	0	0	0

NOTE: The historic frequency of a hazard event over a given period of time determines the historic recurrence interval. For example: If there have been 20 HazMat Releases in the County in the past 5 years, statistically you could expect that there will be 4 releases a year.

Realize that from a statistical standpoint, there are several variables to consider. 1) Accurate hazard history data and collection are crucial to an accurate recurrence interval and frequency. 2) Data collection and accuarcy has been much better in the past 10-20 years (NCDC weather records). 3) It is important to include all significant recorded hazard events which will include periodic updates to this table.

By updating and reviewing this table over time, it may be possible to see if certain types of hazard events are increasing in the past 10-20 years.

***Flood records from 2014 extending back to 1897**

National Water Information System: Web Interface

Click to hideNews Bulletins

- Read the Mobile Site Tutorial Try it (http://m.waterdata.usgs.gov) from your mobile device!
- Full News

Peak Streamflow for the Nation

USGS 02352500 FLINT RIVER AT ALBANY, GA

Available data for this site Surface-water: Peak streamflow GO

Dougherty County, Georgia
Hydrologic Unit Code 03130008
Latitude 31°35'39", Longitude 84°08'39" NAD83
Drainage area 5,310 square miles
Gage datum 150.03 feet above NGVD29

Output formats

Table
Graph
Tab-separated file
peakfq (watstore) format
Reselect output format

Water Year	Date	Gage Height (feet)	Stream-flow (cfs)
1893	Aug. 21, 1893	14.10[3]	18,900[E]
1894	Feb. 20, 1894	18.70[3]	25,600[E]
1895	Mar. 20, 1895	25.80[3]	40,500[E]
1896	Feb. 13, 1896	16.80[3]	22,700[E]

1897	Mar. 25, 1897	32.40^3	72,800[E]
1898	Sep. 02, 1898	18.00^3	24,500
1899	Feb. 15, 1899	22.60^3	32,600
1900	Feb. 18, 1900	29.80^3	55,900
1901	Sep. 22, 1901	26.00^3	41,000
1902	Mar. 07, 1902	22.90^3	33,300
1903	Feb. 17, 1903	25.00^3	38,400
1904	Feb. 13, 1904	19.20^3	27,400
1905	Feb. 17, 1905	25.30^3	39,200
1906	Jan. 27, 1906	18.10^3	25,100
1907	Feb. 11, 1907	11.10^3	14,600
1908	May 03, 1908	28.00^3	47,800
1909	Mar. 20, 1909	22.40^3	32,500
1910	Apr. 24, 1910	12.70^3	17,000
1911	Jan. 10, 1911	7.80^3	10,400
1912	Apr. 24, 1912	30.10^3	57,300
1913	Mar. 21, 1913	30.30^3	58,300
1914	Mar. 03, 1914	9.00^3	11,900
1915	Jan. 25, 1915	16.60^3	22,800
1916	Jul. 15, 1916	27.40^3	45,500
1917	Mar. 11, 1917	20.80^3	28,900
1918	Feb. 09, 1918	12.30^3	17,100
1919	Mar. 03, 1919	27.80^3	47,200
1920	Apr. 05, 1920	26.20^3	41,600
1921	Feb. 18, 1921	17.30^3	23,400[E]
1922	Mar. 16, 1922	26.80^3	43,300[E]
1923	Mar. 25, 1923	22.80^3	33,000[E]

1924	Apr. 19, 1924	14.40[3]	19,400[E]
1925	Jan. 21, 1925	37.80[3]	92,000[E]
1926	Apr. 07, 1926	19.40[3]	26,600[E]
1927	Mar. 17, 1927	9.80[3]	13,000[E]
1928	Apr. 24, 1928	29.40[3]	58,100[E]
1929	Mar. 20, 1929	34.40[3]	78,800[E]
1930	Oct. 04, 1929	25.10	37,100
1931	Nov. 21, 1930	19.20	25,000
1932	Jan. 14, 1932	13.50	16,400
1933	Feb. 27, 1933	18.58	23,800
1934	Mar. 12, 1934	17.30	21,700
1935	Mar. 19, 1935	11.70	14,700
1936	Apr. 15, 1936	29.00	52,300
1937	Mar. 27, 1937	16.00	20,600
1938	Apr. 14, 1938	25.80	39,800
1939	Mar. 05, 1939	25.60	39,200
1940	Feb. 19, 1940	19.90	26,300
1941	Mar. 24, 1941	8.00	8,890
1942	Mar. 27, 1942	26.70	43,200
1943	Jan. 22, 1943	31.60	64,800
1944	Mar. 26, 1944	31.20	62,800
1945	May 02, 1945	18.50	24,200
1946	Jan. 14, 1946	21.20	28,600
1947	Mar. 14, 1947	23.40	33,200
1948	Apr. 02, 1948	27.50	45,800
1949	Dec. 04, 1948	31.50	64,300
1950	Mar. 12, 1950	11.50	14,500
1951	Apr. 28, 1951	12.70	16,000
1952	Mar. 30, 1952	23.00	32,200
1953	May 08, 1953	26.30	41,400

1954	Dec. 12, 1953	20.20	26,800
1955	Apr. 19, 1955	13.40	17,200
1956	Mar. 23, 1956	15.20	19,600
1957	Apr. 12, 1957	19.40	25,500
1958	Mar. 14, 1958	22.10	30,300
1959	Jun. 08, 1959	20.50	27,400
1960	Apr. 07, 1960	30.80	57,000
1961	Mar. 03, 1961	29.00	48,000
1962	Mar. 17, 1962	21.80	29,700
1963	Jan. 26, 1963	21.60	29,300
1964	Apr. 14, 1964	31.12	58,600
1965	Dec. 31, 1964	25.58	37,200
1966	Mar. 07, 1966	34.72	77,000
1967	Jan. 04, 1967	20.70	27,700
1968	Mar. 17, 1968	19.10	25,100
1969	Apr. 24, 1969	16.66	21,500
1970	Apr. 02, 1970	30.69	54,800
1971	Mar. 09, 1971	31.01	56,000
1972	Jan. 16, 1972	22.62	31,300
1973	Feb. 04, 1973	24.68	35,400
1974	Apr. 07, 1974	18.77	25,000
1975	Mar. 21, 1975	30.32	56,300
1976	May 17, 1976	18.75	25,100
1977	Mar. 08, 1977	20.60	28,700
1978	Jan. 29, 1978	27.18	44,500
1979	Feb. 26, 1979	26.13	41,800
1980	Mar. 15, 1980	25.19	39,500
1981	Feb. 17, 1981	21.21	29,900
1982	Feb. 08, 1982	18.87	25,300
1983	Apr. 14, 1983	22.27	32,100
1984	Mar. 07, 1984	19.57	26,600

1985	Feb. 08, 1985	21.52	30,500
1986	Mar. 24, 1986	13.06	17,300
1987	Mar. 06, 1987	19.78	27,000
1988	Jan. 26, 1988	11.25	14,800
1989	Jul. 07, 1989	14.67	19,500
1990	Mar. 23, 1990	30.92	58,700
1991	Mar. 05, 1991	25.81	40,900
1992	Feb. 19, 1992	18.77	25,200
1993	Dec. 01, 1992	22.99	33,800
1994	Jul. 11, 1994	43.00	120,000
1995	Feb. 23, 1995	22.45	32,600
1996	Mar. 13, 1996	23.56	35,200
1997	Feb. 23, 1997	19.02	25,600
1998	Mar. 10, 1998	36.92	86,100
1999	Feb. 07, 1999	11.65	15,400
2000	Apr. 01, 2000	14.35	19,000
2001	Mar. 22, 2001	19.86	27,200
2002	Feb. 10, 2002	9.05	11,400
2003	May 15, 2003	18.20	24,300
2004	Sep. 29, 2004	16.16	21,400
2005	Mar. 30, 2005	32.33	62,500
2006	Feb. 28, 2006	13.38	17,300
2007	Mar. 04, 2007	12.01	15,200
2008	Feb. 24, 2008	11.34	14,200
2009	Apr. 04, 2009	31.66	62,800
2010	Dec. 17, 2009	26.63	45,800
2011	Feb. 10, 2011	11.59	15,000
2012	Jan. 27, 2012	8.20	9,310
2013	Feb. 27, 2013	22.16	34,900

- 3 -- Gage height at different site and(or) datum

?

Peak Streamflow Qualification Codes.

- E -- Only Annual Maximum Peak available for this year

Questions about sites/data?
Feedback on this web site
Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
News

Title: Surface Water for USA: Peak Streamflow
URL: http://nwis.waterdata.usgs.gov/nwis/peak?

APPENDIX 4

GEMA Worksheet #4 Inventory of Assets

Hazard: Flooding (Dougherty County)

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Dougherty County 2013									
	Number of Structures (based on building footprints)			Value of Structures			Number of People		
Type of Structure (Occupancy Class)	# in Dougherty County, GA	# in Hazard Area	% in Hazard Area	$ in Dougherty County	$ in Hazard A	% in Dougherty County	# In Dougherty County	# in Hazard Area	% in Hazard Area
Agricultural	1,688	148	8.77%	$19,707,730	$4,867,490	24.70%			
Commercial	1,689	163	9.65%	$21,341,200	$3,077,300	14.42%			
Education	15	0	0.00%	$70,399,200	$0	0.00%			
Government	674	51	7.57%	$2,740,200	$75,200	2.74%			
Industrial	246	18	7.32%	$15,225,200	$4,765,200	31.30%			
Religious/Non-Profit/Exempt	289	41	14.19%	$7,416,000	$363,800	4.91%			
Residential	13,418	569	4.24%	$576,261,005	$47,809,336	8.30%			
Utilities	67	27	40.30%	$0.00	$0	#DIV/0!			
Total:	18,086	1,017	5.62%	$713,090,535	$60,958,326	8.55%	94,565	1,792	1.89%

Task B. Determine whether (and where) you want to collect additional inventory data.

	Y	N
1. Do you know where the greatest damages may occur in your area?	**x**	
2. Do you know whether your critical facilities will be operational after a hazard event?	**x**	
3. Is there enough data to determine which assets are subject to the greatest potential damages?	**x**	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	**x**	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	**x**	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	**x**	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		**x**

GEMA Worksheet #4 Inventory of Assets

Hazard: Flooding (City of Albany)

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

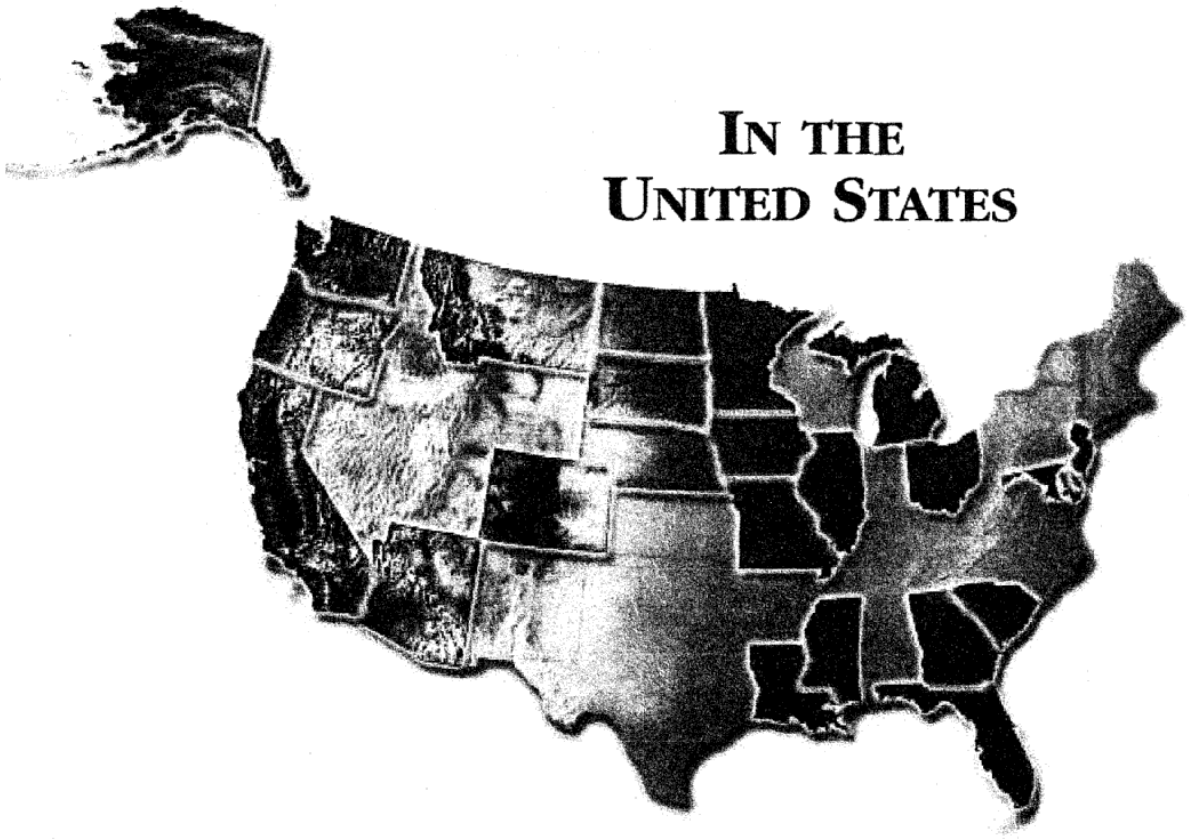
City of Albany 2013									
	Number of Structures (based on building footprints)			Value of Structures			Number of People		
Type of Structure (Occupancy Class)	**# in the city of Albany, GA**	# in Hazard Area	% in Hazard Area	$ in the City of Albany	$ in Hazard Area	% in Albany	# in Albany	# in Hazard Area	% in Hazard Area
Agricultural	43	0	0.00%	$758,000	$0	0.00%			
Commercial	5,607	475	8.47%	$653,690,870	$56,694,094	8.67%			
Education	98	2	2.04%	$327,222,990	$6,643,900	2.03%			
Government	1,105	279	25.25%	$150,679,100	$4,282,660	2.84%			
Industrial	366	3	0.82%	$15,102,720	$992,365	6.57%			
Religious/Non-Profit/Exempt	959	105	10.95%	$63,820,410	$6,839,660	10.72%			
Residential	29,710	3,726	12.54%	$1,464,346,716	$97,318,512	6.65%			
Utilities	5	1	20.00%	$0	$0	#DIV/0!			
Total	37,893	4,591	12.12%	$2,675,620,806	$172,771,191	6.46%	77,434	3,700	4.78%

Task B. Determine whether (and where) you want to collect additional inventory data.

	Y	N
1. Do you know where the greatest damages may occur in your area?	x	
2. Do you know whether your critical facilities will be operational after a hazard event?	x	
3. Is there enough data to determine which assets are subject to the greatest potential damages?	x	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	x	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	x	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	x	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		x

APPENDIX 5

MITIGATION SUCCESS STORIES



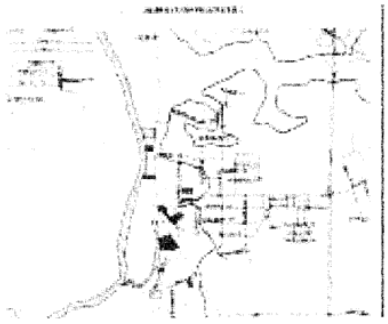
IN THE UNITED STATES

Edition 4 • January , 2002

GEORGIA

Dougherty County

Location: Dougherty County, Georgia
Project: Flint River Acquisition Project
Techniques: Acquisition, GIS
Contact: Terry Lunn, Georgia Emergency Management Agency, tlunn@gema.state.ga.us or 404-635-7016



Acquisitions completed at the time of the 1998 flood event.

Background

In early July of 1994, Tropical Storm Alberto ravaged southern Georgia, leaving a trail of flooding and devastation. It was the most devastating and costly flood in recent history. After one week of heavy rain caused by Tropical Storm Alberto, the Flint River watershed became saturated with water. Rainfall totaled 27 inches in some parts of Southern Georgia. The flood crested in Albany, Dougherty County, at 44.3 feet; this was 24.3 feet above "flood stage". Thousands of structures were flooded, including many residential neighborhoods in Dougherty County.

In March of 1998, a flood event caused by torrential rains of almost a foot for a three day period forced the Flint River to peak at 37 feet; this is 17 feet above "flood stage". Although the flooding was much less severe than the 1994 flood event, more than 11,000 residents were evacuated from their homes, including 3,000 students from Albany State University. The 1998 flood event has been approximated to be a "2.5% chance flood"* event.

Project Description

As a result of the devastating flooding in 1994 and the need to mitigate the significant flood losses, Dougherty County submitted a FEMA HMGP application to voluntarily acquire 42 properties at an estimated cost of $3.8 million. These properties included 37 residences, three vacant lots and two commercial properties.

Benefits

- The following table illustrates the savings to Dougherty County, Georgia State government and the federal government on avoided damages from the March 1998 flood event. The structures have been grouped by estimated flood depth.
- The mitigation measures completed at the time of the 1998 flood paid off. Of the properties acquired by Dougherty County since the 1994 flood, it has been determined that 19 of the properties would have flooded again, based on finished floor elevations and projected flood levels based on the recorded flood stage. Using FEMA's benefit-cost software, which is a tool to estimate scenario damages based on flood depth, it has been determined that the original investment in mitigation made between the 1994 and 1998 flood event had already resulted in avoided losses that exceed the original investment. Mitigation does pay off! Investment was $3.8 million and damages avoided in the 1998 flood alone were $4.6 million.

Number of Structures	1998 Flood Depth in Structure (Feet)	Avoided Damages (Benefits)
1	9	$115,898
2	6	$525,868
2	5	$2,972,953
5	4	$432,778
3	3	$282,613
1	2	$155,235
3	1	$124,936
2	0	$27,560
Totals		
19		$4,637,841

Costs and Funding Sources

Total Project Cost = $3,806,797 (not including demolition)

- Funding Sources included FEMA HMGP, FEMA PA, HUD CDBG supplemental appropriation, HUD Disaster Recovery Initiative, State of Georgia Governor's Emergency Fund.
- For the demolition component FEMA provided 90% funding and the State of Georgia Governor's Emergency Fund provided 10% funding.

Note

* "2.5% chance" = a flood event that has a 2.5% chance of occurring or being exceeded in any given year. This is a replacement term for the "40 year flood".

APPENDIX 6

CITY OF ALBANY
CITY COMMISSION AGENDA ITEMS

Date:	May 24, 2004
Meeting Date:	June 1, 2004
Subject/Title:	Flood Mapping Project, Phase II
Presented for:	Decision ▣ Information ☐
Presenter:	Randy Weathersby and Tracy Hester

Statement of Issue

The City of Albany, Dougherty County, and the U.S. Geological Survey (USGS) are jointly involved in a potential three phase Flood Mapping Project, referred to by the USGS as the Albany-Dougherty County Cooperative Water Resources Program. While Phase I provides an effective emergency response and proactive planning tool, Phase II offers the opportunity to identify, evaluate, and implement relatively low cost measures to minimize the impact of flooding to Albany and Dougherty County. Phase III involves re-mapping of the Albany area floodway. Albany – Dougherty County consideration for needs associated with re-mapping should await the analysis of results from Phases 1 and 2.

History/Facts and Issues

Phase I of the ongoing Albany-Dougherty County Cooperative Water Resources Program was to develop a 2-dimensional hydrodynamic model to predict the impact of flooding at various river stages and to use the model to delineate incremental one-foot flood plains corresponding to gauge heights at the USGS Albany gauge from about 180 feet (the 10 year recurrence interval flood) through about 193 feet (the peak elevation for Tropical Storm Alberto in 1994).

We are proposing to enter into Phase II of the Albany-Dougherty County Cooperative Water Resources Program which entails the following:

- Continued development of the hydrodynamic model to incorporate the impact of recent development of Albany's new River-walk Park along the western downtown riverbank.
- The 2-D hydrodynamic model will also be used to assess proposed channel improvements, for example, potential improvements from the 8.5 mile-extension of the River-walk Park or the effect of removing the man-made island-peninsula below the Oglethorpe Bridge.
- Continued efforts with FEMA concerning using the 2-D hydrodynamic model to help develop a new Digital Flood Insurance Rate Map (DFIRM) for Albany and Dougherty County. The model will be processed according to FEMA guidelines and certified by FEMA.
- Arrange formal discussions (in Albany) with the Georgia Department of Transportation (GDOT) and the CSX and Norfolk Southern Railroad Companies (RR) to request their participation in possible flood-flow improvement near their facilities.
- A reconnaissance level assessment of impacts of upstream development on Albany's flood flows. The USGS will make recommendations and work with Albany-Dougherty County officials to inform and request appropriate State and Federal agencies participation and support to seek best solutions.

Options/Pros and Cons of each

Increasing the flow velocity of the Flint River in the Albany area will reduce the corresponding peak elevation during flood stage. A number of potential channel improvements have been identified. The model can be used to test the results of making these improvements. Each modeling scenario would enable the community to quantitatively assess improvement benefits and then to compute and weigh the costs that would be associated with each improvement.

A number of these improvements have been previously identified by State and Federal agencies. Our intent is to bring these agencies back to the table to see if we can get them to make the improvements at low or no cost to the community.

Recommended Action

We recommend proceeding with the Albany-Dougherty County Cooperative Water Resources Program utilizing SPLOST III Storm Drainage funds from the City's 8th Avenue Basin Project as suggested by Bob Alexander, City Engineer.

Fiscal Impact/Funding Source

The cost to Albany-Dougherty County for the work outlined by this proposal will be $75,000 with the USGS matching this amount with $75,000 for a total cost of $150,000. The Dougherty County Commission has voted to continue the project (see attachment) and fund $37,500, half of the local match, contingent on the City of Albany doing the same.

_____ _____

Dept./Division Director City Manager

For information, please contact:

Richard Wooten, Director of Planning & Community Development
Planning & Community Development (438-3905)

List of Documents Attached

Dougherty County Board of Commissioners, USGS Joint Funding Agreement

TWO-DIMENSIONAL FLOOD-INUNDATION MODEL OF THE FLINT RIVER AT ALBANY, GEORGIA

Jonathan W. Musser and Thomas R. Dyar

AUTHORS: Hydrologists, U.S. Geological Survey, 3039 Amwiler Road, Suite 130, Peachtree Business Center, Atlanta, Georgia 30360-2824
REFERENCE: *Proceedings of the 2005 Georgia Water Resources Conference*, held April 25–27, 2005, at the University of Georgia.
Kathryn J. Hatcher, editor, Institute of Ecology, The University of Georgia, Athens, Georgia.

Abstract. The City of Albany, Dougherty County, and the U.S. Geological Survey (USGS) are using recent digital elevation model data and a USGS-developed two-dimensional hydrodynamic flow model to determine potential flow characteristics of future flooding along a 4.6-mile reach of the Flint River in Albany. The flow model is being used to develop incremental, 1-foot vertical separation, flood surfaces that will correspond to streamflow values from gage heights at the USGS Albany streamgage from about 180 feet (the 10-year recurrence interval flood) through about 193 feet (the peak elevation for Tropical Storm Alberto during 1994).

INTRODUCTION

The City of Albany, Dougherty County, and the USGS are cooperating on floodplain studies along the Flint River in Albany, Georgia (see Fig. 1). Since 1994, the City of Albany has experienced two large floods. Tropical Storm Alberto (TSA), during July 1994, caused record-breaking flooding in much of the Flint River Basin. The maximum flood flow in Albany was about 120,000 cubic feet per second (ft^3/s) at about 193 feet (ft) elevation above mean sea level (msl) at the USGS Albany streamgage. The probable recurrence interval (RI) of the flood was estimated to be about a 200–300-year event. The flood inundated much of Albany, caused widespread community infrastructure and property damage, affected public safety and health, and required the evacuation of approximately 75,000 people. A regional, winter storm, during March of 1998, also caused significant flooding in Albany and required the evacuation of approximately 14,000 people. The flood was estimated to be about a 70-year RI, at about 86,000 ft^3/s flow, with a flood elevation of about 187 ft msl.

MODELING METHOD

A two-dimensional, steady-state flow model developed by the USGS Hydrologic Instrumentation Facility, based on finite-element (FE) principles (FESWMS), is being used to develop two-dimensional flood surfaces for the Albany floodplain. Flood surfaces, in 1-foot increments, will be developed that correspond to streamflow values from gage heights at the USGS Albany streamgage from about 180 ft (the 10-year recurrence interval flood) through about 193 ft (the peak elevation for Tropical Storm Alberto during 1994). These surfaces will be printed over 1-foot resolution gray-scale digital orthophotos. The USGS streamgage in Albany is a National Weather Service flood-forecast location, and flood-forecast predictions are indexed to gage heights at the streamgage. These maps will be used by Albany–Dougherty County for planning for potential future flood events. High-resolution images of these maps, as well as geographic-information-system compatible data sets are being written to CD–ROM. In addition to the flood-extent information provided by this effort, depth, velocities, sectional-flow and flow-direction vectors will be calculated. These vectors can be displayed and used to develop warnings and hazard scales for a flood disaster.

MODELING PROCEDURE

The effort included field and background investigations, data acquisition, and model development. Numerous field visits were required to gain sufficient site information, flood and flood-damage history, bridge structure characteristics, stream cross-sections, and land-cover characteristics. Background investigations included obtaining and reviewing previous reports and model runs such as: Section 205 Detailed Project Report, Flint River Albany, Georgia, U.S. Army Corps of Engineers, Mobile District, 2002; Flood Insurance Study for Dougherty County Georgia and Incorporated Areas, Federal Emergency Management Agency, 2001; and Section 205 Detailed Project Report and Environmental Assessment Kinchafoonee Creek and Hogpen Ditch, Albany Georgia, U.S. Army Corps of Engineers, 1997.

During August 2003, the initial elements of the model compilation began, and a suitable model grid was established. The reach being modeled is shown in Figure 1. Model cross-sections were determined for the study reach and georeferenced. Additional digital elevation model (DEM) detail was added at river and cross-section anomalies.

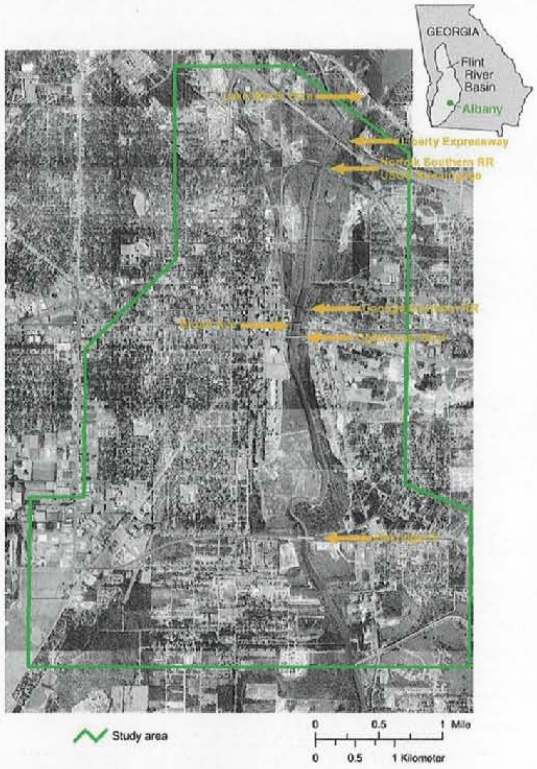


Figure 1. The flood inundation study area in Albany, Georgia, showing all major crossings. [USGS, U.S. Geological Survey; RR, Railroad]

All areas in the study reach were classified into five land-cover categories: channel, clear, forest, high-density urban, and low-density urban. Roughness coefficients were assigned to each land-cover category. The boundary conditions used for the model are inflow volume and outflow elevation. The initial boundary conditions used to start the model were an inflow of 0 ft^3/s and an outflow elevation of 231 ft msl. Next the inflow was gradually increased to 120,000 ft^3/s. Once the maximum inflow was achieved, the outflow boundary condition was slowly reduced to 185 ft msl. At this point, bridge piers and deck elevations for the four highway and two railroad bridges were placed into the model.

In the Albany area, during TSA, a number of areas near the Flint River were inundated due to underground hydraulic connections. To show these low-lying areas, the river surface elevations were extended beyond the river banks using Geographic Information Systems analysis. A number of these low areas with elevations below the river surface elevation are also mapped in Figure 2. Many of these areas were inundated during TSA.

CALIBRATION

Initial model calibration runs involved running the model for the peak streamflow observed during 1994 during TSA, about 120,000 ft^3/s, which was estimated to be about 200–300-year RI. An adjustment of the eddy viscosity value for the model was done until the water-surface elevation at the USGS Albany streamgage was 193 ft msl. This model calibration essentially reproduced the measured TSA floodplain. Figure 2 shows the floodplain generated by the model compared with the recorded floodplain in Albany on July 11, 1994. The actual flood elevations and modeled values are in close agreement. The model was also calibrated against the March 1998 flood of approximately 86,000 ft^3/s at 187 ft msl.

CURRENT FLOODPLAIN ANALYSIS

Currently (2005), the model is being utilized to produce incremental 1-foot floodplains as specified in the original project plans discussed above. The model is also being used to develop a new Digital Flood Insurance Rate Map for Albany. In addition, the model is being used to analyze flow characteristics such as velocity, depth, and streamflow in sections of the floodplain and river. Current model runs incorporate the effects, to date, of the partially completed Riverwalk. The Riverwalk is a new park adjacent to the Flint River comprised of greenspace and pedestrian walkways.

POTENTIAL EFFECTS OF UPSTREAM DEVELOPMENT ON FLOOD FLOWS

In addition to the streamflow modeling within the Albany area, this study begins a reconnaissance-level assessment of upstream development on flood flows in Albany. This assessment is made by reviewing data from USGS Flint River Basin streamgaging stations (Fig. 3), having sufficient records, and examining land-use change in rapidly-developing areas of the Flint River Basin. Changes in the Flint River Basin that might send higher peak flows into the City of Albany are profoundly important.

FLOOD MITIGATION PLANNING

Albany is growing rapidly and has a number of active community improvement projects. Some of the projects, such as the planned 8.5-mile extension to the new Riverwalk along the west bank of the Flint River, will improve floodwater conveyance in the study reach. The community has invited a number of Federal, State and local agencies to continue to partner with the community by helping to evaluate a variety of flood mitigation measures.

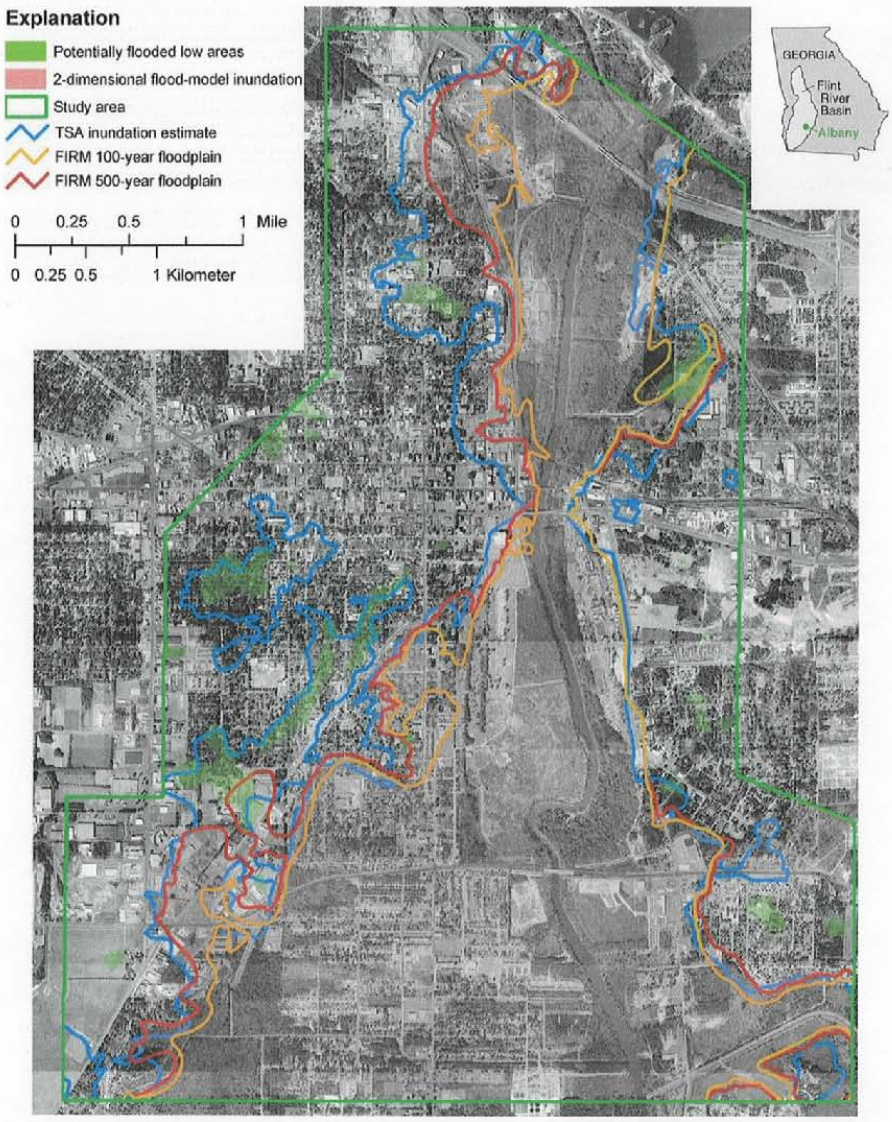


Figure 2. Flood inundation model compared with Tropical Storm Alberto (TSA) and Federal Emergency Management Agency's digital Flood Insurance Rate Maps (FIRM).

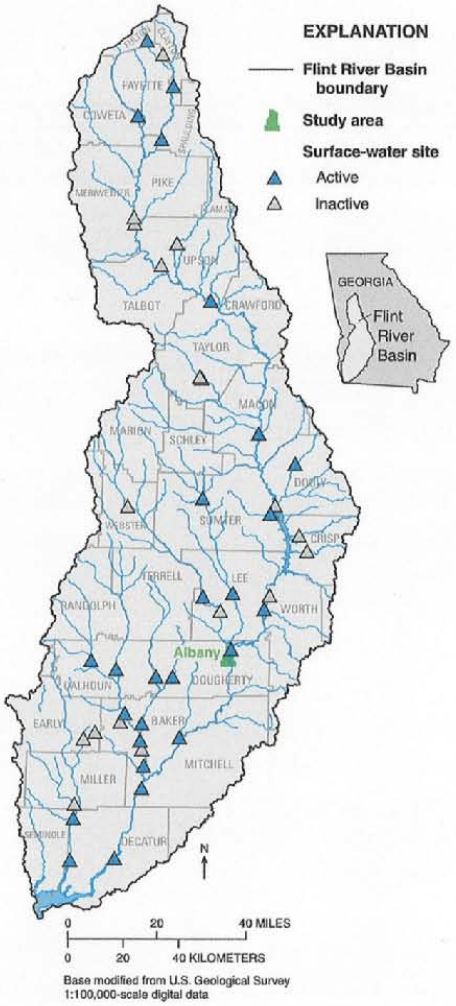


Figure 3. Active and inactive U.S Geological Survey surface-water sites in the Flint River Basin.

For example, the U.S. Army Corps of Engineers is conducting a feasibility study of construction of one or more dikes in the study reach to contain the design flood. The subject two-dimensional hydrodynamic flow model can be used to help assess impacts of future near-river development on flooding in Albany. This includes using the model to help decide on, prioritize, or assess the effects of any stream bank, stream channel, or roadway/bridge configuration modifications to reduce flooding. All significant flood-flow improvements will be reflected in the Albany streamgage stage-discharge relation.

Perhaps the principle value of the hydrodynamic model will be its usage to aid the planning and engineering processes by helping solve specific problems prior to any large flood event. For example, high-resolution hydrodynamic and DEM models can markedly improve flood-disaster management and emergency transportation operations and planning.

LITERATURE CITED

Federal Emergency Management Agency. 2001. Flood Insurance Study for Dougherty County Georgia and Incorporated Areas, pp. 1–29.

Georgia Emergency Management Agency and the Georgia Department of Natural Resources. 1998. The Governor's Task Force on Reducing the Impacts of Flooding in the Flint River Basin, Preliminary Report, pp. 1–22.

Konrad, C.P. 2003. Effects of Urban Development on Floods. U.S. Geological Survey Fact Sheet 076-03, pp. 1–9.

U.S. Army Corps of Engineers, Mobile District. 1997. Section 205 Detailed Project Report and Environmental Assessment Kinchafoonee Creek and Hogpen Ditch, Albany, Georgia, pp. 1–28.

U.S. Army Corps of Engineers, Mobile District. 2002. Section 205 Detailed Project Report, Flint River Albany Georgia, pp. 1–51.

APPENDIX 7

CITY OF ALBANY
FIRE AND EMERGENCY SERVICE
J.L. CARSWELL
FIRE CHIEF/DIRECTOR
320 NORTH JACKSON STREET
ALBANY, GEORGIA 31701

Communications 911

AREA CODE 229
431-3262 OR 431-3266
FAX: 431-3207

Press Release: Emergency Management Agency Director

Dougherty County has contracted with Emergency Communications Network, for its "CodeRED" high-speed telephone emergency notification services. The CodeRED system gives county officials the ability to deliver pre-recorded emergency telephone notification/information messages to targeted areas or the entire county at a rate of up to 60,000 calls per hour. The CodeRED system was chosen has part of an early emergency warning system to include sirens, weather radios and telephone emergency notification.

Fire Chief and EMA Director James Carswell cautioned that such systems are only as good as the telephone database supporting them. "If your phone number is not in the database, you will not be called". The CodeRED system gives individuals and businesses the ability to add their own phone numbers directly to the system's telephone database. Carswell emphasized that this is an extremely important feature.

To ensure no one is omitted, Carswell urges all individuals and businesses to log onto the Dougherty County website, www.dougherty.ga.us , and follow the link to the "CodeRED Residential and Business Data Collection" page. Those without Internet access may call the Albany Fire Department at (229) 431-3262), Monday through Friday, (8AM-5PM) to give their information over the phone. Required information includes first and last name, street address (physical address, no P.O. boxes), city, state, and zip code, and primary phone number, additional phone number (optional).

No one should automatically assume his or her phone number is included, Carswell said. All businesses should register, as well as all individuals who have unlisted phone numbers, who have changed their phone number or address within the last year, and who use a cellular phone as their primary home phone.

Carswell explained that the "CodeRED system is a geographical based notification system, which means street addresses are needed to select which phone numbers will receive emergency notification calls in any given situation. The system works fine for cell phones too, but we have to have a street address". People who have recently moved but kept the same listed or unlisted phone number also need to change their address in the database.

Carswell stated, "CodeRED gives those who want to be included an easy and secure method for doing so. The information will only be used for emergency notification purposes". Questions should be directed to the Emergency Management Agency, (229) 431-2155.

CodeRED Weather Warning™

What is CodeRED Weather Warning?

- ***CodeRED Weather Warning*** *is designed to deliver severe weather warnings to your resident's telephones within seconds after being issued by the National Weather Service.*
- *Subscribers to the* ***CodeRED Weather Warning*** *service receive warning messages any time severe weather threatens their local area.*
- ***CodeRED Weather Warning*** *uses propriety banding technology which allows us to utilize new polygon-based weather warnings.*
- ***CodeRED Weather Warning*** *can provide critical extra time for preparation in case severe weather threatens.*
- ***CodeRED Weather Warning*** *has saved lives.*

How It Works:

Warnings Delivered:

- *Severe Thunderstorm Warnings*
- *Flash Flood Warnings*
- *Tornado Warnings*

Benefits:

Rapid Activation: *Warning calls are initiated automatically with no interaction needed by your staff.*

Cost: *Flat yearly fee for service, with no minutes deducted from your CodeRED Minute Bank.*

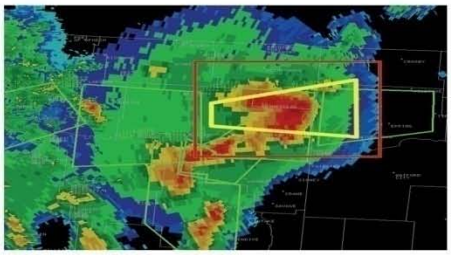
Opt-in: *Only residents who sign up to receive the warnings will be contacted.*

Reduction of False Warnings: *CodeRED uses new polygon warnings methodologies direct from the NWS to target only areas in the projected path of inclement weather.*

Technology:

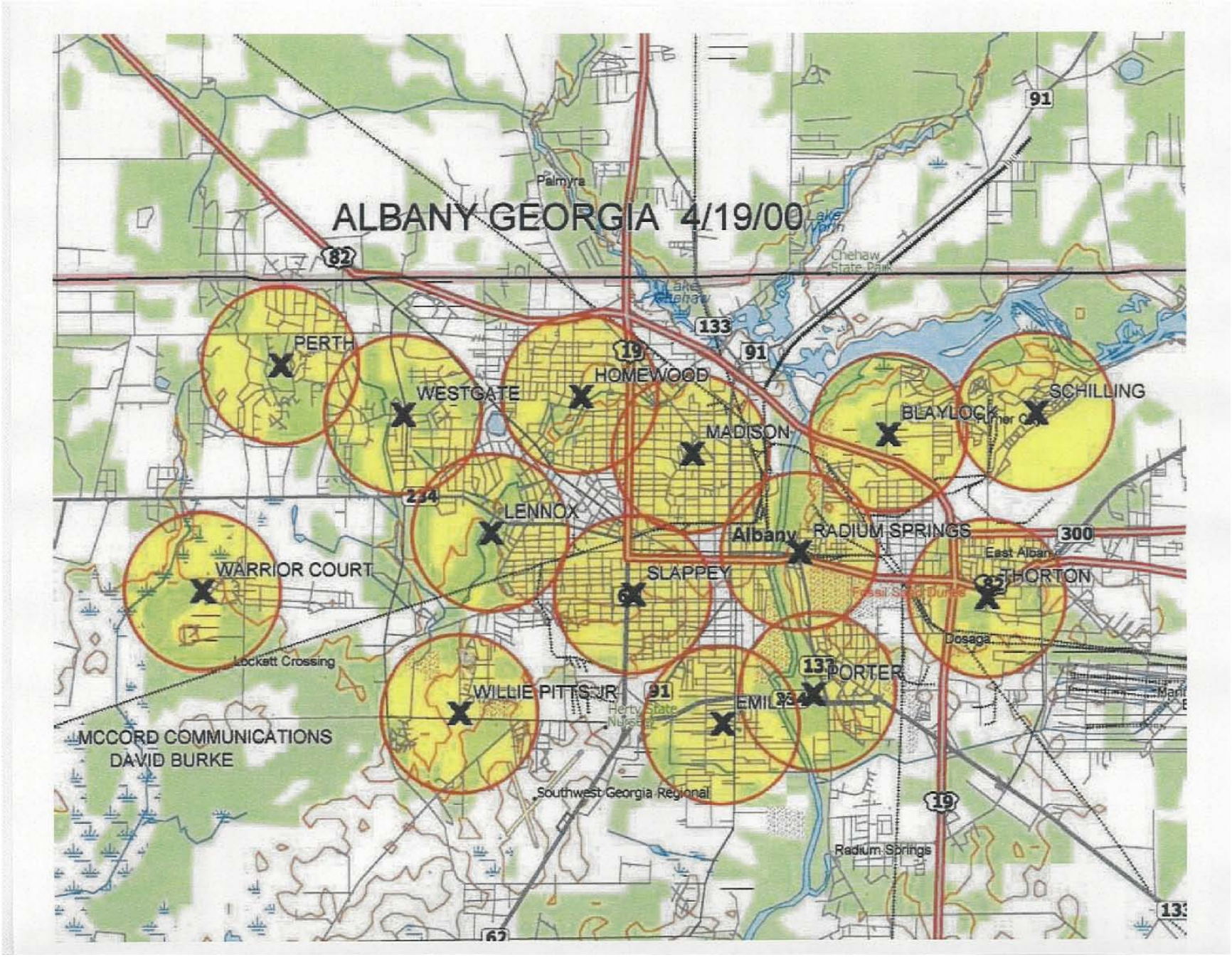
CodeRED Weather Warning *uses state of the art technology to alert homes and businesses of Severe Weather Warning for their area.*

New polygon-based warnings use heading and speed to determine the most vulnerable areas to call first.



Emergency Communications Network

9 Sunshine Boulevard
Ormond Beach, FL 32174
888-848-6337
www.coderedweb.com


ALBANY GEORGIA 4/19/00
PERTH
WESTGATE
HOMEWOOD
MADISON
BLAYLOCK
SCHILLING
LENNOX
Albany
RADIUM SPRINGS
WARRIOR COURT
SLAPPEY
THORTON
PORTER
WILLIE PITTS JR
EMIL
MCCORD COMMUNICATIONS
DAVID BURKE
Southwest Georgia Regional
Radium Springs
Lockett Crossing
Dosaga
East Albany
Palmyra
Chehaw State Park
91
82
133
19
234
300
62

APPENDIX 8

Dougherty County
Phase II MS4
Storm Water Management Program (SWMP)

JULY 10, 2014 (REVISED: AUGUST 15, 2014)
DOUGHERTY COUNTY PUBLIC WORKS DEPARTMENT
2038 NEWTON RD. ALBANY, GA 31702

DOCUMENT CAN BE VIEWED AT:

Dougherty County Public Works
2038 Newton Rd.
Albany, GA 31701

City of Albany

Phase II Municipal Separate Storm Sewer System (MS 4)

STORM WATER MANAGEMENT PLAN

Submitted to:

Environmental Protection Division
Georgia Department of Natural Resources

Prepared for:

City of Albany
P. O. Box 447
Albany, GA 31702 – 0447

REVISED June 2014

DOCUMENT CAN BE VIEWED AT:

City of Albany
240 Pine Ave. Suite 200
Albany, GA 31701

APPENDIX 9

City of Albany

DEPARTMENT OF
COMMUNITY & ECONOMIC DEVELOPMENT

COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG)

FLOOD HAZARD MITIGATION POLICIES & PROCEDURES

Department of Community & Economic Development
230 South Jackson Street, Suite 333
Albany, Georgia 31701

APPENDIX 10

References

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