

**Appendix D**

# Flood Hazard and Remediation in Gainesville Florida

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Andy Renshaw, CFM  
Floodplain Manager, City of Gainesville

## Purpose

The City of Gainesville is subject to a wide variety of natural hazards. Out of all of them, the most prevalent is flooding. This brief covers specifics to the flood hazard within the City of Gainesville. Included within are sections covering known hazards, past flooding events, less frequent flood hazards, and other likely flood locations.

There is also assessment of the impact of flooding, as well as discussion of possible remedial and mitigation activities that could lessen the impact of floods within the City of Gainesville.

This Brief should be updated as needed or as new information is available concerning flooding and its impact, or at least every five years by the City of Gainesville Floodplain Manager, or another responsible party.

## Historical Floods

Alachua County has experienced several historical floods usually coinciding with Tropical Storms. Among historic storms, Hurricane Dora on September 10<sup>th</sup> 1964 passed on the northern edge of Alachua County after making landfall on the Atlantic coast as a Category 3 bringing significant rainfall over North Florida. (Fig 1)

In Gainesville, homes in Highland Court Manor and Lincoln Estates were flooded. Several residences on Northwest 10th Avenue were also flooded, while a trailer park on Archer Road was inundated waist-deep. At Clear Lake, several homes were threatened by the rising body of water. A 25,000 US gal fuel tank at Stengel Field, now the site of Butler Plaza, emerged from the ground due to saturation. At the University of Florida, the half-basements of Anderson, Flint, Matherly, and Tigert halls were flooded. Combined with other damages, Gainesville alone exceeded \$300,000.



Elsewhere in the county, another 25 dwellings experienced water damage in High Springs after the Santa Fe River overflowed. Overall, 225 dwellings and 36 mobile homes in Alachua County were impacted, while 4 businesses received major damage or were destroyed. The effects from Hurricane Dora still play an important role in Alachua County and Gainesville as the mapped flooding formed the beginning of flood hazard areas within the county. (Fig 2)

Most recently Hurricane Irma impacted the region with historic flooding. The storm brought a record 2 day rainfall total of 12.40". The storm followed a wet summer where high water table and saturated ground compounded the threat from flooding.

Within Gainesville, Hogtown Creek overtopped its banks in a historic floodplain area around W University Ave and NW 34th ST, and there was a berm breach further upstream causing residential structure flooding. Lake Meta and a smaller depression in the Clear Lake area also flooded. Figure 3 shows locations of reported flooding that occurred during the event.

Afternoon thunderstorms can also bring significant rainfall to a specific watershed, and occasionally be intense enough to overtax the urban stormwater system causing localized, short term shallow flooding. Such flooding tends to be confined to streets and drainage right-of-ways, with occasional incursions into private property. Repetitive, consistent complaints by citizens of localized flooding results in assessment by Public Works for potential infrastructure improvements.



*Flooding at 1000 blk N Main Street from a short afternoon thunderstorm in 2006. This area is FEMA Zone X, but forms the start of Sweetwater Branch. The localized high intensity event caused the stormwater system to reach capacity when the overtopped creek created a tailwater. Once rain stopped, water receded within 10 minutes.*

## **Hazard Areas**

As mentioned, the mapping efforts after Hurricane Dora in 1964 produced the first Flood Prone Area map for Alachua County and Gainesville. (Figure 2) These maps remained in effect until new maps and studies conducted by Federal Insurance Administration produced the first Flood Hazard Boundary Map in 1970, which became the first Flood Insurance Rate Map (FIRM) for Gainesville in 1971 upon joining the National Flood Insurance Program (NFIP). Subsequent FIRM's have been issued since, however as the boundary of the published FIRM expanded to meet Gainesville's growth, the original Flood Prone Area map was incorporated starting with the 1983 FIRM. Many of these regions have been republished as "Zone A" and still appear on the latest FIRM.

In addition to the current FEMA FIRM Maps, Alachua County and the City of Gainesville also utilize other Flood Hazard Area maps, including those produced from past studies, such as the

North Florida Regional Planning Council (NFRPC) from 1974, later updated in 1984. Regions of this study were incorporated into the 2006 FIRM, however areas covered by the FEMA FIS, namely Hogtown Creek, were not incorporated. The City of Gainesville continues to use the NFRPC data in locations where the FEMA FIRM may not accurately reflect flood risk in several Zone X areas. The FEMA FIS for Hogtown Creek uses data prior to 1984, so in many cases the NFRPC is more accurate, regardless of the FIRM date. See included map of additional Flood Hazard Areas mapped in the Hogtown Creek basin that are outside of the FEMA FIRM zone X. (Figure 4)

The City of Gainesville references several Watershed Master Plans for the major creeks systems that traverse its jurisdiction, and are referenced in the City of Gainesville Comprehensive Plan, Stormwater Management Element. Each Watershed Master Plans assessments of areas for potential flooding and included projects designed to reduce street flooding during storm events ranging up to the 25-year storm. Several of the watersheds have been updated or are currently undergoing an update. (Figure 5)

A detailed flood hazard analysis and vulnerability assessment was conducted in 2009 for Alachua County including The City of Gainesville as part of a multi-jurisdiction disaster response plan. This plan, the Alachua County Post-Disaster Redevelopment Plan, includes an in-depth analysis with estimated economic, health, natural, and infrastructure vulnerability due to possible flood events. Elements of this plan can be used to further highlight areas of potential mitigation and remediation efforts.

## **Repetitive Loss**

Out of the 2,258 structures within the SFHA inside the City of Gainesville, there is one identified repetitive flood loss property in the Anglewood area within the Hogtown Creek watershed. Other structures that received substantial damage and required additional code compliance to be brought to NFIP standards are being acquired through HMGP Grant funding. Flooding during Hurricane Irma caused multiple other structures to be damaged, and those areas are noted for future possible “repetitive loss” if a similar flood event occurs.

Two structures within the Hogtown Creek watershed have been or are funded to be acquired and removed from the Flood Hazard Area through HMGP Grant funding. Once removed, these parcels will be vacated, returned to natural floodplain, and deed restricted to prevent any future construction.

## **Possible Activities**

Below are some possible additional activities that could help mitigate future flood damage and impacts. These are only points for discussion and in no way are binding or require action.

### **Preventative:**

**Develop or update Watershed Management Plans**, including updated flood zone mapping using current data and methods. Several plans are already in the works covering major portions of Gainesville. Several smaller watersheds, and rural areas of the County may still be in need of a plan or updated. Flooding locations from past storm events could be used to target and prioritize needed areas of study.

### **Regulatory Current and Future conditions**

**Prohibiting critical infrastructure in the X500** (500 year frequency) flood zone. This would provide greater resiliency to flood disasters both during and after the event. This is also a creditable item within the CRS.

**Raise Flood Hazard Area freeboard to 2.0 feet**, including utilities. This would provide additional protection for larger flood events currently and in future. This is also a creditable item within the CRS.

**Enact Cumulative Substantial Improvement tracking and current code compliance.** Either a five or ten year window could increase the number of structures that need to come into current code. This is also a creditable item within the CRS.

**Lower Substantial Improvements Threshold.** Currently Alachua County and the City of Gainesville are at the NFIP standard of 50% of market value. A lower standard would require additional structures come into current NFIP compliance. This is also a creditable item within the CRS.

### **Property Protection**

**Raise Flood Hazard Area freeboard to 2.0 feet**, including utilities. This would provide additional protection for larger flood events currently and in future. This is also a creditable item within the CRS.

**Additional outreach to promote Flood insurance in X and X500 areas.** This will be done as part of the joint County/City Plan for Public Information to be implemented in 2021. This is also a creditable item within the CRS.

### **Natural Resource Protection**

**Prohibiting installation of new septic systems within floodplain.** Failing septic systems pose a threat to natural waterbodies, and a health hazard during flood conditions. With the utility infrastructure in place, the City of Gainesville could prohibit new septic systems within the Flood Hazard Area. This is also a creditable item within the CRS.

### **Emergency Services**

The City of Gainesville coordinates with Alachua County during regional emergencies, and cooperates within several joint agreements and plans.

Both the 2010 “Alachua County Post-Disaster Redevelopment Plan” and “Alachua County Flood Warning and Response Standard Operating Procedures” outline warning and response through the unified Emergency Operations Center that the City of Gainesville participates in.

### **Structural Projects**

**Bring Existing Levies under a maintenance plan.** Several natural levy’s exist within the City of Gainesville. Providing routine maintenance including easement access would help mitigate future breaches. This is also a creditable item within the CRS Activity 620.

### **Public Information Activities**

**Real Estate Disclosure for properties in FEMA Special Flood Hazard Area (SFHA) and/or other Flood Hazard Areas (FHA)**

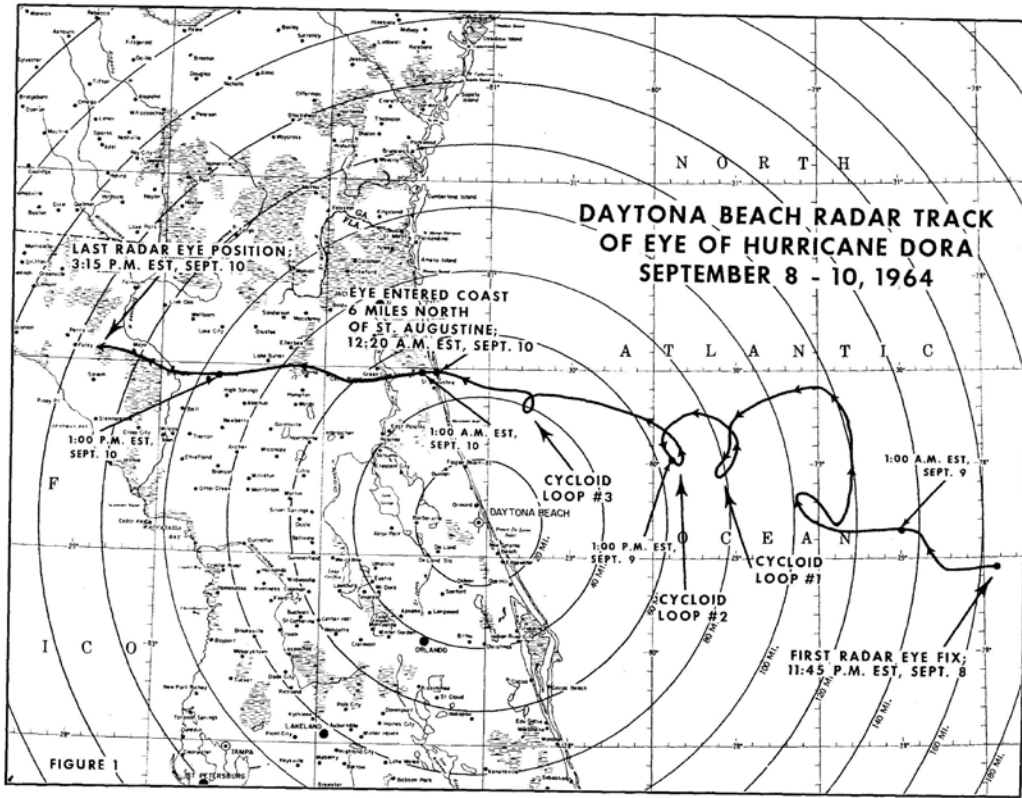
## **Looking Forward**

The City of Gainesville will continue to champion accurate floodplain mapping, conservation, and risk assessment. Coupled with State and National initiatives and sound policy, the City will constantly build toward increased resiliency to flooding and improve the quality of life for its residents.

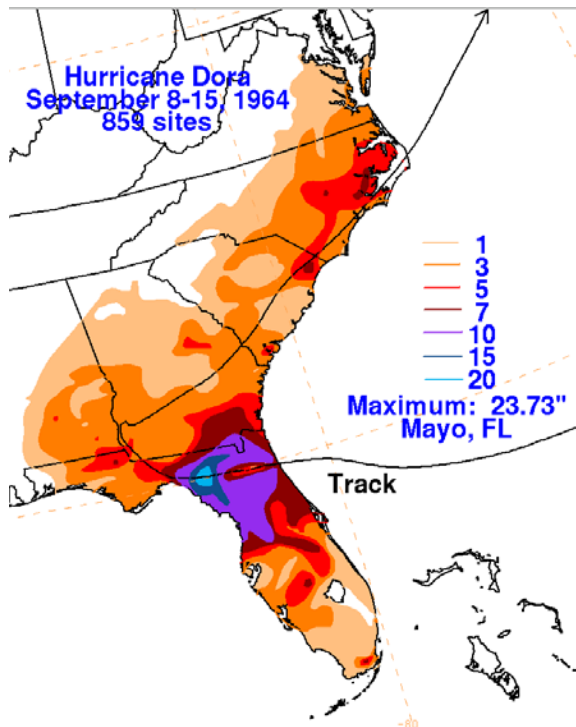
*Anyone with questions concerning this brief or for more information is encouraged to contact the Floodplain Manager at the City of Gainesville Public Works Department at 352-334-5072 or visit [www.cityofgainesville.org](http://www.cityofgainesville.org)*



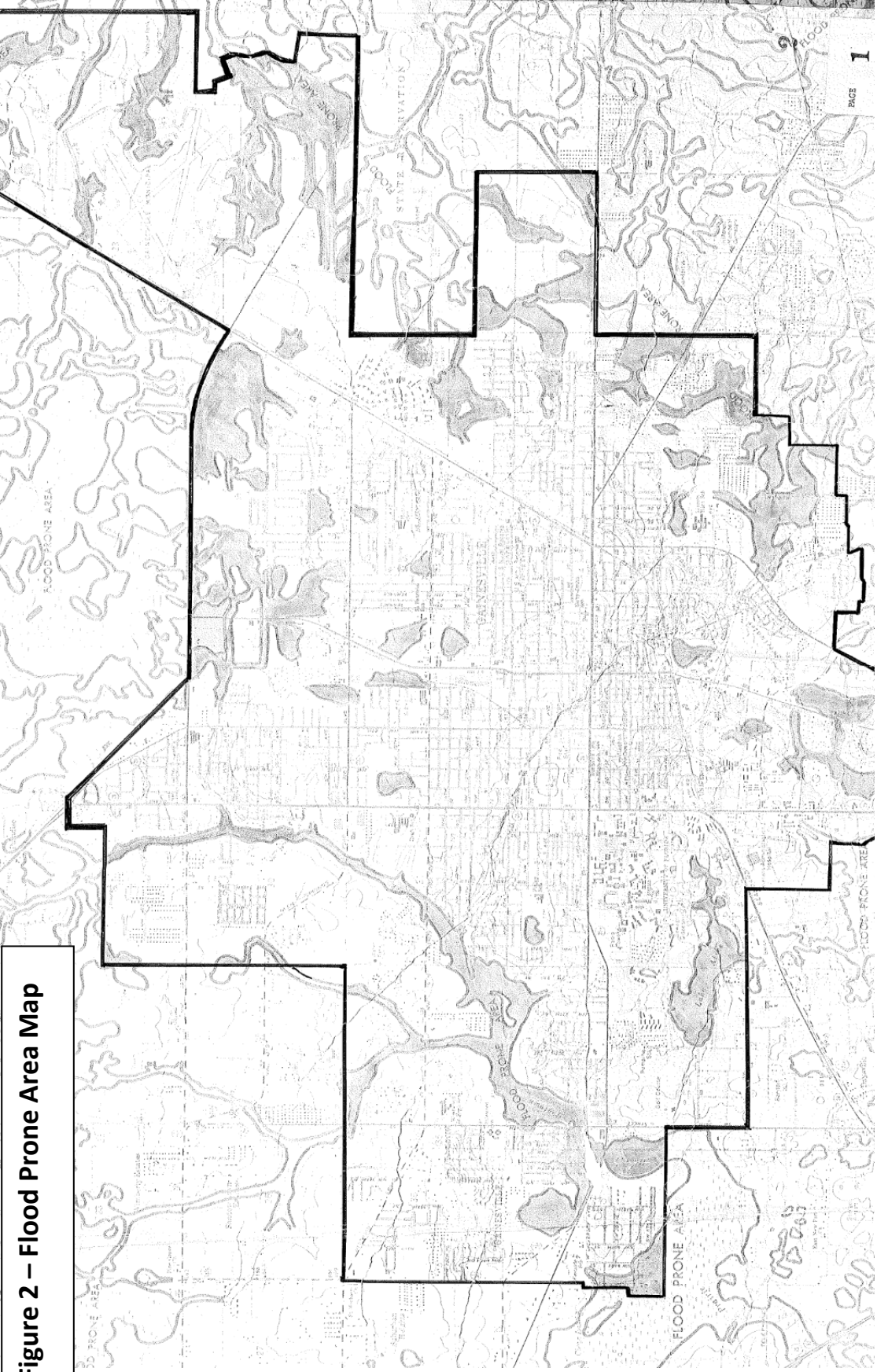
**Fig 1 --- Hurricane Dora, 1964**



**Rainfall (inches) Hurricane Dora 1964**

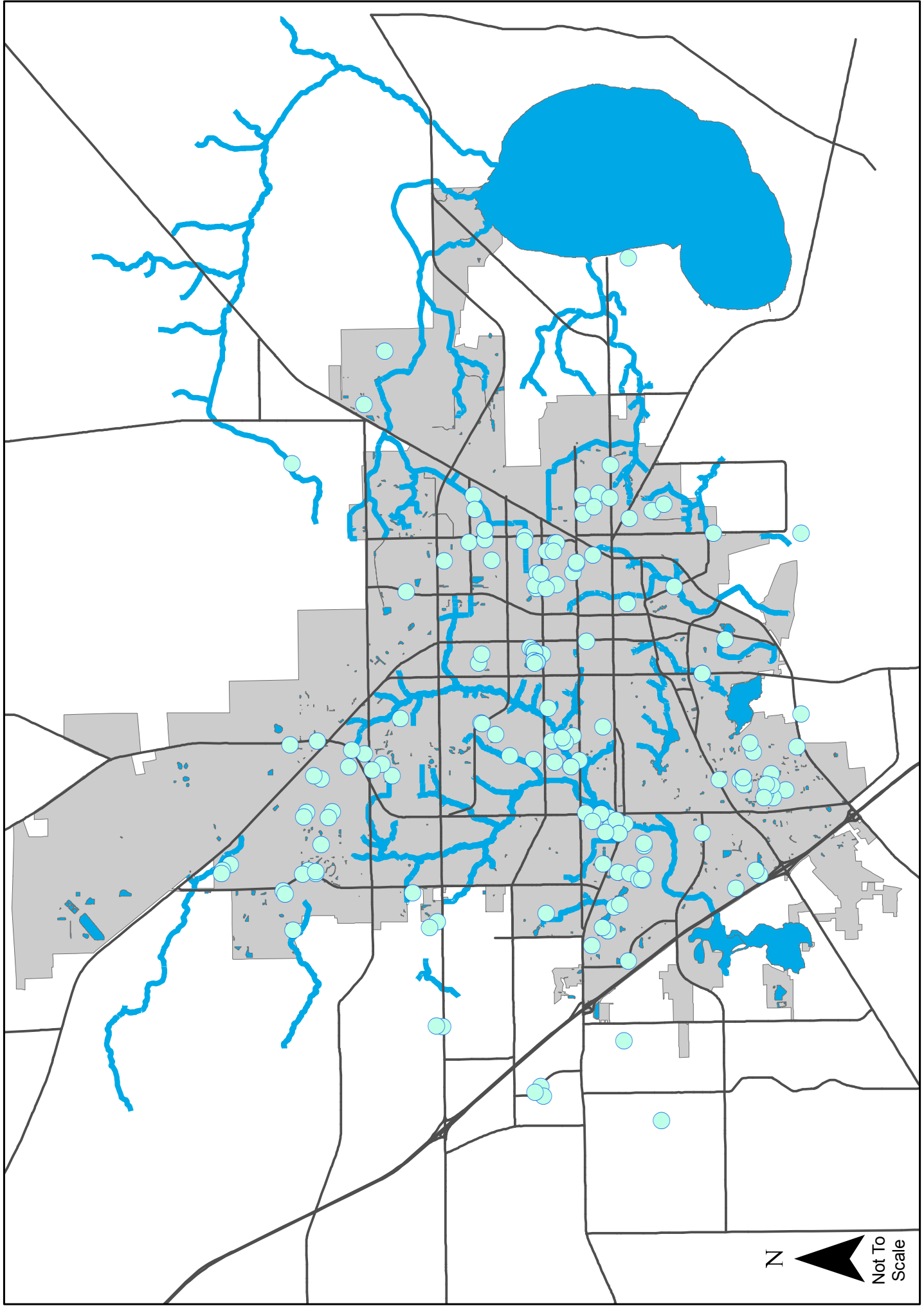


**Figure 2 – Flood Prone Area Map**



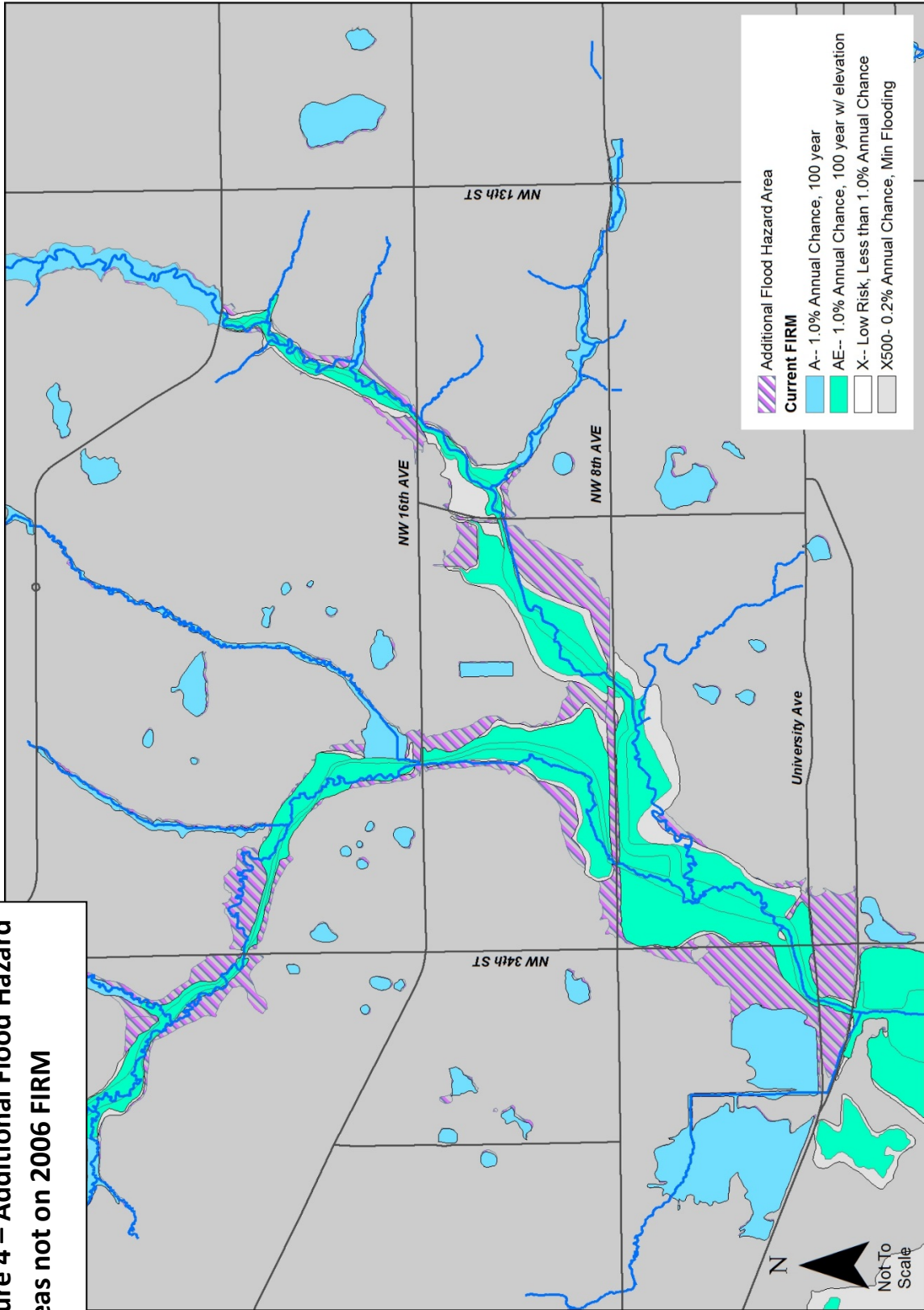
*Flood Prone Area Map developed after 1964 Hurricane Dora*



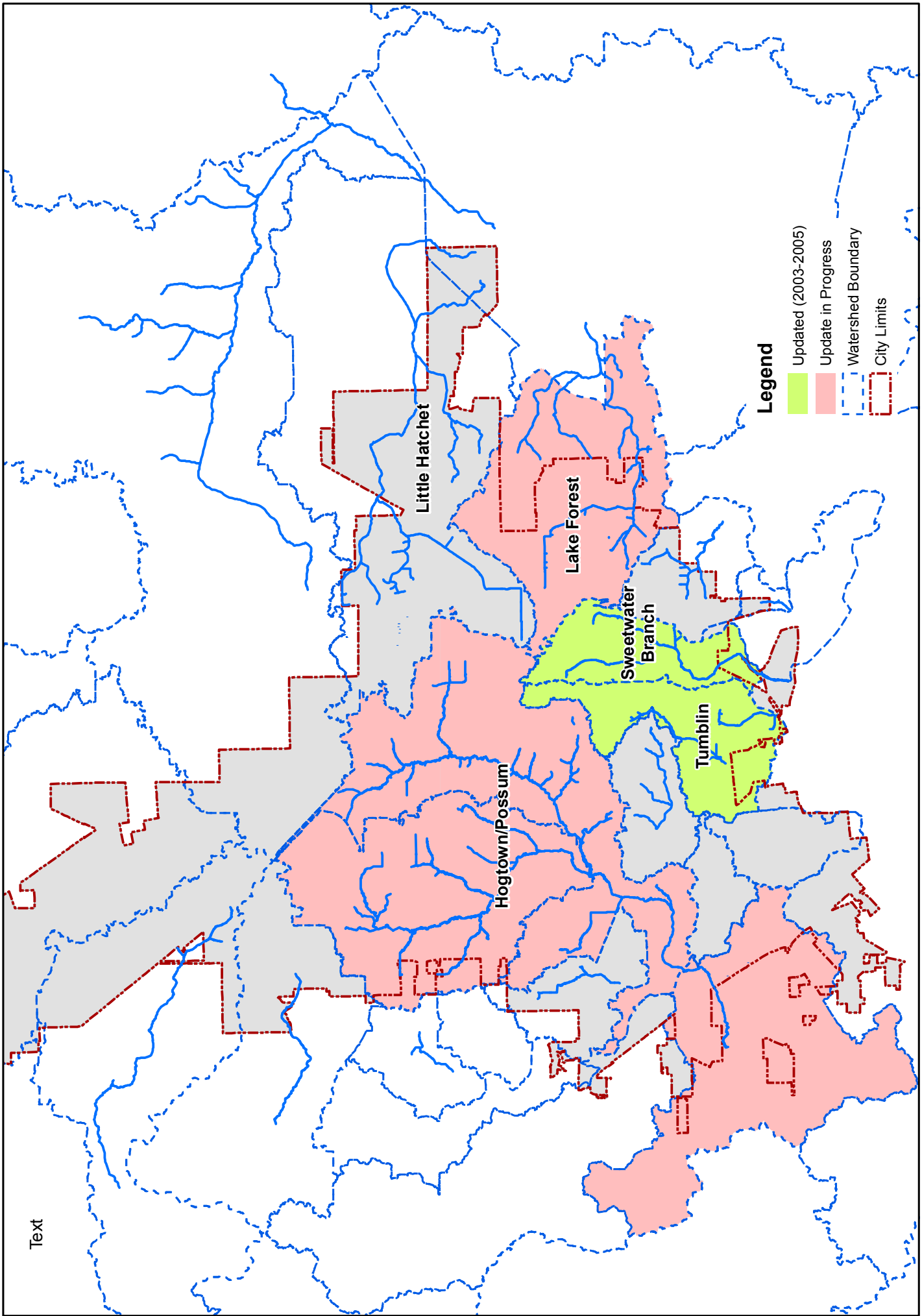


**Figure 3 - Recorded Flooding Locations, Hurricane Irma  
Sept 10-11 2017**

**Figure 4 – Additional Flood Hazard Areas not on 2006 FIRM**



**Additional Flood Hazard Areas  
Gainesville Florida**



Text

**Legend**

- Updated (2003-2005)
- Update in Progress
- Watershed Boundary
- City Limits



**Figure 5- Updated Watershed Management Plans and Flood Studies**  
City of Gainesville