Chapter 7: Plan Maintenance

7 Chapter Overview

7.1 Federal Requirements for Plan Maintenance
7.2 Summary of Plan Updates
7.3 Monitoring, Evaluating, and Updating of the Mitigation Plan
7.4 Incorporation of the Mitigation Plan into Other Planning Mechanisms
7.5 Continuing Public Participation in the Plan Maintenance Process

7.1 Federal Requirements for Plan Maintenance

This chapter of the Plan addresses the Plan Maintenance Process requirements of 44 CFR Sec. 201.6 (c) (4), as follows:

"Sec. 201.6 (c) ***Plan content***. The plan shall include the following:

(4) A plan maintenance process that includes:

(i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

(ii) A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

(iii) Discussion on how the community will continue public participation in the plan maintenance process."

7.2 Summary of Plan Updates

Table 7-1: Updates to the Maintenance Portion of the Plan

Summary of Plan Updates for the Mitigation Strategy		
Section		**Change**
7.3	Monitoring, Evaluation, and Updating the Mitigation Plan	Provides greater process details for these activities
7.4	Incorporation of the Mitigation Plan into Other Planning Mechanisms	Provides greater process details for these activities
7.5	Incorporation of the Mitigation Plan into Other Planning Mechanisms	Reaffirms commitment to public participation

7.3 Monitoring, Evaluating, and Updating the Mitigation Plan

7.3.1 Ongoing Monitoring of the Plan

The countywide Hazard Mitigation Planning Committee's (HMPC) ongoing review process throughout the year should continually monitor the current status of the mitigation measures scheduled for implementation. The City of Alpharetta's Mitigation Advisory Committee will be a subset that meets to organize and prioritize activities before and after meeting with the HMPC. Ongoing status reports of each jurisdiction's progress will be reviewed by the AFCEMA Director and representatives from the HMPC and should include the following information:

- Actions that have been undertaken to implement the scheduled mitigation measure, such as, obtaining funding, permits, approvals or other resources to begin implementation.
- Mitigation measures that have been completed, including public involvement activities.
- Revisions to the priority, timeline, responsibility, or funding source of a measure and cause for such revisions or additional information or analysis that has been developed that would modify the mitigation measure assignment as initially adopted in the plan.
- Measures that a jurisdiction no longer intends to implement and justification for cancellation.
- The ongoing review process may require adjustments to the selection of mitigation measures, priorities, timelines, lead responsibilities, and funding sources scheduled in the Mitigation Action Projects presented in Chapter 6 – Mitigation Strategy. In the event modifications to the plan are warranted as a result of the annual review or other conditions, the HMPC will oversee and approve all amendments to the plan by majority vote of a quorum of HMPC members. Conditions that might warrant amendments to this plan would include, but not be limited to, special opportunities for funding and response to a natural or man-made disaster. A copy of the plan amendments will be submitted by the Atlanta-Fulton County EMA to all jurisdictions in a timely manner and filed with the GEMA.

7.3.2 Evaluating the Plan

Within sixty days following a significant disaster or an emergency event having a substantial impact on a portion of or the entire Atlanta-Fulton County area or any of its jurisdictions, the HMPC will conduct or oversee an analysis of the event to evaluate the responsiveness of the Mitigation Strategy to the event and the effects on the contents of the Risk Assessment. The Risk Assessment should evaluate the direct and indirect damages, response and recovery costs (economic impacts) and the location, type, and extents of the damages. The findings of the assessment should determine any new mitigation initiatives that should be incorporated into this plan to avoid similar losses from future hazard events. The results of the assessment will be provided to those affected jurisdictions for review. These results also provide useful information when considering new mitigation initiatives as an amendment to the existing plan or during the next five-year plan update period.

The HMPC will oversee an annual evaluation of progress towards implementation of the Mitigation Strategy. Any discussions and reports by the HMPC should be documented. When the plan is next revised, the evaluation findings can clearly justify and explain any revisions. In its

annual review, the HMPC should discuss the following topics to determine the effectiveness of the implementation actions and the need for revisions to the Mitigation Strategy:

Are there any new potential hazards that have developed and were not addressed in the plan?

- Have any disasters occurred and are not included in plan?
- Are there additional mitigation ideas that need to be incorporated into the plan?
- What projects or other measures have been initiated, completed, deferred or deleted?
- Are there any changes in local capabilities to carry out mitigation measures?
- Have funding levels to support mitigation actions either increased or decreased?

The HMPC may create subcommittees to oversee and evaluate plan implementation. This will be done at the Committee's discretion.

7.3.3 Plan Update Process

Any of the following situations may require a review and update of the plan:

- Requirement for a five-year update.
- Change in federal requirements for review and update of the plan.
- Significant natural or man-made hazard event(s) before the expiration of the five-year plan update.

As stated above in Section 7.3.2, the HMPC will convene within 60 days of a significant disaster to discuss the potential need for any amendments to the plan. If there are no significant disasters which trigger an update, the current Federal guidelines require a five-year update.

The Atlanta-Fulton County EMA will release or publish a notice to the public that an update is being initiated and provide information on meeting schedules, how and where to get information on the plan, how to provide comments on the plan, and opportunities for other public involvement activities. The AFCEMA will then convene the HMPC and with the assistance of EMA staff or a consultant, as deemed necessary, carry out the steps necessary to update the plan.

The initial steps for the five-year update to this plan should begin nine to twelve months before the current FEMA approval expiration, which takes into consideration the 90 day review process by the GEMA and FEMA. Additional time for planning grants may require up to an additional year added to the start date. Once the Hazard Mitigation Planning Committee has been organized to oversee the update, the following steps will take place in order to facilitate the process:

Step 1. Review of the most recent FEMA local mitigation planning requirements and guidance.
Step 2. Evaluation of the existing planning process and recommendations for improvements.
Step 3. Examination and revision of the risk assessment, including hazard identification, profiles, vulnerabilities, and impacts on development trends, to ensure accuracy and up to date information.

Step 4. Update of mitigation strategies, goals and action items, in large part based on the annual plan implementation evaluation input.
Step 5. Evaluation of existing plan maintenance procedures and recommendations for improvements.
Step 6. Comply with all applicable Federal regulations and directives.

Ninety days prior to the anniversary date, a final draft of the revised plan will be submitted to the GEMA for review and comments and then to FEMA for conditional approval. Once FEMA Region IV has issued a conditional approval, the updated plan will be adopted by all participating jurisdictions.

7.4 City of Alpharetta's Capability Assessment and Incorporation of the Mitigation Plan into Other Planning Mechanisms

Upon local adoption, the City's Hazard Mitigation Plan will become a City Annex to the countywide plan. That plan supplements the most recent edition of the Atlanta-Fulton County Emergency Operations Plan, which is administered through the Atlanta-Fulton County Emergency Management Agency. Further, each governmental entity will be responsible for implementation of their individual Jurisdiction Mitigation Action Programs based on priorities, funding availability, capabilities, and other considerations described in Chapter 6 – Mitigation Strategy. Because the 2010 Atlanta-Fulton County Hazard Mitigation Plan is a multi-jurisdictional plan, the mechanism for implementation of the various mitigation measures through existing programs may vary by jurisdiction. Each jurisdiction's unique needs and capacities for implementation are reflected in its respective mitigation action program.

The countywide Hazard Mitigation Planning Committee recognizes the importance of fully integrating hazard mitigation planning and implementation into existing local plans, regulatory tools, and related programs. This plan is intended to influence each jurisdiction's planning decisions concerning land use, development, public facilities, and infrastructure. Any updates, revisions, or amendments to the Atlanta-Fulton County Emergency Operations Plan, local comprehensive plans, capital improvement budgets or plans, zoning ordinances and maps, subdivision regulations, building and technical codes, and related development controls should be consistent with the goals, objectives, and mitigation measures adopted in this plan. Each jurisdiction's commitment to this consistency is reflected in its respective mitigation action program. As part of the subsequent five-year update process, all local planning mechanisms should again be reviewed for effectiveness, and recommendations for new integration opportunities should be carefully considered. This type of evaluation was performed in the 2010 update and should follow in the next update cycle.

Multi-hazard mitigation planning should not only be integrated with local planning tools but into existing public information activities, as well as household emergency preparedness. Ongoing public education programs should stress the importance of managing and mitigating hazard risks. Public information handouts and brochures for emergency preparedness should emphasize hazard mitigation options, where appropriate.

Of particular importance to incorporating hazard mitigation planning into other planning programs, is the Atlanta-Fulton County EMA's commitment to full integration of natural and

man-made hazards mitigation planning into its comprehensive emergency operations planning program and associated public emergency management activities, to the furthest possible extent.

7.4.1 Administrative and Technical Capability

The City identified several capabilities related to administrative and technical capabilities. For example, the City currently employs Planners with knowledge of land development and land management practices, Engineers or professionals trained in construction practices related to buildings and/or infrastructure, Planners or engineers with an understanding of natural and/or human-caused hazards, Emergency manager, Floodplain manager, Land surveyors, Scientist familiar with the hazards of the community, Staff with education or expertise to assess the community's vulnerability to hazards, Personnel skilled in Geographic Information Systems (GIS) and/or HAZUS, Resource development staff or grant writers.

Table 7-2: Administrative and Technical Capacity of the City

Staff/Personnel Resources	Y/N	Department/Agency and Position
A. Planner(s) or engineer(s) with knowledge of land development and land management practices	Y	Community Development and Engineering & Public Works departments
B. Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Engineering & Public Works Department - Senior Engineer
C. Planners or Engineer(s) with an understanding of natural and/or manmade hazards	Y	Community Development and Engineering & Public Works departments
D. Floodplain manager	Y	Engineering & Public Works Department - Senior Engineer
E. Surveyors	Y	Contractor
F. Staff with education or expertise to assess the community's vulnerability to hazards	Y	Engineering & Public Works Department - Senior Engineer; Department of Public Safety – EMS
G. Personnel skilled in GIS and/or HAZUS	Y	Community Development, Engineering & Public Works, and Public Safety departments
H. Scientists familiar with the hazards of the community	Y	Full environmental laboratory in house
I. Emergency manager	Y	Department of Public Safety
J. Grant writers	Y	Community Development, Engineering & Public Works, and Public Safety departments

7.4.2 Planning and Regulatory Programs Capability

The attendees identified several capabilities related to planning and regulatory programs. For example, the City currently has a Hazard Mitigation Plan, Comprehensive Land Use Plan, Stormwater Management Plan, Emergency Operations Plan, Capital Improvements Plan, Economic Development Plan, Flood Damage Prevention Ordinance, Zoning Ordinance, Subdivision Ordinance, Building Code, Fire Code, and others related to the Unified Development Code, such as the Stormwater Management Ordinance and the Tree Protection Ordinance. The group had the plans and binders of plans available throughout the meeting for review. During this time, the group reviewed the plans. The following table lists the particular components that likely affect loss reduction and mitigation planning. Further information is provided below the table concerning plans that are the most significant regarding future growth and land use planning.

Table 7-3: Planning, Legal, and Regulatory Capability of the City

Regulatory Tools (ordinances, codes, plans)	Existing? (Y/N)	Under Development? (Y/N)
Hazard Mitigation Plan	Y	
Comprehensive Plan	Y	
Stormwater Management Plan/Ordinance (UDC)	Y	
Emergency Operations Plan	Y	
Capital Improvements Plan	Y	
Economic Development Plan	Y	
Flood Damage Prevention Ordinance	Y	
Zoning ordinance	Y	
Subdivision ordinance or regulations	Y	
Building Code	Y	
Fire Code	Y	
National Flood Insurance Program	Y	
Floodplain Management Plan	N	N
Open Space Management Plan (Parks/Rec or Greenways)	N	N

7.4.3 Fiscal Capability

The MAC identified several capabilities related to fiscal programs and grant-making. The City has a good track record of grant writing and management. For example, the City does have access to Capital Improvement Programming, Community Development Block Grants, Special Purpose Taxes, Development Impact Fees, Partnering Arrangements or Intergovernmental Agreements, and grants such as a U.S. Environmental Protection Agency Section 319(h) Grant and a FEMA Flood Mitigation Assistance Grant. Other sources were the Public Safety Foundation Grant, which funds police and fire projects/equipment from several non-profit sources, and the congressional SPAP grant.

Table 7-4: Fiscal Capability of the City

Financial Resources	Eligible to Use (Yes/No)	Department/Agency
Community Development Block Grants (CDBG)	Y	Community Development Dept.
Capital Improvements Program	Y	Engineering & Public Works Dept.
Specific Purpose Taxes (Sales, Solid Waste, Hotel/Motel, etc.)	Y	Community Development Dept.
Development Impact fees	Y	Engineering & Public Works Dept.
Partnering Agreements or Intergovernmental Agreements (North Fulton CID, etc.)	Y	City Administrator and Engineering & Public Works Dept.
EPA Section 319(h) Grant	Y	Community Development Dept. and Engineering & Public Works Dept.
Hazard Mitigation Assistance (HMGP, PDM etc.)		Department of Public Safety
Public Safety Grants	Y	Department of Public Safety
Greenspace / Open Space Grant (see Tree Protection Ordinance)	Y	Community Development Dept. and Engineering & Public Works Dept.
Ga Environmental Finance Authority	Unknown	
Land Conservation Grants	Unknown	

7.4.4 Opportunities for Future Action

The MAC identified several capabilities from which the City of Alpharetta can draw upon when considering mitigation actions and the resources required implementing them. For the capabilities that are limited, the MAC could address them in the mitigation actions in the future. Of the three major types of capabilities, Fiscal Capability may seem to be the most limited due to the size of the city and the lack of revenue-producing services (e.g. water, stormwater utility fees, etc.). However, what is lacking in Fiscal Capability is made up for in Administrative and Technical capabilities due to the experienced grant-writing staff.

The Planning and Regulatory capabilities are moderate due to the size of the city and the lack of a dedicated land surveyor and emergency management department director. An opportunity to improve planning and hazard mitigation interaction would be the development of a Floodplain Management Plan (FMP). The City does not have a FMP, but this could be a recommended action of the MAC which would enhance the Flood Damage Prevention Ordinance that is already present. Community Rating System (CRS) participation that can reduce flood insurance for home-property owners – a new manual for this rating program is expected sometime in 2012 and the newly mapped floodplains in accordance with the Metro Water District's floodplain mapping requirement are due out in 2013. Hence, participation in the rating system may be considered. The Continuation of Operations Plan (COOP) is another soon-to-be developed plan in accordance with a federal mandate. Conservation of open space (riparian areas or greenbelt) is another identified opportunity. There is a need to obtain an updated Building Code Effectiveness Grade Score (BCEGS), as this is related to many other programs such as the CRS.

7.5 Continuing Public Participation in the Plan Maintenance Process

A critical part of maintaining an effective and relevant multi-hazard mitigation plan is ongoing public review and comment. Consequently, the Hazard Mitigation Planning Committee is dedicated to direct involvement of its citizens in providing feedback and comments on the plan throughout the five-year implementation cycle and interim reviews.
To this end, copies of the City of Alpharetta's Hazard Mitigation Plan will be available at the Engineer / Public Works office. The 2010 Atlanta-Fulton County Multi-Hazard Mitigation Plan will be maintained in the offices of the Atlanta-Fulton County EMA and the principal offices of all of the jurisdictions that participated in the planning process. After adoption, a public information notice will inform the public that the plan may be viewed at these offices or on the Web. The Atlanta-Fulton County EMA Web site at http://www.afcema.com contains a link to download an on-line copy of the plan. Public comments can be mailed, e-mailed, or phoned in to the Atlanta-Fulton County EMA.

Public meetings will be held when significant modifications to the plan are required or when otherwise deemed necessary by the Hazard Mitigation Planning Committee. The public will be able to express their concerns, ideas, and opinions at the meetings. At a minimum, public hearings will be held during the annual and five-year plan updates and to present the final plan and amendments to the plan to the public before adoption. Public opinion surveys are conducted during the community meeting and public involvement activities required for the five-year update and may be periodically administered by the Atlanta-Fulton County EMA.

Public involvement activities initiated by the 2010 planning process are documented in this plan. These activities will continue throughout the five-year implementation cycle and be evaluated for effectiveness at least annually by the Hazard Mitigation Planning Committee. Moreover, the public outreach goal of this plan and the associated objectives and mitigation measures commit each locality to implement a range of public education and awareness opportunities. The constant monitoring of these programmed mitigation actions assures ongoing public participation throughout the plan maintenance process.

Public Involvement Appendix

Advertisement for Public Participation – Public Meeting and Web Survey

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Calendar of Events: Public Information Meeting

2012 Alpharetta Hazard Mitigation Plan Meeting

Engineering / Public Works Building at 1790 Hembree Road

Thursday, March 15, 2012 7:00 PM

On Thursday, March 15, 2012, there will be a Public Information Meeting to present draft data for the 2012 Alpharetta Hazard Mitigation Plan (HMP). The meeting will be held at 7:00 pm at the Engineering / Public Works Building at 1790 Hembree Road. There will be a formal presentation and an opportunity for the public to ask questions and make comments.

Take The Survey

Recent Press Release:

Alpharetta is currently working on an update to our Natural Disaster Hazard Mitigation Plan (HMP). This plan examines the level of risk and exposure of the City to dangers like flooding, drought, tornadoes, and hurricanes. Once potential threats are identified, the City then works on plans to lessen or eliminate the impact of these hazards in our community. Because this planning directly affects public safety, spending, and future City projects, we would like input from residents and business owners.

Alpharetta has released a short survey http://www.surveymonkey.com/s/KZR3H6C for community input. The survey should take about 10 minutes to complete and will be available online until Monday, April 30, 2012. Property owners should be educated about their risks and what is covered by their property insurance policy. For example in high risk flood zones, there is a 1 in 4 chance of flooding during a 30-year mortgage and they are twice as likely to be damaged by a flood then by fire. All information collected will be kept confidential and will be used for statistical analysis when creating our mitigation plan. No personal information will be shared.

Additionally, on Thursday, March 15, 2012, there will be a Public Information Meeting to present draft data for the 2012 Alpharetta Hazard Mitigation Plan (HMP). The meeting will be held at 7:00 pm at the Engineering / Public Works Building at 1790 Hembree Road. There will be a formal presentation and an opportunity for the public to ask questions and make comments.

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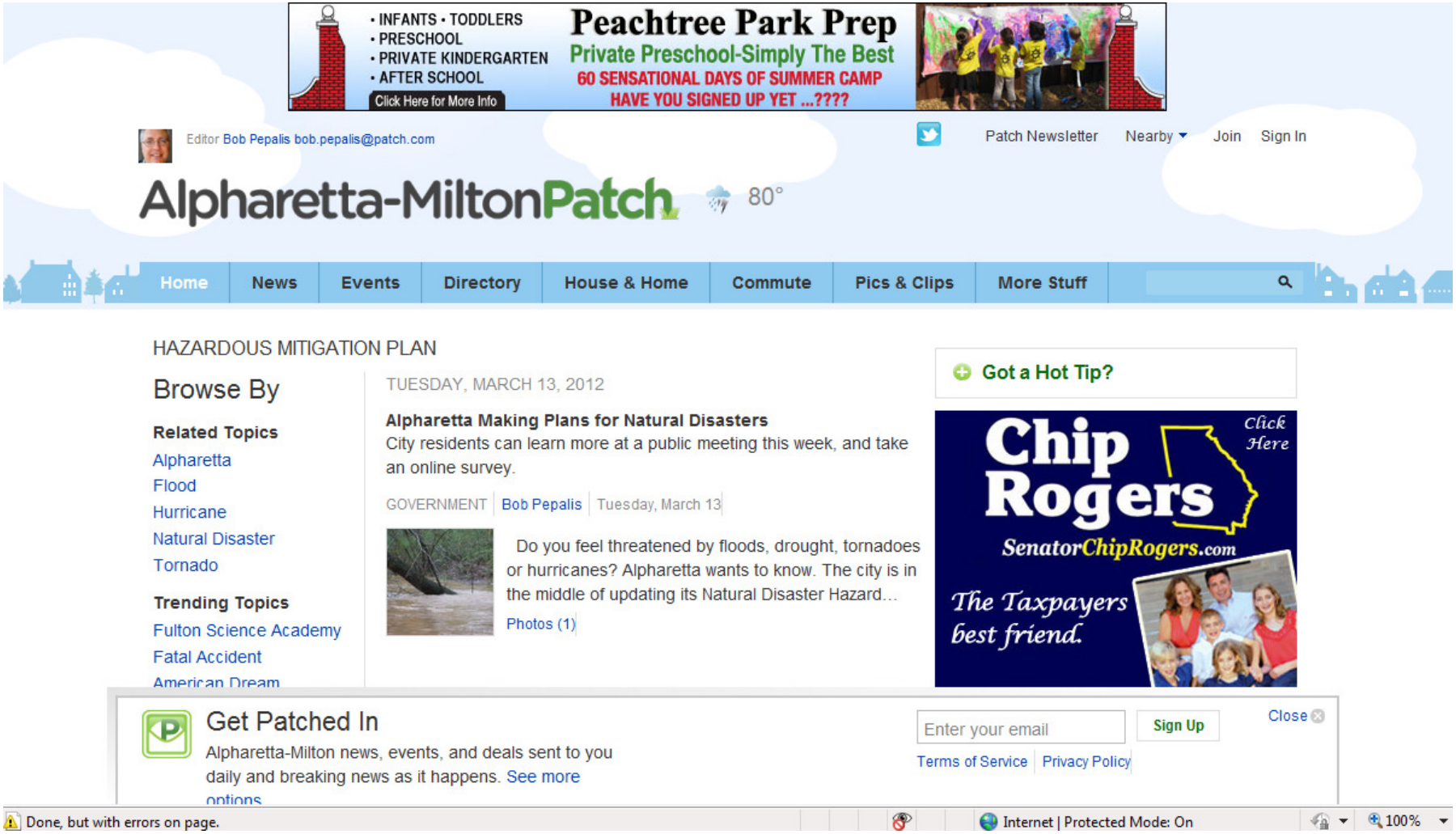

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2012 Alpharetta Hazard Mitigation Plan Survey

Community Edit

Design Survey Collect Responses Analyze Results

View Summary
Browse Responses
Filter Responses
Crosstab Responses
Download Responses
Share Responses

Default Report + Add Report

Response Summary

Total Started Survey: 20
Total Completed Survey: 20 (100%)

PAGE: 1

1. Please rate each of the following hazards on a scale of 1 (no concern) to 3 (high concern) indicating the level of threat each presents to your neighborhood, home, or business property. (Select N/A for hazards that are not applicable) Create Chart Download

	1 Low Threat	2 Moderate Threat	3 High Threat	N/A	Response Count
Floods	**45.0% (9)**	**45.0% (9)**	5.0% (1)	5.0% (1)	20
Wind Storms	15.0% (3)	**55.0% (11)**	30.0% (6)	0.0% (0)	20
Epidemic	**70.0% (14)**	25.0% (5)	0.0% (0)	5.0% (1)	20
Winter Storms	40.0% (8)	**45.0% (9)**	15.0% (3)	0.0% (0)	20
Drought	20.0% (4)	**40.0% (8)**	35.0% (7)	5.0% (1)	20
Hazardous Materials	**50.0% (10)**	30.0% (6)	15.0% (3)	5.0% (1)	20
Tornadoes	15.0% (3)	**45.0% (9)**	40.0% (8)	0.0% (0)	20
Extreme Heat	20.0% (4)	**50.0% (10)**	25.0% (5)	5.0% (1)	20
Nuclear Event	**55.0% (11)**	25.0% (5)	10.0% (2)	10.0% (2)	20
Wildfires	**50.0% (10)**	35.0% (7)	10.0% (2)	5.0% (1)	20
Expansive Soils	**75.0% (15)**	10.0% (2)	5.0% (1)	10.0% (2)	20
Ground Transportation Incident	**35.0% (7)**	**35.0% (7)**	20.0% (4)	10.0% (2)	20
Landslide and Mudflow	**60.0% (12)**	15.0% (3)	0.0% (0)	25.0% (5)	20
Summer Storms	20.0% (4)	**45.0% (9)**	35.0% (7)	0.0% (0)	20
Aviation Incident	**85.0% (17)**	5.0% (1)	5.0% (1)	5.0% (1)	20
Earthquake	**90.0% (18)**	5.0% (1)	0.0% (0)	5.0% (1)	20
Hail	20.0% (4)	**55.0% (11)**	25.0% (5)	0.0% (0)	20
				answered question	20
				skipped question	0

1. Please rate each of the following hazards on a scale of 1 (no concern) to 3 (high concern) indicating the level of threat each presents to your neighborhood, home, or business property. (Select N/A for hazards that are not applicable)

Create Chart Download

Urban Fire	**50.0% (10)**	35.0% (7)	10.0% (2)	5.0% (1)	20
Motor Vehicle Incident	30.0% (6)	**40.0% (8)**	30.0% (6)	0.0% (0)	20
Thunder Storms	10.0% (2)	40.0% (8)	**50.0% (10)**	0.0% (0)	20
Utility Mishap	**45.0% (9)**	**45.0% (9)**	10.0% (2)	0.0% (0)	20
Mass Casualty Incident	**75.0% (15)**	25.0% (5)	0.0% (0)	0.0% (0)	20
				answered question	20
				skipped question	0

2. If you live in Alpharetta, do you have adequate basic homeowners insurance to cover the hazards that could impact your home?

Create Chart Download

	Response Percent	Response Count
Yes, my insurance coverage should be adequate	**57.9%**	11
No, I don't believe my insurance coverage would be adequate for a major disaster	15.8%	3
Unsure	5.3%	1
I do not have an insurance policy	0.0%	0
Not applicable, I rent my residence or place of business	5.3%	1
I do not live in the city limits of Alpharetta	15.8%	3
answered question		19
skipped question		1

3. Do you have any other insurance (flood, sinkhole, etc.)?

Download

	Response Count
Show Responses	14
answered question	14
skipped question	6

4. Did you know that most standard homeowner's insurance policies do not cover rising water (flooding) or minor subsidence (sinkhole)?

Create Chart Download

	Response Percent	Response Count
Yes	**85.0%**	17
No	15.0%	3
answered question		20
skipped question		0

5. Are you aware that you could have to comply with current local / state codes, ordinances, and laws that would affect rebuilding and recovery in the wake of a disaster? Create Chart Download

	Response Percent	Response Count
Yes	80.0%	16
No	20.0%	4
	answered question	20
	skipped question	0

6. What are you doing to reduce risk of damage from natural and human-caused hazards? (choose all that apply) Create Chart Download

	Response Percent	Response Count
Defensible space landscaping (clear vegetation around house to reduce wildfire risk)	21.1%	4
Enhanced homeowner insurance coverage (sinkhole, additional wind coverage)	0.0%	0
Optional flood insurance	0.0%	0
Installed backflow prevention device	10.5%	2
Roof retrofit (fire resistant shingles, hurricane brackets, etc.)	5.3%	1
Strengthened openings (doors, windows, and/or garage door to reduce high0hazard wind risk)	5.3%	1
I have done no additional risk reduction	63.2%	12
	Other (please specify) Show Responses	2
	answered question	19
	skipped question	1

7. If you work in Alpharetta, is your place of work in a hazardous location? (choose all that apply) Create Chart Download

	Response Percent	Response Count
High-risk flood zone	0.0%	0
Evacuation zone	0.0%	0
Wind-borne debris zone	5.6%	1
I don't know	27.8%	5
We are not located in a hazardous location	33.3%	6
I do not work in the city limits of Alpharetta	33.3%	6
	Other (please specify) Show Responses	1
	answered question	18
	skipped question	2

8. Does your employer have a plan for disaster recovery in place? Create Chart Download

	Response Percent	Response Count
Yes	58.8%	10
No	5.9%	1
I do not know	35.3%	6
answered question		17
skipped question		3

9. What recommendations do you have for Alpharetta to improve identifications, prioritiaztion, and implementation of hazard mitigation actions (i.e. retrofit infrastructure, upgrade building codes,etc.) Download

	Response Count
Hide Responses	11

Responses (11) | Text Analysis | My Categories (0)

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Showing **11** text responses No responses selected

I am concerned about the risk of flooding along the Greenway based on the new bridge @ Kimball and other development in the vicinity of the Greenway.
4/10/2012 4:02 PM View Responses

Hazard threat analysis needs to be prominently posted. In addition, basic plans should also be available.
3/26/2012 7:58 PM View Responses

Allow homeowners to decide if a tree constitutes a jeopardy against their home rather than having it done by persons with absolutely "no skin in the game". I live in Windward which has almost a religious zeal not to remove ANY trees. They blame the City of Alpharetta.
3/15/2012 10:58 PM View Responses

none
3/14/2012 5:06 PM View Responses

Make available the current rebuilding codes in plain language that would be manditory in a disaster. What changes by years of implementation. Also what percent of damage to the dwelling would bring into effect the new standards?
3/14/2012 4:00 PM View Responses

Increased emphasis and action to inform public of hazards and remedies.

answered question	11
skipped question	9

10. The City plans to host a Mitigation Strategy Public Meeting on March 15, 2012 at 7:00pm at the Engineering / Public Works Department located at 1790 Hembree Road, Alpharetta, Georgia 30009. Do you plan to attend this meeting? Would you like notice of future meetings? (Please select all that apply) Create Chart Download

	Response Percent	Response Count
Yes I plan to attend March 15	5.0%	1
No I will not be able to attend March 15	80.0%	16
Yes I would like information about future meetings	35.0%	7
No I do not need information about future meetings	15.0%	3
answered question		20
skipped question		0

10. The City plans to host a Mitigation Strategy Public Meeting on March 15, 2012 at 7:00pm at the Engineering / Public Works Department located at 1790 Hembree Road, Alpharetta, Georgia 30009. Do you plan to attend this meeting? Would you like notice of future meetings? (Please select all that apply) Create Chart Download

Please provide an email address for notification of future meetings Show Responses	9
answered question	**20**
skipped question	**0**

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Alpharetta, GA
Hazard Mitigation Plan Update

Public Meeting - March 15, 2012, 7:00PM

What is the Hazard Mitigation Plan?

- A collection of information to help understand the City's vulnerability to natural hazards and a strategy to help reduce risks to life and property from these hazards
  - Chapter 1 – Introduction
  - Chapter 2 – Regulatory Requirements
  - Chapter 3 – County Profile
  - Chapter 4 – Planning Process
  - Chapter 5 – Risk Assessment
  - Chapter 6 – Mitigation Strategy
  - Chapter 7 – Plan Maintenance

Why Do We Plan?

- It's required
  - Creating a plan pursuant to Section 322 of the Disaster Mitigation Act of 2000 (Public Law 106-390) keeps communities eligible for the following:
  - The **Hazard Mitigation Grant Program** (HMGP)
  - The **Pre-Disaster Mitigation** Grant Program (PDM)
  - The **Flood Mitigation Assistance** Program (FMA)
  - The **Repetitive Flood Claims** Program (RFC)
  - The **Severe Repetitive Loss** Program (SRL)

Why *Should* We Plan?

Because…Disasters are not fun

After a Disaster…

Tensions

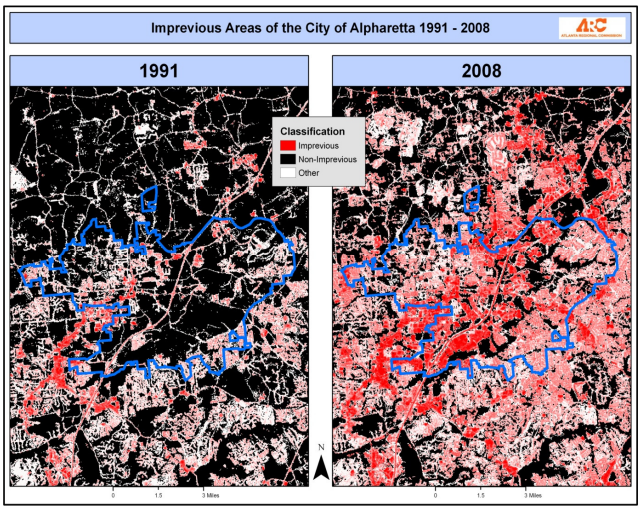
Resources

Confusion

Future Direction

Why Do We *Update* the Plan?

- Changes to the Built Environment
- Changes in Population and Demographics
- Changes in Frequency of Hazard Events



Orientation to Hazard Mitigation Planning

Developing a mitigation plan is your opportunity to **"blue-sky" plan for bad days.**

It allows you to **prioritize loss reduction activities with limited resources in the present** and let's you plan to **prioritize for potentially very large amounts of funding in a post-disaster environment.**

Where are we in the Planning Process?

- Held a Kickoff Meeting with our Mitigation Advisory Committee (MAC) in November 2011 and One Earlier Today
  - Members of Alpharetta City Government
  - Fulton County Emergency Management Staff
  - Georgia Emergency Management Agency Staff
- Surveyed the MAC for Prioritization of Hazards
  - Rank Natural Hazards Based on Historical and Perceived Threat
- Developed the Preliminary Risk Assessment
  - Analyzed Priority Hazards for Impacts to the Community
- Developed the Preliminary Capability Assessment
  - City Staff Provided Input into their Ability to Prepare and Respond to Disasters (Plans in Place, Staff's Technical Ability, Financial Mechanisms, etc)

Hazards, Hazards, Everywhere

Wildfire
Flooding
Tornadoes
Winter Storm
Drought
Heat Wave
Tropical Systems
Earth
quake
Sink es
hol

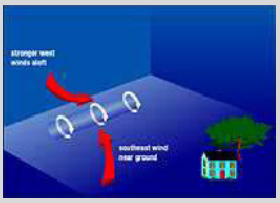
Hazard Prioritization by the MAC

Table 5-1: Alpharetta Risk Assessment Matrix

Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Tornadoes	L	L	L	H	13
Winter Storm	P	L	L	H	12
Severe Weather	P	L	L	L	11
Drought	P	P	L	L	10
Flood	P	P	L	L	10
Heat Wave	P	P	P	P	8
Wildfire/Urban Interface	P	P	P	P	8
Dam Failure	U	P	P	P	7
Tropical System	U	P	P	P	7
Earthquake	U	U	P	P	6
Sinkhole	U	U	U	P	5
Average Risk by Level	1.73	2.09	2.36	2.64	

Tornado

How a Tornado Forms



Before thunderstorms develop, a change in wind direction and an increase in wind speed with increasing height create an invisible, horizontal spinning effect in the lower atmosphere

Rising air within the thunderstorm updraft tilts the rotating air from horizontal to vertical.

An area of rotation, 2-6 miles wide, now extends through much of the storm. Most strong and violent tornadoes form within this area of strong rotation.

Tornado

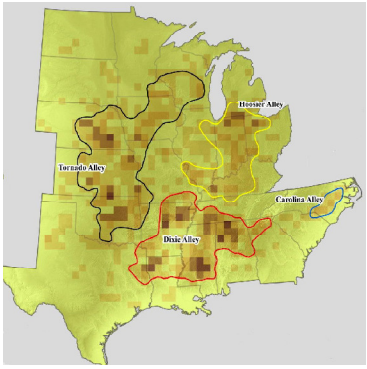
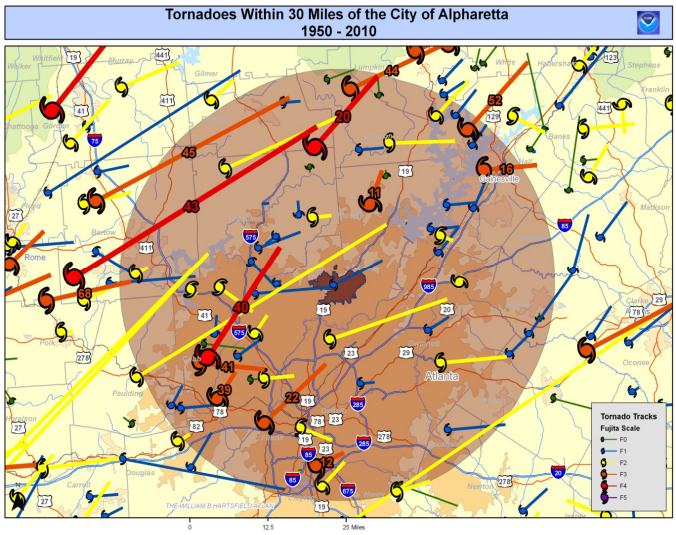


Table 5-5: Enhanced F Scale for Tornado Damage

EF Number	3 second gusts	Damage Description
F-0	65 - 85 mph	Light Damage: Chimneys are damaged, tree branches are broken, shallow-rooted trees are toppled.
F-1	86 - 110 mph	Moderate Damage: Roof surfaces are peeled off, windows are broken, some tree trunks are snapped, unanchored manufactured homes are overturned, and attached garages may be destroyed.
F-2	111 - 135 mph	Considerable Damage: Roof structures are damaged, manufactured homes are destroyed, debris becomes airborne, large trees are snapped or uprooted.
F-3	136 - 165 mph	Severe Damage: Roofs and some walls are torn from structures, some small buildings are destroyed, non-reinforced masonry buildings are destroyed, most trees in forest are uprooted.
F-4	166 - 200 mph	Devastating Damage: Well-constructed houses are destroyed, some structures are lifted from foundations and blown some distance, cars are blown some distance, large debris becomes airborne.
F-5	Over 200 mph	Incredible Damage: Strong frame houses are lifted from foundations, reinforced concrete structures are damaged, automobile-sized debris becomes airborne, trees are completely debarked.

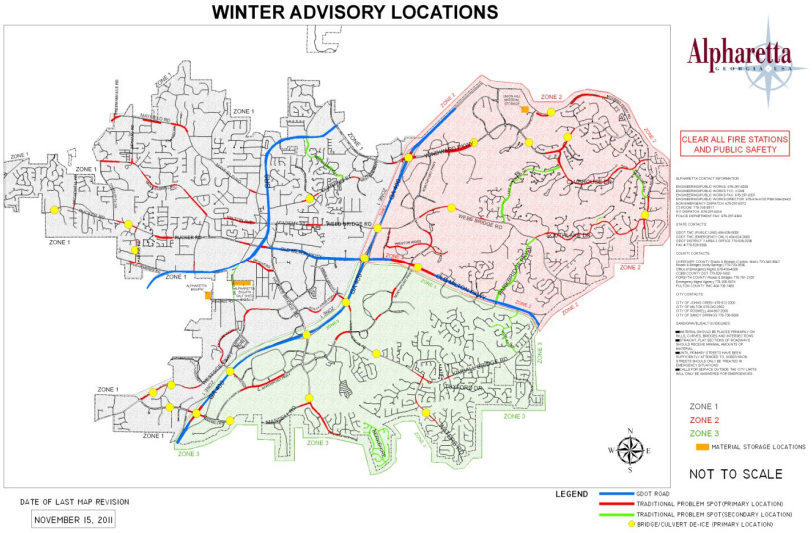
Tornado



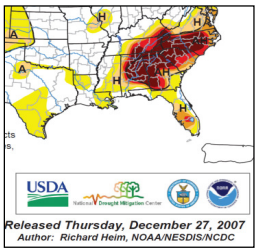
Tornado

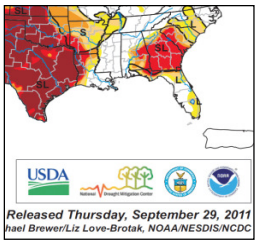
F3/ F4 Tornadoes within 30 Miles of the City of Alpharetta (1950 – 2010)								
ID	Date	Time	F-Scale	Injuries	Fatalities	Loss ($1,000)	Length (Miles)	Width (Feet)
11	4/2/1970	4:00am	3	0	0	$5 - $50	6.5	50
12	1/10/1972	10:25am	3	9	1	$50 - $500	6.3	200
16	12/13/1973	11:20am	3	21	0	$500 - $5,000	9.5	200
20	4/3/1974	6:30pm	4	30	6	$500 - $5,000	17.7	200
22	3/24/1975	5:30am	3	152	3	$50,000 - $500,000	14.8	500
39	3/29/1991	6:30am	3	25	0	$5,000 - $50,000	5.0	1320
40	11/22/1992	9:45am	4	46	0	$5,000 - $50,000	20.0	867
41	2/21/1993	7:15pm	3	3	0	$5,000 - $50,000	8.0	880
43	3/27/1994	11:15am	4	20	3	$5,000 - $50,000	49.0	1760
44	3/27/1994	12:15pm	3	45	3	$5,000 - $50,000	44.0	2613
45	3/27/1994	1:00pm	3	70	9	$5,000 - $50,000	40.0	2613
52	3/20/1998	5:25am	3	171	12	Unknown	4.0	100
68	3/15/2008	10:25am	3	2	2	$5,000 - $50,000	16.9	880
			Totals	594	39			

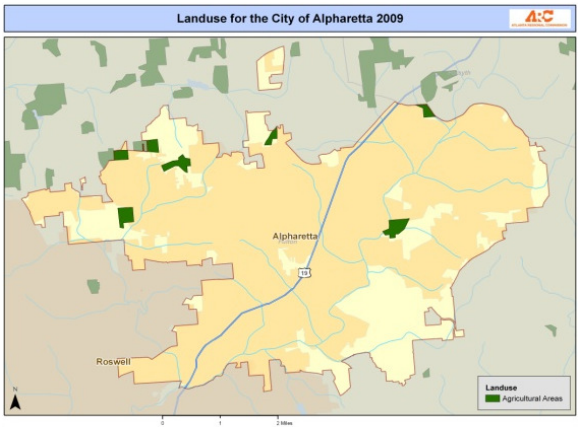
Winter Storms



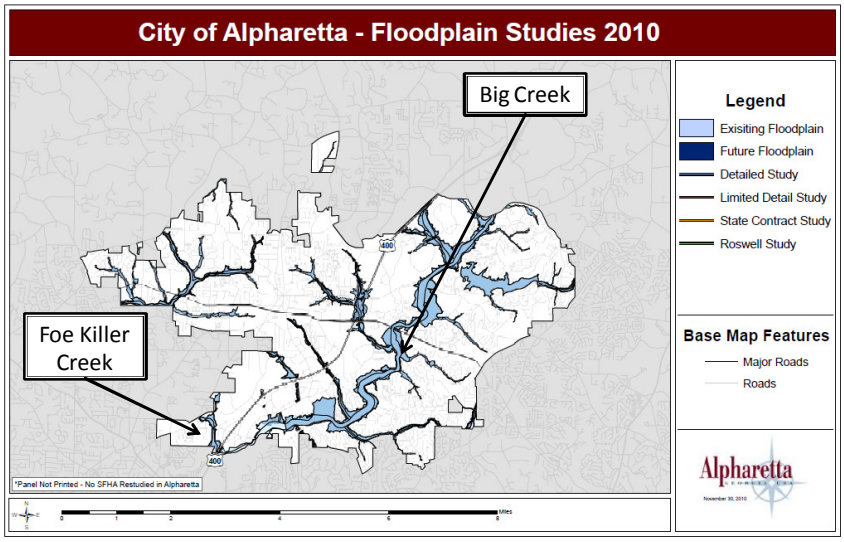
Drought





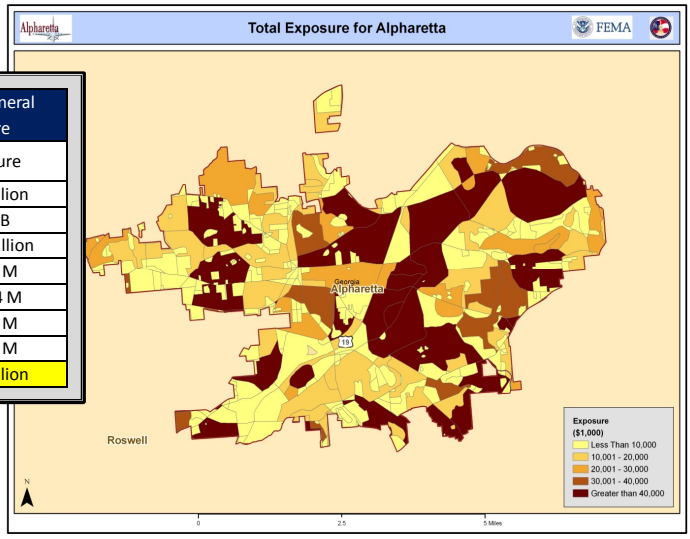


Flood



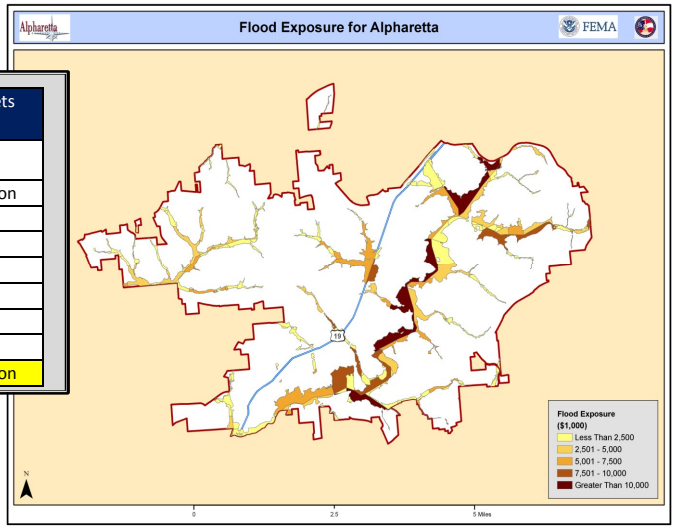
Community Exposure

The City of Alpharetta General Building Stock Exposure	
Category	Exposure
Residential	$2.6 Billion
Commercial	$1.8 B
Industrial	$448 Million
Agriculture	$15.3 M
Religious	$116.4 M
Government	$12.1 M
Education	$40.5 M
Total	$5.1 Billion

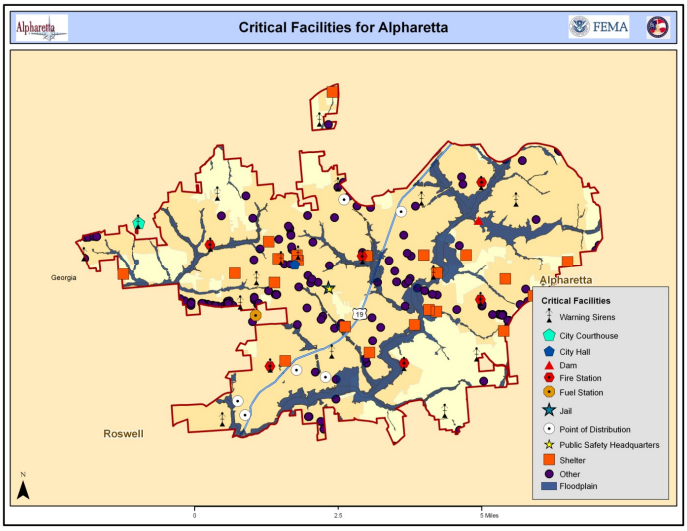


1% Annual Chance Flood Exposure

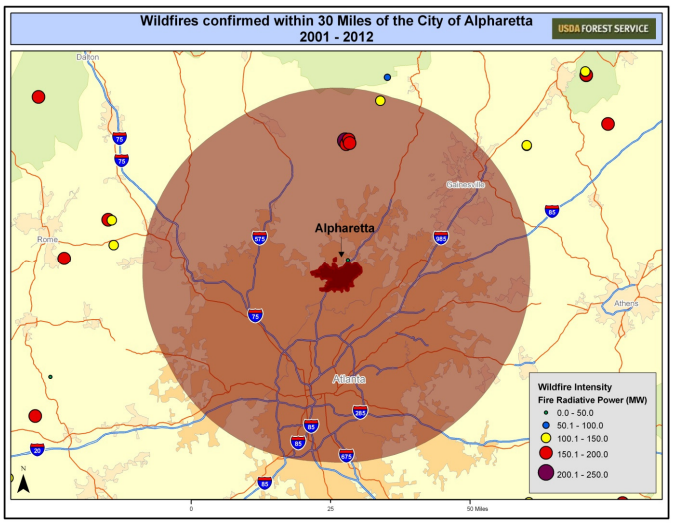
The City of Alpharetta Assets Exposed in Floodplain	
Category	Exposure
Residential	$282.9 Million
Commercial	$147.4 M
Industrial	$34.9 M
Agriculture	$1.3 M
Religious	$5.8 M
Government	$723,000
Education	$2.3 M
Total	$475.6 Million



Critical Facilities

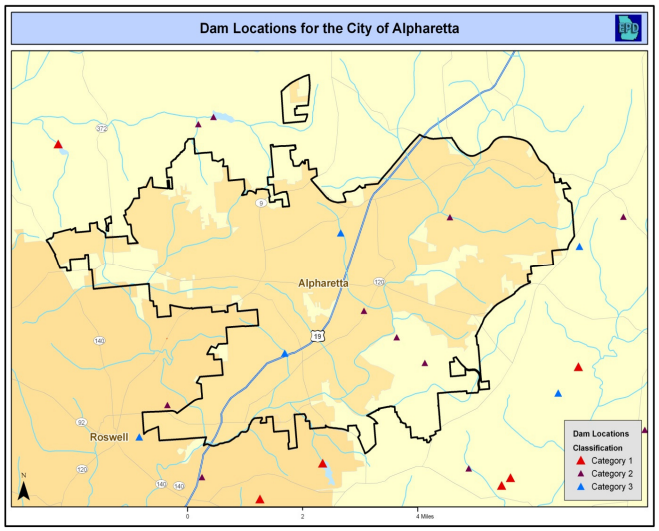


Wildfires

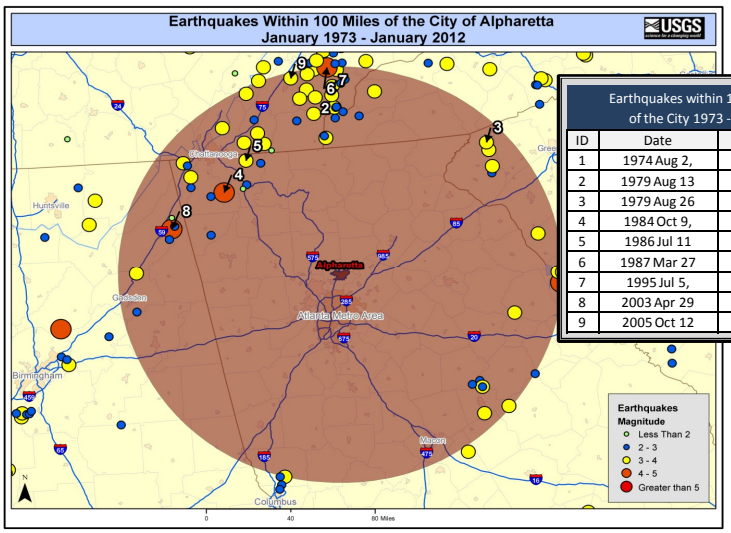


Dam Failure

Dam Categories and Potential Impact		
Classification	Loss of Human Life	Economic, Environmental, of Lifeline Loss
High (Cat 1)	Probable, >1	Yes (not necessary for classification)
Significant (Cat 2)	None expected	Yes
Low (Cat 3)	None expected	Low & generally limited to owner



Earthquake



Earthquakes within 100 Miles of the City 1973 - 2012		
ID	Date	Magnitude
1	1974 Aug 2,	4.9
2	1979 Aug 13	3.7
3	1979 Aug 26	3.7
4	1984 Oct 9,	4.2
5	1986 Jul 11	3.8
6	1987 Mar 27	4.2
7	1995 Jul 5,	3.7
8	2003 Apr 29	4.6
9	2005 Oct 12	3.6

Exposure of Countywide Hazards

Table 5-4: Summary of Exposure by Hazard – City of Alpharetta				
Hazard	Number of Properties		Value of Properties	
	Residential	Non-Residential	Residential	Non-Residential
Dam Failure	N/A	N/A	N/A	N/A
Drought*	16,960	2,166	$5,129,366,231	$6,105,778,810
Earthquake*	16,960	2,166	$5,129,366,231	$6,105,778,810
Flood	N/A	N/A	N/A	N/A
Heat Wave*	16,960	2,166	$5,129,366,231	$6,105,778,810
Severe Weather*	16,960	2,166	$5,129,366,231	$6,105,778,810
Sinkhole	N/A	N/A	N/A	N/A
Tornadoes*	16,960	2,166	$5,129,366,231	$6,105,778,810
Tropical System*	16,960	2,166	$5,129,366,231	$6,105,778,810
Wildfire/Urban Interface	N/A	N/A	N/A	N/A
Winter Storm*	16,960	2,166	$5,129,366,231	$6,105,778,810

Where Do We Go From Here?

- We know the hazards that we want to focus on (Tornado, Winter Storm, Severe Weather, Drought, and Flood)
- We know our approximate exposure to these hazards (slides shown earlier)
- Now we need to **strategize** about how we reduce our risks from these hazards
  - What actions do we want to take?
  - Are these actions feasible (monetarily, politically, technologically, etc)?
  - We need to prioritize the proposed actions based on the feasibility and projected effectiveness of the action

Creation of Mitigation Actions

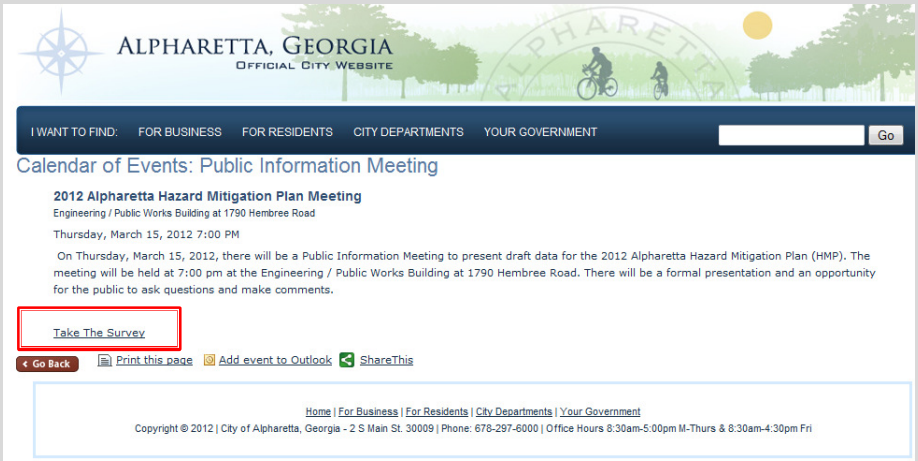
Atlanta-Fulton County Hazard Mitigation Plan | 2010

Table 6-3: Atlanta-Fulton County Potential Hazard Mitigation Actions

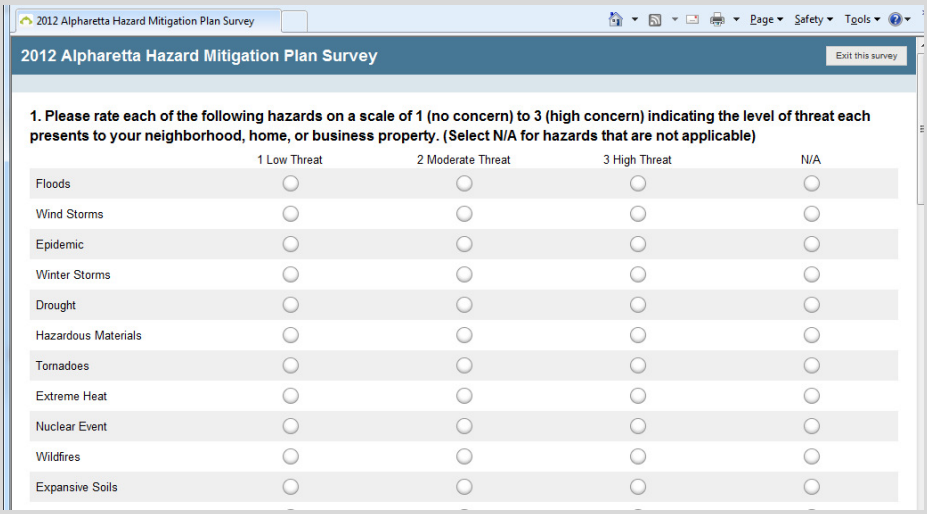
Project Number	Mitigation Action and Description	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe For Completion	STAPLEE Score
40.0007	Retrofit Police Station for improved wind loading capacity	Palmetto	Severe Weather; Tornado; Winter Storm; Tropical System	2.10 6.4	Property Protection	$15,000	HMA, DHS, Local	1 year from date of funds availability	8
40.0008	Harden Community Center which functions as a first responder shelter. Reinforce roof for wind loading capacity as well replace windows for wind resistance	Palmetto	All hazards	2.10 6.4	Property Protection	$110,000	HMA, Local,	2 years from date of funds availability	8
40.0009†	Acquire stream in Palmetto Oaks to preserved as green space and improve flood plain management	Palmetto	Flooding	2.7 5.2 5.3 5.4	Natural Resource Protection	$300,000	HMA, FMA, Local	2 – 3 years from date of funds availability	7
40.0010	Acquire land on Mixon Ave to prevent further dense development as part of their green space expansion program	Palmetto	Wildfire/Urban Interface; Tornado; Severe Weather	4.3 5.3 5.5	Natural Resource Protection	$150,000	HMA, Local	2 – 3 years from date of funds availability	7
	Retrofit Fire Station #42 to be more wind, impact resistant, surge resistant, improve	Milton	Severe Weather; Winter Storm;	2.10 2.11	Property Protection	$1.5M	HMA, SCG,	1 year from date of funds	11

Keep Your Eye Out for Web Announcements

Keep Your Eye Out for Web Announcements



Participate by Taking the 10-Question Survey



Thanks for Participating

- For further information:
  - Alpharetta's Website
  - Jill Bazinet, Alpharetta
    - jabzinet@alpharetta.ga.us
  - Chris Zambito, Dewberry
    - czambito@dewberry.com

Planning Process Appendix

AlpharettaHMP

Home

Announcements

The first complete plan draft has been loaded 5/2/2012 10:38 AM
by Chris Zambito
The draft has been loaded to shared documents\plan drafts folder. It still needs some cleaning relative to tables and figures, but the content is there for review.

Alpharetta Hazard Survey and MAC Participants Added 11/16/2011 10:32 AM
by Chris Zambito
The MAC Meeting 1 powerpoint and sign-in sheet have been added to the shared documents (accessible via the link at the left). I've also added the hazard survey to the "links" section on the right of the home page.

<-- Shared Documents 11/8/2011 11:40 AM
by Chris Zambito
The "Shared Documents" link on the left is where you will find items such as the 2004 and recent mitigation plans for Fulton County. You will also find the list of contacts and other pertinent info for the mitigation planning process in...

Welcome to the Alpharetta HMP sharepoint 10/25/2011 10:19 AM
by Chris Zambito
This sharepoint site will be where we share information and documents related to the Alpharetta Hazard Mitigation Plan. Additional participants will be granted access based on permission of staff from the City of Alpharetta.

Add new announcement

Events

There are currently no upcoming events. To add a new event, click "Add new event" below.

Add new event

Links

- Alpharetta Demographics (ArcGIS Online)
- Alpharetta Natural Hazards (ArcGIS Online)
- FEMA Hazard Mitigation Planning "Blue Book"
- Alpharetta Census Quick Facts
- Hazard Prioritization Survey

Add new link

Alpharetta HMP Appendix
Local Jurisdiction Meeting—City of Alpharetta
November 15, 2011

Meeting Attendees—

Name	Affiliation	Title	Phone	Email
Jill Bazinet	City of Alpharetta	Sr. Stormwater Engineer	678.208.6200	jbazinet@alpharetta.ga.us
James Brooker	City of Alpharetta	Building Inspector	678.297.6080	jbrooker@alpharetta.ga.us
Earl Chatham	City of Alpharetta	Sr. Operations Manager	678.297.6200	echatham@alpharetta.ga.us
James Drinkard	City of Alpharetta	Assistant City Administrator	678.297.6014	jdrinkard@alpharetta.ga.us
John Maloney	City of Alpharetta	Sr. Engineering Traffic Tech	678.297.6200	jmaloney@alpharetta.ga.us
Derek Nelson	City of Alpharetta	Risk Manager	404.304.7797	dnelson@alpharetta.ga.us
Joe Popadics	City of Alpharetta	City EM Coordinator	770.403.3755	jpopadics@alpharetta.ga.us
Craig Schmitz	City of Alpharetta	Battalion Chief	678.776.9523	cschmitz@alpharetta.ga.us

Name	Affiliation	Title	Phone	Email
Eli Veith	City of Alpharetta	Traffic Signal Engineer	678.267.6200	eveith@alpharetta.ga.us
Pansy Ricks	AFCEMA	Deputy Director	404.703.5600	Pansy.Ricks@Fultonco.ga.gov
Kelly Keefe	GEMA	Risk Reduction Specialist/Hazard Mitigation Planner	404.635.2125	Kelly.keefe@gema.ga.gov
Chris Zambito	Dewberry	Project Manager	813.421.8639	czambito@dewberry.com
Sam Fleming	Dewberry	Sr. Project Manager	678.537.8627	sfleming@dewberry.com
Chee Hill	Dewberry	Geographer	678.537.8621	chill@dewberry.com
Jason Brown	Dewberry	Geographer	678.537.8620	jfbrown@dewberry.com

Meeting Start: 2:30 pm EST

1. Welcome/Introductions
    - Attendees introduced themselves
    - Discussion of what we are gathered for

2. Overview of Agenda and Meeting Objectives
    - Welcome/ List the Name of Attendees
    - Overview of Agenda/ Meeting Objectives
    - Explanation of HMP
    - Mitigation Actions Past, Current, Future
    - Data Collection
    - Introduction to sharepoint site
    - Survey

3. Explanation of HMP Process
    - Described the Planning process and started to identify potential stakeholders such as Universities, Churches and Business Groups.
    - Identify ways to get the public in the planning process such and identify representatives for groups of people and public notification of the Hazard Mitigation Plan meetings.
    - Explained in detail key benefits of having an active and useable mitigation plan for purposes of reducing risk to the community and in the event of a disaster being eligible for HMA funds.
    - Emphasized that during an emergency is not the time to create a mitigation plan. There will be too many things to handle. Putting a good deal of effort into the plan now and will help in alleviate the stress during an event.

4. Explanation of the Federal Requirements

    Alpharetta must:
    - Gain approval from FEMA, the State and the organization responsible for the Fulton County Plan to become an addition to the current countywide plan
    - Alpharetta must review the AFC HMP Risk Assessment and agree to it
    - Alpharetta must agree with the stated Mitigation Goals. Also an action item must be added
    - Alpharetta must document involvement of the general public and local government in the planning process
    - Draft appendix and copy of AFC HMP and a letter of concurrence from Fulton county provided to the State for Review
    - Adopt the plan

5. Timeline for Alpharetta HMP
    - The timeline was proposed to have the plan done by the end of the contract. It was mentioned that no projects were outstanding due to not having the plan approved.
    - Identified that the Fulton County Plan will be general to Alpharetta with limited specifics to the city. This is the opportunity to focus on the city, its vulnerabilities and its ability to reduce those with specific actions.
    - 2013-2014 will be another round of updates to the plan.

6. Discussion of Different chapters in the HMP
    - Discussed the Regulatory Requirements
    - County Profile
    - Planning Process
    - Risk Assessment
    - Mitigation Strategy
    - Plan Maintenance
    - Discussed potential of a capabilities section which would help identify the strengths and weakness the city has and how they might be leveraged to better utilize mitigation actions.

7. Identified Community hazards.
    - Reviewed the hazards identified in the Fulton County plan
    - Floods are very concerning. There is also a major dam in the city with houses near the spillways and emergency spillways. This dam is not maintained by the city.
    - Winter storms caused havoc and the city is becoming better prepared for them but still have concerns
    - Tornadoes threaten all areas of the community and there limited sheltering options for those who are at highest risk.
    - Explained hard and soft mitigation actions such as acquisition and demolition and building codes, acquiring data and planning items.
    - Conversed about the social vulnerability of the city. Concerned about the vulnerability to the aging population in the city.
    - Explained that a risk analysis is a combination between the probability of occurrence and the order of magnitude and the analysis of vulnerabilities and impacts of the events. Focused on what was in the Fulton County plan which used parcel data to create a building stock of the county in order to provide an analysis of vulnerabilities.
    - Discussed that each hazard should have at least one mitigation action. There might be specific actions that should be pursued and this is an avenue to do it.

---BREAK---

8. Communication and Outreach to community
    - Discussed ways to reach the stakeholders and the public by either finding representatives for the group, broadcasting on public t.v. or online web surveys and sharepoint sites.
    - Communication department has used survey monkey online and it has worked very well.
    - Could have specific meetings for the hazard mitigation plan or could combine meetings such as a CIP meeting and the HMP meeting at the same time. That way there is a significant effort to reach out to everyone who might be affected.
    - Consensus was to use online advertisement by also put things in the paper so everyone is aware.
    - Need at least two public meetings and also to adopt the plan.
    - Guided through an example of the online survey that everyone all stakeholders should fill out.

9. Additional Stakeholders to reach out to.
    - Identified others who should be on the MAC team such as the city's GIS, Grants, and Parks and Recreation departments especially since Parks and Rec manage shelters.
    - Identified other stakeholders such as the United Way, Red Cross, and North Fulton Community Charities.
    - Identified utilities and businesses such as Georgia Power and Atlanta Gas line. Water and Sewer is controlled by the county.
    - Identified the school system both private and public and churches such as the North American Mission Board as potential stakeholders.
    - Other entities included the Security Council, Homeland Security Panel and the Council on Aging.

10. Action Items
    - Prioritize Risk – Online Survey
    - Prioritize Mitigation Actions
    - Gather outreach and buy in from the community
    - Participate in Maintenance of the plan
    - Identify other plans that might be used in conjunction with the Hazard Mitigation Plan such as Comprehensive Plan or Emergency Operation Plans or Senior Livability Analysis. This would be documented in the capabilities assessment.
    - The MAC Sharepoint site was introduced for coordination, and a demonstration was given on how to navigate the site. Decided to meet back in a few weeks to discuss the results of the Hazard Identification and Risk Assessment specific to the City of Alpharetta.
    - Identified MAC points of contact for the risk and capabilities assessments.

Meeting Completion: 4:00 pm EST

Signature or Initials	Last	First	Agency	Department	Title	Phone	Email	Project POC
	Bazinet	Jill	Alpharetta	Engineering Public Works	Sr. Stormwater Engineer	678.208.6200	jbazinet@alpharetta.ga.us	Yes
	Brooker	James	Alpharetta	Community Development	Building Inspector	678 297-6050	jbrooker@alpharetta.ga.us	
	Brown	Jason	Dewberry		Geographer	678.537.8620	jfbrown@dewberry.com	
	Chatham	Earl	Alpharetta	Engineering Public Works	Sr. Operations Manager	678-297-6200	echatham@alpharetta.ga.us	
	Drinkard	James	Alpharetta	Administration	Assistant City Administrator	678-297-6014	jdrinkard@alpharetta.ga.us	
	Fleming	Sam	Dewberry		Sr. Project Manager	678.537.8627	sfleming@dewberry.com	
	Hill	Chee	Dewberry		Geographer	678.537.8621	chill@dewberry.com	
	Keefe	Kelly	GEMA	Hazard Mitigation	Risk Reduction Specialist/Hazard Mitigation Planner	404.635.2125	kelly.keefe@gema.ga.gov	
	Maloney	John	Alpharetta	Engineering Public Works	Sr. Enginering Traffic Tech	678-297-6200	jmaloney@alpharetta.ga.us	
	Nelson	Derek	Alpharetta	Finance	Risk Manager	404-304-7797	dnelson@alpharetta.ga.us	
	Popadics	Joe	Alpharetta	Public Safety	City EM ~~and Battalion Chief~~ COORDINATOR	770-401-3205 ~~678.297.6329~~	jpopadics@alpharetta.ga.us	Yes
	Schmitz	Craig	Alpharetta	Public Safety	Battalion Chief	6787769523	cschmitz@alpharetta.ga.us	
	Zambito	Chris	Dewberry		Project Manager	813.421.8639	czambito@dewberry.com	Yes
	Veith	Eli	Alpharetta	EPW	Traffic Signal Engineer	6782976200		
↳ on behalf of John Maloney								
Pansy Ricks			AFCEMA	Emerg. Mgmt	Deputy Director	404-730-5600	Pansy.Ricks@fultonco.ga.gov	

5 responses

Summary See complete responses

Contact Information

This will just provide us a means to track participation in the planning process

Contact Information

Please provide name

Jill Bazinet | Joe Popadics | James Brooker | James Drinkard | Craig Schmitz

Please provide name of your agency/department

Alpharetta EPW | Alpharetta Dept. of Public Safety | City of Alpharetta | City of Alpharetta | Public Safety

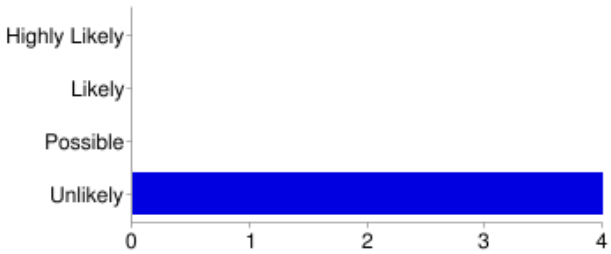
Please provide a work email

jbazinet@alpharetta.ga.us | jpopadics@alpharetta.ga.us | jbrooker@alpharetta.ga.us | jdrinkard@alpharetta.ga.us | cschmitz@alpharetta.ga.us

Likelihood of Hazard Occurrence for each Magnitude/Severity Category

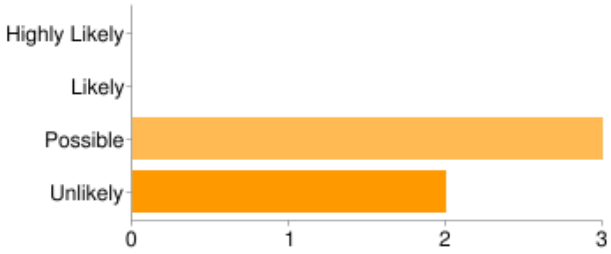
Dam Failure

Please rate the likelihood of occurrence of a dam failure for each of the provided magnitudes - Catastrophic



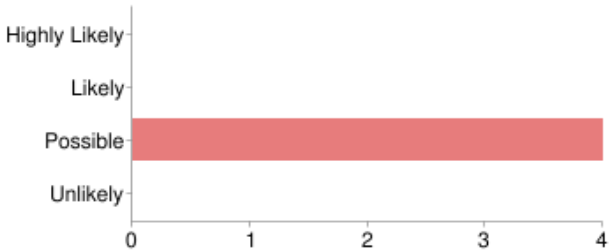
Highly Likely	**0**	0%
Likely	**0**	0%
Possible	**0**	0%
Unlikely	**4**	80%

Please rate the likelihood of occurrence of a dam failure for each of the provided magnitudes - Critical



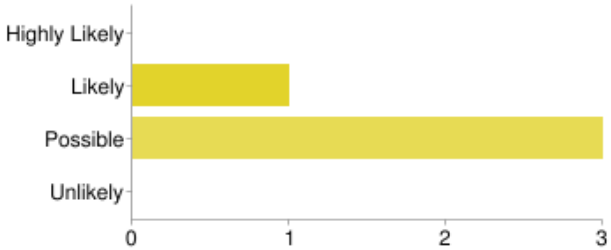
Highly Likely	**0**	0%
Likely	**0**	0%
Possible	**3**	60%
Unlikely	**2**	40%

Please rate the likelihood of occurrence of a dam failure for each of the provided magnitudes - Marginal



Highly Likely	**0**	0%
Likely	**0**	0%
Possible	**4**	80%
Unlikely	**0**	0%

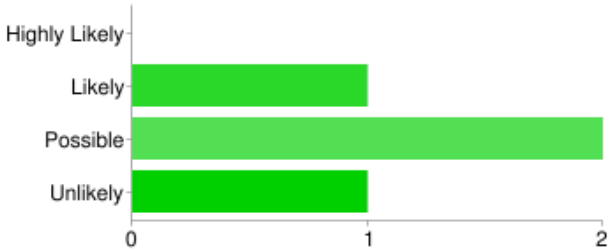
Please rate the likelihood of occurrence of a dam failure for each of the provided magnitudes - Negligible



Highly Likely	**0**	0%
Likely	**1**	20%
Possible	**3**	60%
Unlikely	**0**	0%

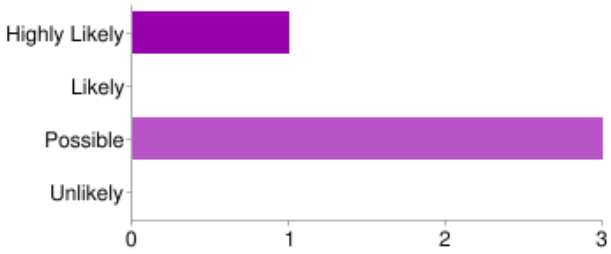
Drought

Please rate the likelihood of occurrence of drought for each of the provided magnitudes - Catastrophic



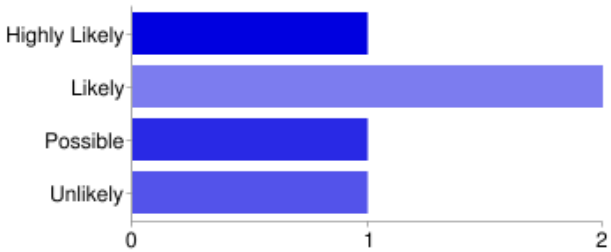
Highly Likely	**0**	0%
Likely	**1**	20%
Possible	**2**	40%
Unlikely	**1**	20%

Please rate the likelihood of occurrence of drought for each of the provided magnitudes - Critical



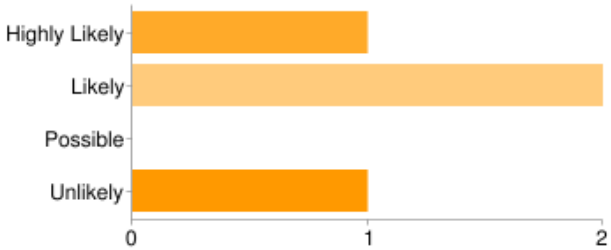
Highly Likely	**1**	20%
Likely	**0**	0%
Possible	**3**	60%
Unlikely	**0**	0%

Please rate the likelihood of occurrence of drought for each of the provided magnitudes - Marginal



Highly Likely	**1**	20%
Likely	**2**	40%
Possible	**1**	20%
Unlikely	**1**	20%

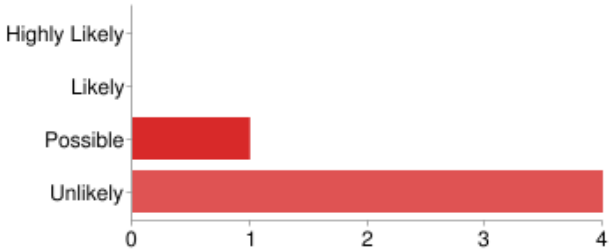
Please rate the likelihood of occurrence of drought for each of the provided magnitudes - Negligible



Highly Likely	**1**	20%
Likely	**2**	40%
Possible	**0**	0%
Unlikely	**1**	20%

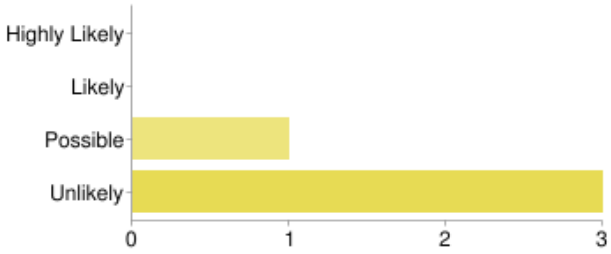
Earthquake

Please rate the likelihood of occurrence of an earthquake for each of the provided magnitudes - Catastrophic



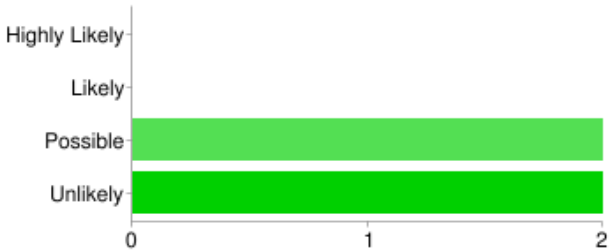
Highly Likely	**0**	0%
Likely	**0**	0%
Possible	**1**	20%
Unlikely	**4**	80%

Please rate the likelihood of occurrence of an earthquake for each of the provided magnitudes - Critical



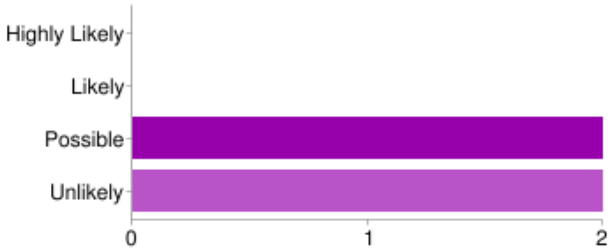
Highly Likely	**0**	0%
Likely	**0**	0%
Possible	**1**	20%
Unlikely	**3**	60%

Please rate the likelihood of occurrence of an earthquake for each of the provided magnitudes - Marginal



Highly Likely	**0**	0%
Likely	**0**	0%
Possible	**2**	40%
Unlikely	**2**	40%

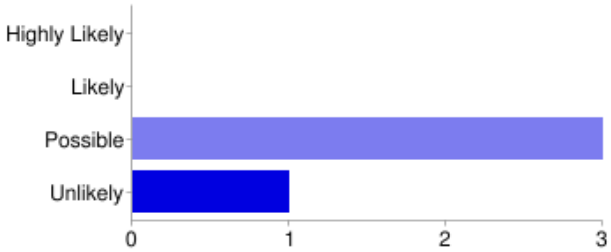
Please rate the likelihood of occurrence of an earthquake for each of the provided magnitudes - Negligible



Highly Likely	**0**	0%
Likely	**0**	0%
Possible	**2**	40%
Unlikely	**2**	40%

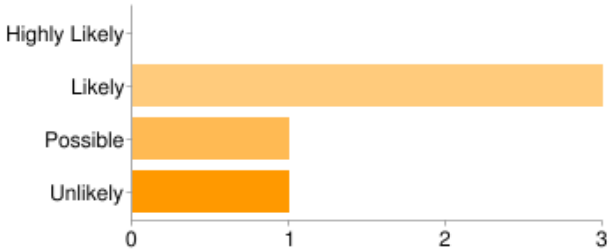
Flood

Please rate the likelihood of occurrence of flood for each of the provided magnitudes - Catastrophic



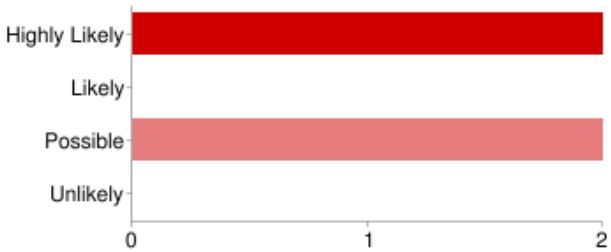
Highly Likely	**0**	0%
Likely	**0**	0%
Possible	**3**	60%
Unlikely	**1**	20%

Please rate the likelihood of occurrence of flood for each of the provided magnitudes - Critical



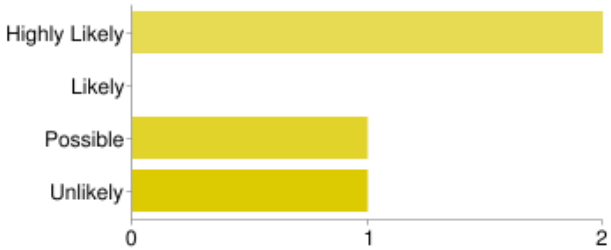
Highly Likely	**0**	0%
Likely	**3**	60%
Possible	**1**	20%
Unlikely	**1**	20%

Please rate the likelihood of occurrence of flood for each of the provided magnitudes - Marginal



Highly Likely	**2**	40%
Likely	**0**	0%
Possible	**2**	40%
Unlikely	**0**	0%

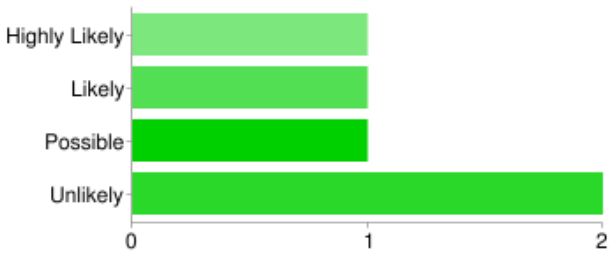
Please rate the likelihood of occurrence of flood for each of the provided magnitudes - Negligible



Highly Likely	**2**	40%
Likely	**0**	0%
Possible	**1**	20%
Unlikely	**1**	20%

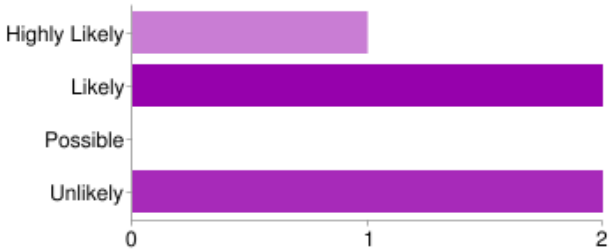
Heat Wave

Please rate the likelihood of occurrence of a heat wave for each of the provided magnitudes - Catastrophic



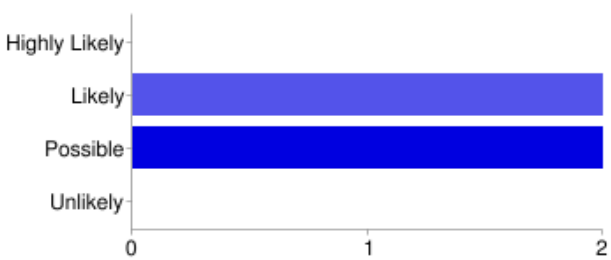
Highly Likely	**1**	20%
Likely	**1**	20%
Possible	**1**	20%
Unlikely	**2**	40%

Please rate the likelihood of occurrence of a heat wave for each of the provided magnitudes - Critical



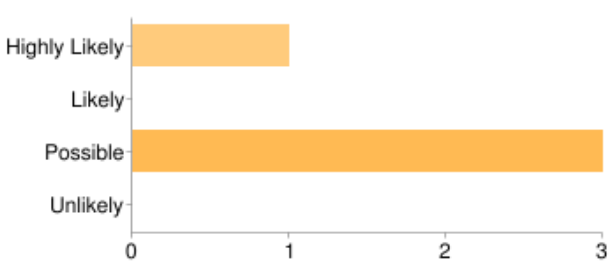
Highly Likely	1	20%
Likely	2	40%
Possible	0	0%
Unlikely	2	40%

Please rate the likelihood of occurrence of a heat wave for each of the provided magnitudes - Marginal



Highly Likely	0	0%
Likely	2	40%
Possible	2	40%
Unlikely	0	0%

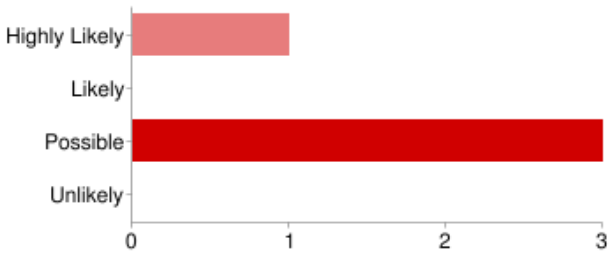
Please rate the likelihood of occurrence of a heat wave for each of the provided magnitudes - Negligible



Highly Likely	1	20%
Likely	0	0%
Possible	3	60%
Unlikely	0	0%

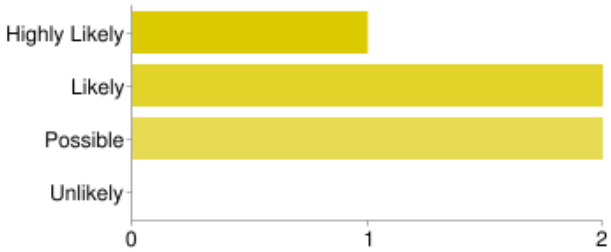
Severe Weather

Please rate the likelihood of occurrence of severe weather for each of the provided magnitudes - Catastrophic



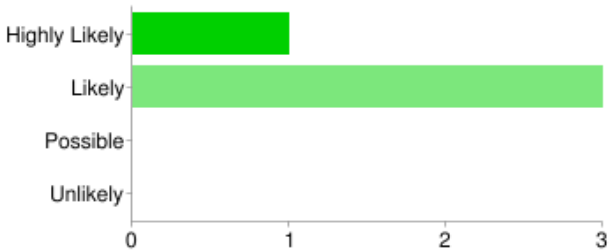
Highly Likely	1	20%
Likely	0	0%
Possible	3	60%
Unlikely	0	0%

Please rate the likelihood of occurrence of severe weather for each of the provided magnitudes - Critical



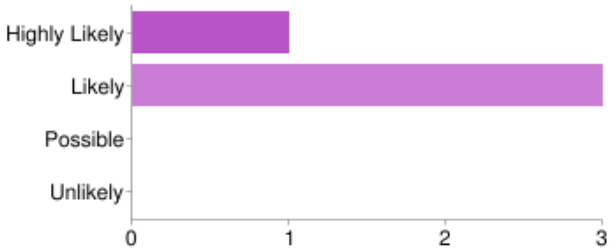
Highly Likely	1	20%
Likely	2	40%
Possible	2	40%
Unlikely	0	0%

Please rate the likelihood of occurrence of severe weather for each of the provided magnitudes - Marginal



Highly Likely	1	20%
Likely	3	60%
Possible	0	0%
Unlikely	0	0%

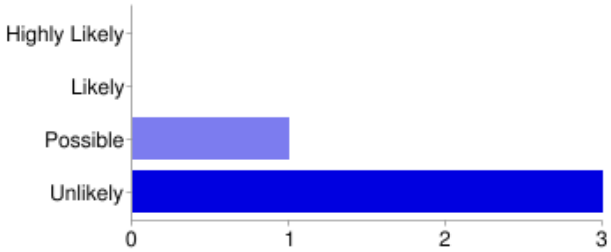
Please rate the likelihood of occurrence of severe weather for each of the provided magnitudes - Negligible



Highly Likely	1	20%
Likely	3	60%
Possible	0	0%
Unlikely	0	0%

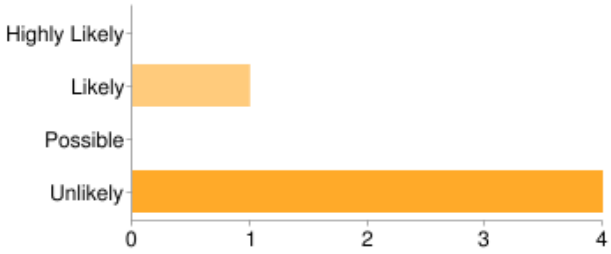
Sinkhole

Please rate the likelihood of occurrence of sinkholes for each of the provided magnitudes - Catastrophic



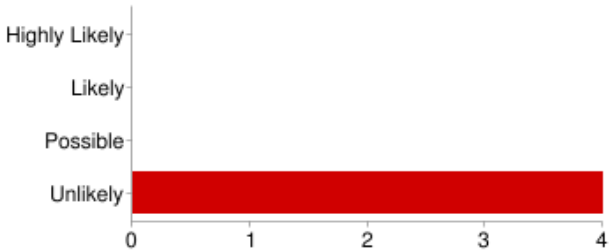
Highly Likely	0	0%
Likely	0	0%
Possible	1	20%
Unlikely	3	60%

Please rate the likelihood of occurrence of sinkholes for each of the provided magnitudes - Critical



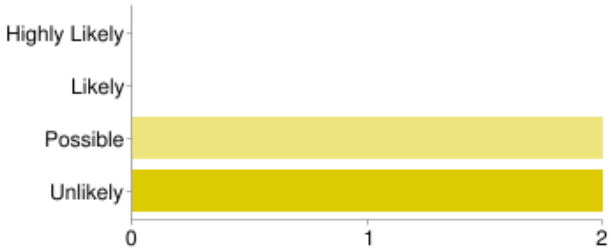
Highly Likely	**0**	0%
Likely	**1**	20%
Possible	**0**	0%
Unlikely	**4**	80%

Please rate the likelihood of occurrence of sinkholes for each of the provided magnitudes - Marginal



Highly Likely	**0**	0%
Likely	**0**	0%
Possible	**0**	0%
Unlikely	**4**	80%

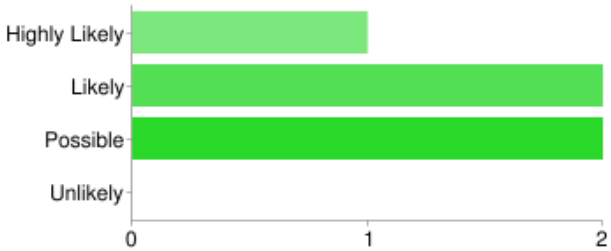
Please rate the likelihood of occurrence of sinkholes for each of the provided magnitudes - Negligible



Highly Likely	**0**	0%
Likely	**0**	0%
Possible	**2**	40%
Unlikely	**2**	40%

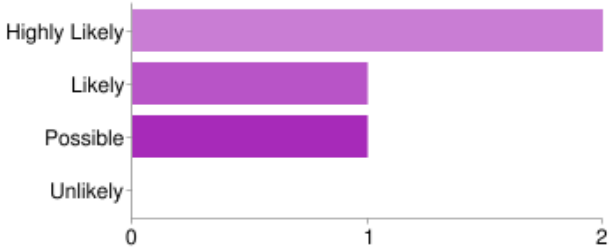
Tornado

Please rate the likelihood of occurrence of a tornado for each of the provided magnitudes - Catastrophic



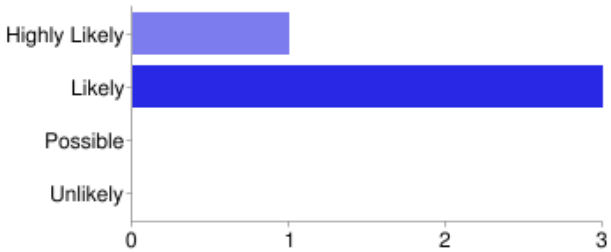
Highly Likely	**1**	20%
Likely	**2**	40%
Possible	**2**	40%
Unlikely	**0**	0%

Please rate the likelihood of occurrence of a tornado for each of the provided magnitudes - Critical



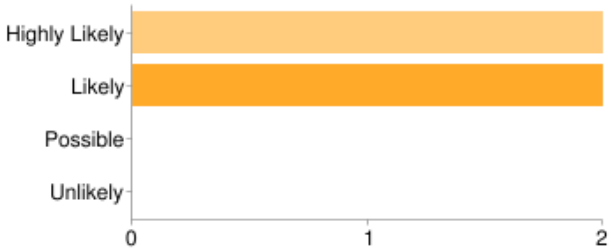
Highly Likely	**2**	40%
Likely	**1**	20%
Possible	**1**	20%
Unlikely	**0**	0%

Please rate the likelihood of occurrence of a tornado for each of the provided magnitudes - Marginal



Highly Likely	**1**	20%
Likely	**3**	60%
Possible	**0**	0%
Unlikely	**0**	0%

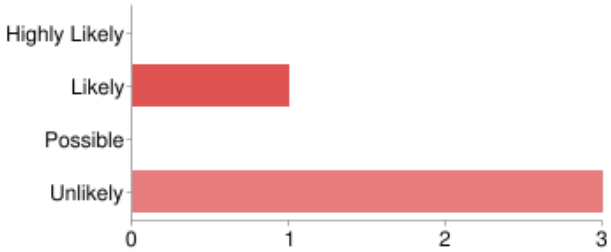
Please rate the likelihood of occurrence of a tornado for each of the provided magnitudes - Negligible



Highly Likely	**2**	40%
Likely	**2**	40%
Possible	**0**	0%
Unlikely	**0**	0%

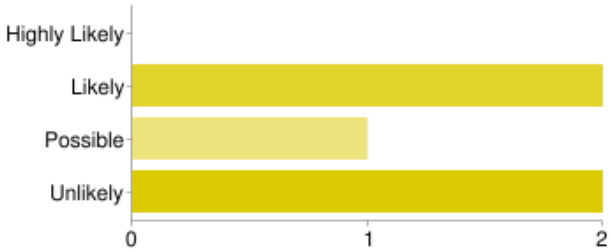
Tropical System

Please rate the likelihood of occurrence of a tropical system for each of the provided magnitudes - Catastrophic



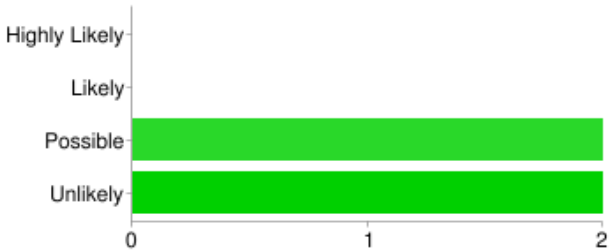
Highly Likely	**0**	0%
Likely	**1**	20%
Possible	**0**	0%
Unlikely	**3**	60%

Please rate the likelihood of occurrence of a tropical system for each of the provided magnitudes - Critical



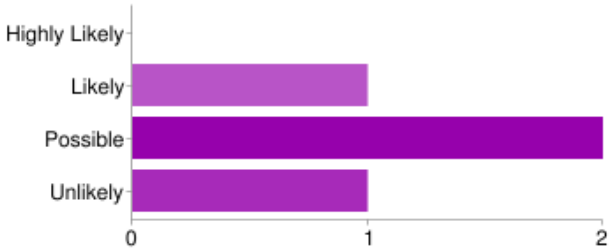
Highly Likely	**0**	0%
Likely	**2**	40%
Possible	**1**	20%
Unlikely	**2**	40%

Please rate the likelihood of occurrence of a tropical system for each of the provided magnitudes - Marginal



Highly Likely	**0**	0%
Likely	**0**	0%
Possible	**2**	40%
Unlikely	**2**	40%

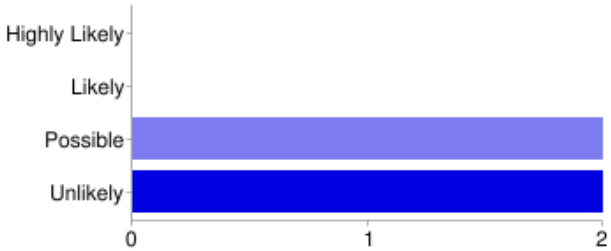
Please rate the likelihood of occurrence of a tropical system for each of the provided magnitudes - Negligible



Highly Likely	**0**	0%
Likely	**1**	20%
Possible	**2**	40%
Unlikely	**1**	20%

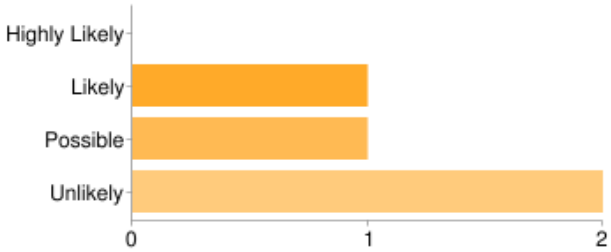
Wildfire

Please rate the likelihood of occurrence of wildfire for each of the provided magnitudes - Catastrophic



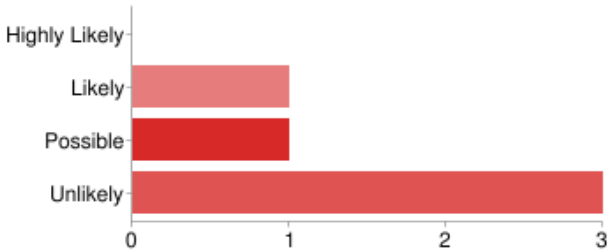
Highly Likely	**0**	0%
Likely	**0**	0%
Possible	**2**	40%
Unlikely	**2**	40%

Please rate the likelihood of occurrence of wildfire for each of the provided magnitudes - Critical



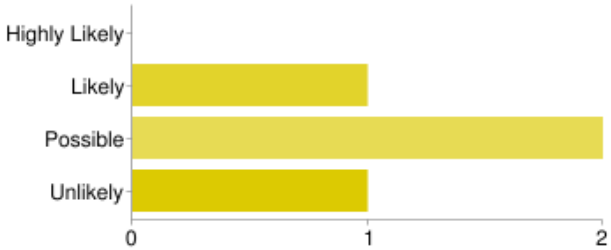
Highly Likely	**0**	0%
Likely	**1**	20%
Possible	**1**	20%
Unlikely	**2**	40%

Please rate the likelihood of occurrence of wildfire for each of the provided magnitudes - Marginal



Highly Likely	**0**	0%
Likely	**1**	20%
Possible	**1**	20%
Unlikely	**3**	60%

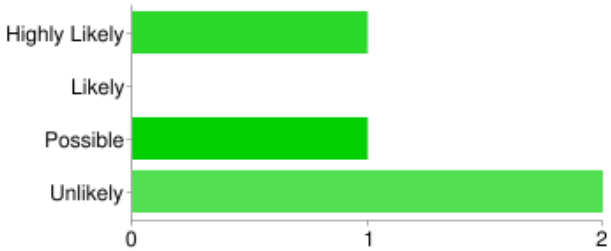
Please rate the likelihood of occurrence of wildfire for each of the provided magnitudes - Negligible



Highly Likely	**0**	0%
Likely	**1**	20%
Possible	**2**	40%
Unlikely	**1**	20%

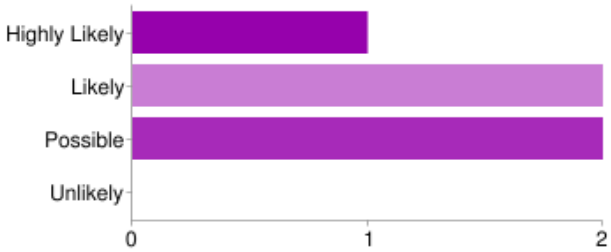
Winter Storm

Please rate the likelihood of occurrence of a winter storm for each of the provided magnitudes - Catastrophic



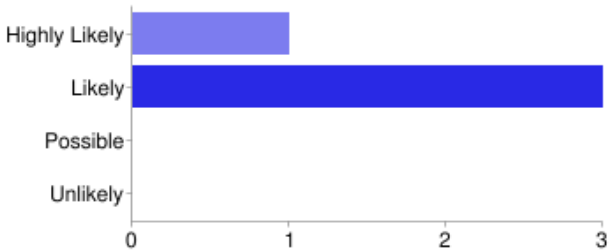
Highly Likely	**1**	20%
Likely	**0**	0%
Possible	**1**	20%
Unlikely	**2**	40%

Please rate the likelihood of occurrence of a winter storm for each of the provided magnitudes - Critical



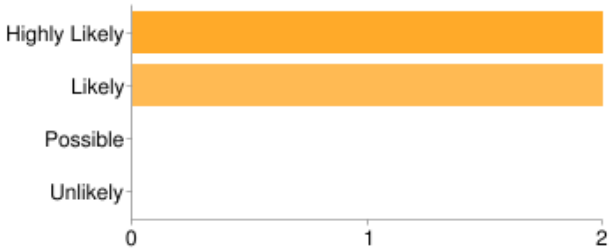
Highly Likely	1	20%
Likely	2	40%
Possible	2	40%
Unlikely	0	0%

Please rate the likelihood of occurrence of a winter storm for each of the provided magnitudes - Marginal



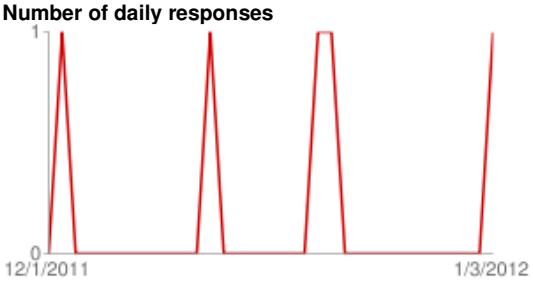
Highly Likely	1	20%
Likely	3	60%
Possible	0	0%
Unlikely	0	0%

Please rate the likelihood of occurrence of a winter storm for each of the provided magnitudes - Negligible



Highly Likely	2	40%
Likely	2	40%
Possible	0	0%
Unlikely	0	0%

Number of daily responses



Signature or Initials	Last	First	Agency	Department	Title	Phone	Email	Project POC
	Bazinet	Jill	Alpharetta	Engineering Public Works	Sr. Stormwater Engineer	678.208.6200	jbazinet@alpharetta.ga.us	Yes
	Brooker	James	Alpharetta	Community Development	Building Inspector			
	Brown	Jason	Dewberry		Geographer	678.537.8620	jfbrown@dewberry.com	
- Earl Joey Shirley	Chatham	Earl	Alpharetta	Engineering Public Works	Sr. Operations Manager			
	Drinkard	James	Alpharetta	Administration	Assistant City Administrator			
	Fleming	Sam	Dewberry		Sr. Project Manager	678.537.8627	sfleming@dewberry.com	
T. Chee Hill	Hill	Chee	Dewberry		Geographer	678.537.8621	chill@dewberry.com	
	Keefe	Kelly	GEMA	Hazard Mitigation	Risk Reduction Specialist/Hazard Mitigation Planner	404.635.2125	kelly.keefe@gema.ga.gov	
	McCall	Wesley	Alpharetta	Public Safety			WMcCall@alpharetta.ga.gov	Yes
	Maloney	John	Alpharetta	Engineering Public Works	Sr. Enginering Traffic Tech			
	Nelson	Derek	Alpharetta	Finance	Risk Manager			
	Popadics	Joe	Alpharetta	Public Safety	City EM and Battalion Chief	678.297.6329	jpopadics@alpharetta.ga.us	Yes
	~~Schmidt~~ Schmitz	Craig	Alpharetta	Public Safety	Battalion Chief			
	Zambito	Chris	Dewberry		Project Manager	813.421.8639	czambito@dewberry.com	Yes
	Reece	Donnie	Atlanta	Emergency Mgt	Operations	404 304 8777	donnie.reece@afcema.com	N
AD	Day	Amanda	Alpharetta	Administration	Grants Administrator	678. 297. 6018	aday@alpharetta.ga.us	No

Additional Hazard Research Appendix

HAZUS-MH: Hurricane Event Report

Region Name: Alpharetta_Wind

Hurricane Scenario: Probabilistic 100-year Return Period

Print Date: Monday, February 13, 2012

Disclaimer:
Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using HAZUS loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.

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General Description of the Region

HAZUS is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of HAZUS is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The hurricane loss estimates provided in this report are based on a region that includes 1 county(ies) from the following state(s):

- Georgia

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 84.82 square miles and contains 9 census tracts. There are over 38 thousand households in the region and has a total population of 101,595 people (2000 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 34 thousand buildings in the region with a total building replacement value (excluding contents) of 11,011 million dollars (2006 dollars). Approximately 90% of the buildings (and 71% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

HAZUS estimates that there are 34,695 buildings in the region which have an aggregate total replacement value of 11,011 million (2006 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure ($1000)	Percent of Tot
Residential	7,863,262	71.4%
Commercial	2,444,305	22.2%
Industrial	465,693	4.2%
Agricultural	25,828	0.2%
Religious	143,479	1.3%
Government	15,047	0.1%
Education	53,727	0.5%
Total	**11,011,341**	**100.0%**

Essential Facility Inventory

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 167 beds. There are 37 schools, 1 fire stations, 1 police stations and no emergency operation facilities.

Hurricane Scenario

HAZUS used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	Probabilistic
Type:	Probabilistic

Building Damage

General Building Stock Damage

HAZUS estimates that about 1 buildings will be at least moderately damaged. This is over 0% of the total number of buildings in the region. There are an estimated 0 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 6 of the HAZUS Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

Table 2: Expected Building Damage by Occupancy : 100 - year Event

	None		Minor		Moderate		Severe		Destruction	
Occupancy	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Agriculture	138	99.68	0	0.31	0	0.01	0	0.00	0	0.00
Commercial	2,311	99.54	10	0.45	0	0.01	0	0.00	0	0.00
Education	79	99.64	0	0.36	0	0.00	0	0.00	0	0.00
Government	17	99.63	0	0.37	0	0.00	0	0.00	0	0.00
Industrial	707	99.62	3	0.38	0	0.00	0	0.00	0	0.00
Religion	170	99.70	1	0.30	0	0.00	0	0.00	0	0.00
Residential	31,222	99.88	35	0.11	1	0.00	0	0.00	0	0.00
Total	**34,644**		**50**		**1**		**0**		**0**	

Table 3: Expected Building Damage by Building Type : 100 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Concrete	418	99.43	2	0.57	0	0.00	0	0.00	0	0.00
Masonry	3,740	99.48	19	0.51	1	0.01	0	0.00	0	0.00
MH	42	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Steel	1,628	99.48	8	0.51	0	0.01	0	0.00	0	0.00
Wood	28,824	99.95	14	0.05	0	0.00	0	0.00	0	0.00

Essential Facility Damage

Before the hurricane, the region had 167 hospital beds available for use. On the day of the hurricane, the model estimates that 167 hospital beds (only 100.00%) are available for use. After one week, 100.00% of the beds will be in service. By 30 days, 100.00% will be operational.

Table 4: Expected Damage to Essential Facilities

		# Facilities		
Classification	**Total**	**Probability of at Least Moderate**	**Probability of Complete Damage > 50%**	**Expected Loss of Use < 1 day**
Fire Stations	1	0	0	1
Hospitals	1	0	0	1
Police Stations	1	0	0	1
Schools	37	0	0	37

Induced Hurricane Damage

Debris Generation

HAZUS estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into three general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, and c) Trees. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 4,190 tons of debris will be generated. Of the total amount, Brick/Wood comprises 4% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 7 truckloads (@25 tons/truck) to remove the debris generated by the hurricane.

Social Impact

Shelter Requirement

HAZUS estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 0 households to be displaced due to the hurricane. Of these, 0 people (out of a total population of 101,595) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the hurricane is 3.4 million dollars, which represents 0.03 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 3 million dollars. 1% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 91% of the total loss. Table 4 below provides a summary of the losses associated with the building damage.

Table 5: Building-Related Economic Loss Estimates

(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Property Damage						
	Building	3,069.09	244.43	46.57	21.56	3,381.64
	Content	0.00	0.00	0.00	0.00	0.00
	Inventory	0.00	0.00	0.00	0.00	0.00
	Subtotal	**3,069.09**	**244.43**	**46.57**	**21.56**	**3,381.64**
Business Interruption Loss						
	Income	0.00	0.00	0.00	0.00	0.00
	Relocation	1.69	1.63	0.00	0.05	3.36
	Rental	0.00	0.00	0.00	0.00	0.00
	Wage	0.00	0.00	0.00	0.00	0.00
	Subtotal	**1.69**	**1.63**	**0.00**	**0.05**	**3.36**
Total						
	Total	**3,070.78**	**246.06**	**46.57**	**21.61**	**3,385.01**

Appendix A: County Listing for the Region

Georgia
- Fulton

Appendix B: Regional Population and Building Value Data

		Building Value (thousands of dollars)		
	Population	Residential	Non-Residential	Total
Georgia				
Fulton	101,595	7,863,262	3,148,079	11,011,341
Total	**101,595**	**7,863,262**	**3,148,079**	**11,011,341**
Study Region Total	**101,595**	**7,863,262**	**3,148,079**	**11,011,341**

HAZUS-MH: Earthquake Event Report

Region Name: Alpharetta_Earthquake

Earthquake Scenario: mag5

Print Date: February 13, 2012

Totals only reflect data for those census tracts/blocks included in the user's study region.

Disclaimer:
The estimates of social and economic impacts contained in this report were produced using HAZUS loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

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Appendix A: County Listing for the Region

Appendix B: Regional Population and Building Value Data

General Description of the Region

HAZUS is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of HAZUS is to provide a methodology and software application to develop earthquake losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from earthquakes and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

Georgia

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 84.80 square miles and contains 9 census tracts. There are over 38 thousand households in the region with a total population of 101,595 people (2002 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 34 thousand buildings in the region with a total building replacement value (excluding contents) of 11,011 (millions of dollars). Approximately 90.00 % of the buildings (and 71.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 665 and 193 (millions of dollars) , respectively.

Building and Lifeline Inventory

Building Inventory

HAZUS estimates that there are 34 thousand buildings in the region which have an aggregate total replacement value of 11,011 (millions of dollars) . Appendix B provides a general distribution of the building value by State and County.

In terms of building construction types found in the region, wood frame construction makes up 83% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

HAZUS breaks critical facilities into two (2) groups: essential facilities and high potential loss (HPL) facilities. Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 167 beds. There are 37 schools, 1 fire stations, 1 police stations and 0 emergency operation facilities. With respect to HPL facilities, there are 19 dams identified within the region. Of these, 1 of the dams are classified as 'high hazard'. The inventory also includes 0 hazardous material sites, 0 military installations and 0 nuclear power plants.

Transportation and Utility Lifeline Inventory

Within HAZUS, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 858.00 (millions of dollars). This inventory includes over 86 kilometers of highways, 60 bridges, 1,825 kilometers of pipes.

Table 1: Transportation System Lifeline Inventory

System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	60	53.50
	Segments	23	611.50
	Tunnels	0	0.00
		Subtotal	**665.00**
Railways	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
		Subtotal	**0.00**
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
		Subtotal	**0.00**
Bus	Facilities	0	0.00
		Subtotal	**0.00**
Ferry	Facilities	0	0.00
		Subtotal	**0.00**
Port	Facilities	0	0.00
		Subtotal	**0.00**
Airport	Facilities	0	0.00
	Runways	0	0.00
		Subtotal	**0.00**
		Total	**665.00**

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	18.30
	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	**18.30**
Waste Water	Distribution Lines	NA	11.00
	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	**11.00**
Natural Gas	Distribution Lines	NA	7.30
	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	**7.30**
Oil Systems	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	**0.00**
Electrical Power	Facilities	2	193.60
		Subtotal	**193.60**
Communication	Facilities	1	0.10
		Subtotal	**0.10**
		Total	**230.20**

Earthquake Scenario

HAZUS uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.

Scenario Name	mag5
Type of Earthquake	Probabilistic
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	100.00
Longitude of Epicenter	NA
Latitude of Epicenter	NA
Earthquake Magnitude	5.00
Depth (Km)	NA
Rupture Length (Km)	NA
Rupture Orientation (degrees)	NA
Attenuation Function	NA

Building Damage

HAZUS estimates that about 29 buildings will be at least moderately damaged. This is over 0.00 % of the total number of buildings in the region. There are an estimated 0 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the HAZUS technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	136	0.39	1	1.04	0	1.08	0	1.12	0	0.68
Commercial	2,291	6.63	24	19.51	6	23.43	1	24.88	0	19.24
Education	78	0.23	1	0.60	0	0.70	0	0.72	0	0.69
Government	17	0.05	0	0.12	0	0.13	0	0.13	0	0.08
Industrial	701	2.03	7	5.58	2	6.59	0	6.60	0	4.23
Other Residential	2,685	7.77	16	13.08	4	16.17	0	16.80	0	16.88
Religion	169	0.49	2	1.38	1	1.92	0	2.20	0	2.33
Single Family	28,465	82.41	72	58.68	13	49.97	1	47.54	0	55.86
Total	**34,543**		**123**		**26**		**3**		**0**	

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	28,792	83.35	44	35.85	3	11.01	0	0.00	0	0.00
Steel	1,618	4.68	13	10.62	3	10.38	0	8.20	0	0.00
Concrete	312	0.90	2	1.75	0	1.34	0	0.52	0	0.00
Precast	101	0.29	2	1.24	1	2.65	0	3.40	0	0.00
RM	501	1.45	4	3.01	1	4.82	0	5.23	0	0.00
URM	3,176	9.19	58	46.88	18	69.06	2	82.53	0	100.00
MH	42	0.12	1	0.66	0	0.74	0	0.12	0	0.00
Total	**34,543**		**123**		**26**		**3**		**0**	

*Note:
RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 167 hospital beds available for use. On the day of the earthquake, the model estimates that only 160 hospital beds (96.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 99.00% of the beds will be back in service. By 30 days, 100.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	1	0	0	1
Schools	37	0	0	37
EOCs	0	0	0	0
PoliceStations	1	0	0	1
FireStations	1	0	0	1

Transportation and Utility Lifeline Damage

Table 6 provides damage estimates for the transportation system.

Table 6: Expected Damage to the Transportation Systems

System	Component		Number of Locations			
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	23	0	0	23	23
	Bridges	60	0	0	60	60
	Tunnels	0	0	0	0	0
Railways	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	0	0	0	0	0
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	0	0	0	0	0
	Runways	0	0	0	0	0

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, HAZUS performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Waste Water	0	0	0	0	0
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	2	0	0	2	2
Communication	1	0	0	1	1

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	913	0	0
Waste Water	548	0	0
Natural Gas	365	0	0
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	38,079	0	0	0	0	0
Electric Power		0	0	0	0	0

Induced Earthquake Damage

Fire Following Earthquake

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. HAZUS uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about 0.00 sq. mi 0.00 % of the region's total area.) The model also estimates that the fires will displace about 0 people and burn about 0 (millions of dollars) of building value.

Debris Generation

HAZUS estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 0.000 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 78.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 80 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

Social Impact

Shelter Requirement

HAZUS estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 1 households to be displaced due to the earthquake. Of these, 0 people (out of a total population of 101,595) will seek temporary shelter in public shelters.

Casualties

HAZUS estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	0	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	0	0	0	0
	Other-Residential	0	0	0	0
	Single Family	0	0	0	0
	Total	**1**	**0**	**0**	**0**
2 PM	Commercial	1	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	0	0	0	0
	Other-Residential	0	0	0	0
	Single Family	0	0	0	0
	Total	**2**	**0**	**0**	**0**
5 PM	Commercial	1	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	0	0	0	0
	Other-Residential	0	0	0	0
	Single Family	0	0	0	0
	Total	**1**	**0**	**0**	**0**

Economic Loss

The total economic loss estimated for the earthquake is 3.03 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 3.02 (millions of dollars); 44 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 35 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Table 11: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.00	0.02	0.28	0.01	0.01	0.31
	Capital-Related	0.00	0.01	0.25	0.00	0.00	0.27
	Rental	0.02	0.05	0.23	0.01	0.00	0.31
	Relocation	0.09	0.03	0.26	0.02	0.03	0.43
	Subtotal	**0.11**	**0.11**	**1.02**	**0.04**	**0.04**	**1.32**
Capital Stock Losses							
	Structural	0.19	0.06	0.30	0.05	0.03	0.63
	Non_Structural	0.42	0.13	0.33	0.04	0.03	0.94
	Content	0.04	0.01	0.06	0.01	0.01	0.13
	Inventory	0.00	0.00	0.00	0.00	0.00	0.00
	Subtotal	**0.65**	**0.20**	**0.68**	**0.10**	**0.07**	**1.70**
	Total	**0.77**	**0.30**	**1.70**	**0.14**	**0.11**	**3.02**

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, HAZUS computes the direct repair cost for each component only. There are no losses computed by HAZUS for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

HAZUS estimates the long-term economic impacts to the region for 15 years after the earthquake. The model quantifies this information in terms of income and employment changes within the region. Table 14 presents the results of the region for the given earthquake.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	611.54	$0.00	0.00
	Bridges	53.48	$0.00	0.00
	Tunnels	0.00	$0.00	0.00
	Subtotal	**665.00**	**0.00**	
Railways	Segments	0.00	$0.00	0.00
	Bridges	0.00	$0.00	0.00
	Tunnels	0.00	$0.00	0.00
	Facilities	0.00	$0.00	0.00
	Subtotal	**0.00**	**0.00**	
Light Rail	Segments	0.00	$0.00	0.00
	Bridges	0.00	$0.00	0.00
	Tunnels	0.00	$0.00	0.00
	Facilities	0.00	$0.00	0.00
	Subtotal	**0.00**	**0.00**	
Bus	Facilities	0.00	$0.00	0.00
	Subtotal	**0.00**	**0.00**	
Ferry	Facilities	0.00	$0.00	0.00
	Subtotal	**0.00**	**0.00**	
Port	Facilities	0.00	$0.00	0.00
	Subtotal	**0.00**	**0.00**	
Airport	Facilities	0.00	$0.00	0.00
	Runways	0.00	$0.00	0.00
	Subtotal	**0.00**	**0.00**	
	Total	**665.00**	**0.00**	

Table 13: Utility System Economic Losses

(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	$0.00	0.00
	Facilities	0.00	$0.00	0.00
	Distribution Line	18.30	$0.00	0.01
	Subtotal	**18.26**	**$0.00**	
Waste Water	Pipelines	0.00	$0.00	0.00
	Facilities	0.00	$0.00	0.00
	Distribution Line	11.00	$0.00	0.01
	Subtotal	**10.95**	**$0.00**	
Natural Gas	Pipelines	0.00	$0.00	0.00
	Facilities	0.00	$0.00	0.00
	Distribution Line	7.30	$0.00	0.00
	Subtotal	**7.30**	**$0.00**	
Oil Systems	Pipelines	0.00	$0.00	0.00
	Facilities	0.00	$0.00	0.00
	Subtotal	**0.00**	**$0.00**	
Electrical Power	Facilities	193.60	$0.01	0.00
	Subtotal	**193.60**	**$0.01**	
Communication	Facilities	0.10	$0.00	0.00
	Subtotal	**0.09**	**$0.00**	
	Total	**230.20**	**$0.01**	

Table 14. Indirect Economic Impact with outside aid
(Employment as # of people and Income in millions of $)

LOSS		Total	%
First Year			
	Employment Impact	0	0.00
	Income Impact	0	0.00
Second Year			
	Employment Impact	0	0.00
	Income Impact	0	-0.01
Third Year			
	Employment Impact	0	0.00
	Income Impact	0	-0.01
Fourth Year			
	Employment Impact	0	0.00
	Income Impact	0	-0.01
Fifth Year			
	Employment Impact	0	0.00
	Income Impact	0	-0.01
Years 6 to 15			
	Employment Impact	0	0.00
	Income Impact	0	-0.01

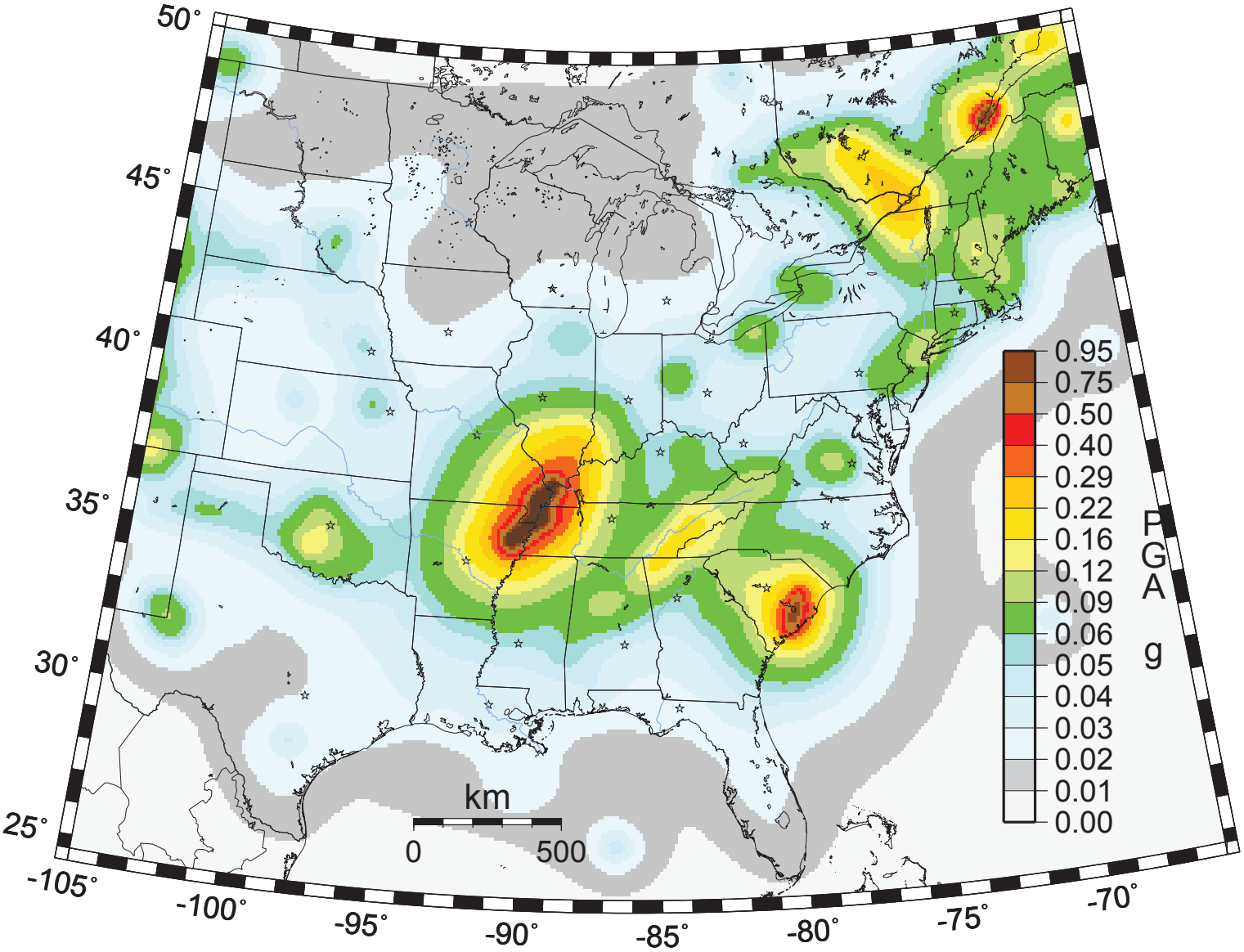
Appendix A: County Listing for the Region

Fulton,GA

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
Georgia					
	Fulton	101,595	7,863	3,148	11,011
Total State		**101,595**	**7,863**	**3,148**	**11,011**
Total Region		**101,595**	**7,863**	**3,148**	**11,011**

Hard Rock PGA 2%/50 year PE



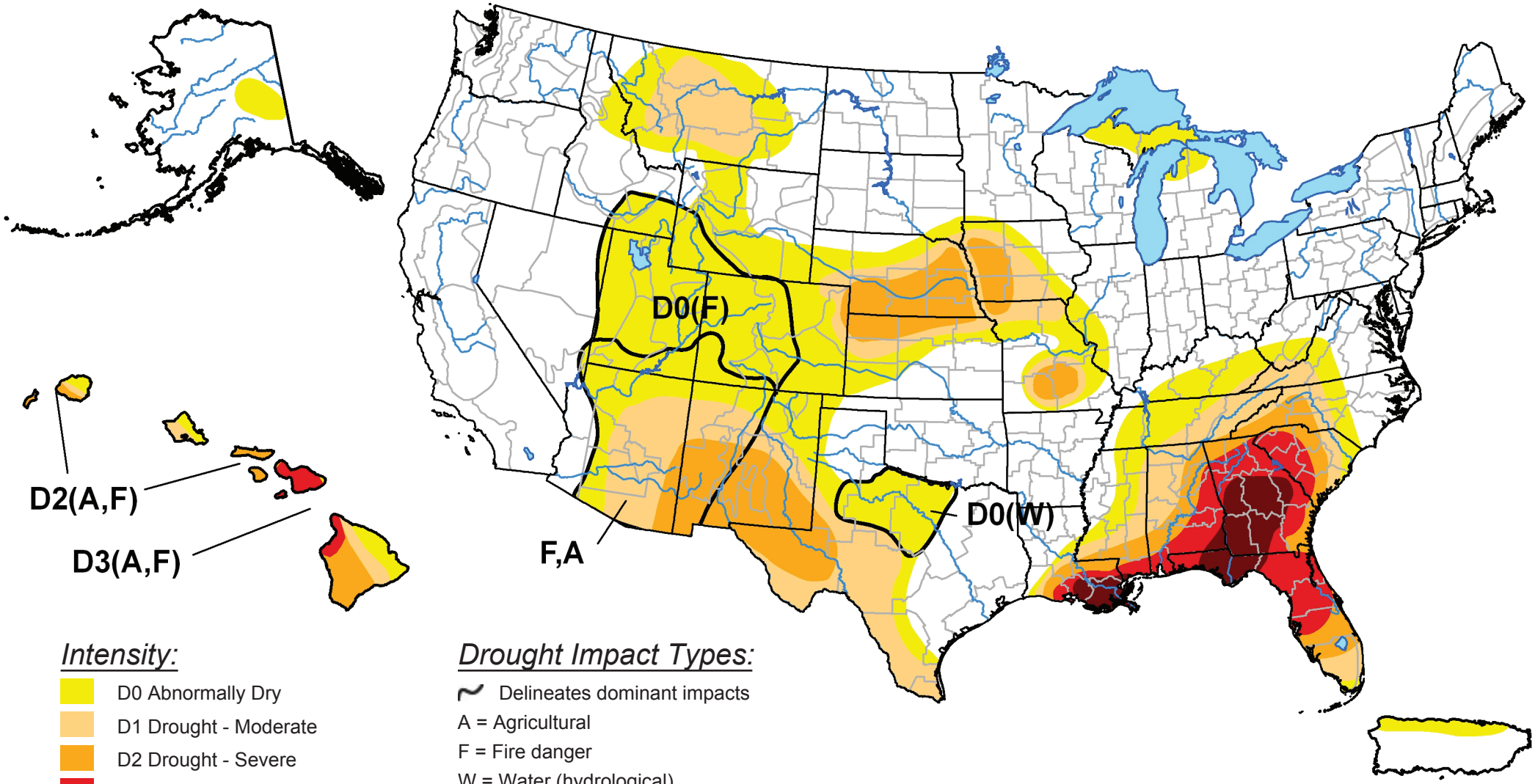
GMT 2009 Apr 15 14:03:39 **Horiz.-comp PGA for NEHRP A-class rock site condition and NSHMP 2008 Seismic Hazard model**

Tornadoes within 30 Miles of the City of Alpharetta 1950 - 2010								
ID	Date	Time	F-Scale	Injuries	Fatalities	Loss ($1,000)	Length (Miles)	Width (Feet)
1	6/4/1950	8:00am	1	1	0	$5 - $50	3.3	10
2	4/8/1954	12:00pm	1	0	0	$5 - $50	4.7	200
3	12/5/1954	3:00pm	2	0	0	$5 - $50	7.1	500
4	5/24/1955	4:15pm	1	0	0	$50 - $500	5.4	300
5	4/15/1956	5:30pm	2	0	0	$50 - $500	46.8	67
6	4/6/1965	6:15pm	1	0	0	$5 - $50	8.0	37
7	5/25/1961	2:30pm	1	0	0	$.5 - $5	6.1	17
8	3/17/1963	10:00am	1	0	0	$5 - $50	26.8	150
9	4/15/1965	7:00pm	2	0	0	$50 - $500	11.5	33
10	5/18/1966	5:00pm	0	0	0	$.5 - $5	0.1	20
11	4/2/1970	4:00am	3	0	0	$5 - $50	6.5	50
12	1/10/1972	10:25am	3	9	1	$50 - $500	6.3	200
13	4/7/1972	9:30pm	1	1	0	$50 - $500	3.6	300
14	8/7/1972	7:00pm	0	0	0	$.05 - $.5	3.0	20
15	3/31/1973	4:30pm	2	100	2	$50,000 - $500,000	72.4	500
16	12/13/1973	11:20am	3	21	0	$500 - $5,000	9.5	200
17	12/29/1973	7:30pm	1	0	0	$50 - $500	5.7	10
18	4/3/1974	4:45pm	2	20	1	$500 - $5,000	65.9	150
19	4/3/1974	5:15pm	2	20	1	$500 - $5,000	55.5	150
20	4/3/1974	6:30pm	4	30	6	$500 - $5,000	17.7	200
21	3/13/1975	7:30pm	1	2	0	$50 - $500	9.6	100
22	3/24/1975	5:30am	3	152	3	$50,000 - $500,000	14.8	500
23	5/8/1978	4:20pm	2	0	0	$500 - $5,000	7.2	200
24	4/8/1980	7:50pm	1	1	0	$5 - $50	4.3	30
25	4/27/1980	1:40am	1	1	0	$50 - $500	4.5	100
26	4/26/1982	5:15pm	2	5	0	$50 - $500	5.0	300
27	3/28/1984	2:25pm	1	1	0	$50 - $500	12.0	50
28	5/7/1984	11:20pm	1	0	0	$50 - $500	12.0	80
29	5/7/1984	11:30pm	1	0	0	$5 - $50	8.0	33
30	4/5/1985	7:05pm	2	0	0	$500 - $5,000	3.0	100
31	3/19/1986	4:30am	2	15	0	$5,000 - $50,000	5.7	300
32	4/4/1989	1:15pm	2	0	0	$50 - $500	3.0	150
33	4/4/1989	1:20pm	2	0	0	$500 - $5,000	6.0	150
34	4/4/1989	2:20pm	2	0	0	$5 - $50	9.0	100
35	4/4/1989	2:20pm	2	0	0	$50 - $500	3.3	50
36	10/1/1989	5:00pm	2	0	0	$50 - $500	4.0	300
37	2/10/1990	4:15am	1	0	0	$50 - $500	4.0	100
38	3/29/1991	6:15am	2	2	0	$5,000 - $50,000	3.0	200
39	3/29/1991	6:30am	3	25	0	$5,000 - $50,000	5.0	1320
40	11/22/1992	9:45am	4	46	0	$5,000 - $50,000	20.0	867
41	2/21/1993	7:15pm	3	3	0	$5,000 - $50,000	8.0	880
42	2/21/1993	10:50pm	1	1	0	$500 - $5,000	4.0	330

Tornadoes within 30 Miles of the City of Alpharetta 1950 - 2010								
ID	Date	Time	F-Scale	Injuries	Fatalities	Loss ($1,000)	Length (Miles)	Width (Feet)
43	3/27/1994	11:15am	4	20	3	$5,000 - $50,000	49.0	1760
44	3/27/1994	12:15pm	3	45	3	$5,000 - $50,000	44.0	2613
45	3/27/1994	1:00pm	3	70	9	$5,000 - $50,000	40.0	2613
46	3/27/1994	1:45pm	0	0	0	$.5 - $5	4.0	220
47	6/26/1994	10:00pm	1	7	0	$500 - $5,000	8.0	100
48	6/26/1994	10:45pm	1	0	0	$500 - $5,000	4.0	200
49	6/27/1994	1:15am	2	0	1	$500 - $5,000	8.0	200
50	6/27/1994	6:00am	1	3	0	$500 - $5,000	10.0	73
51	11/7/1996	10:50pm	1	12	0	Unknown	6.0	75
52	3/20/1998	5:25am	3	171	12	Unknown	4.0	100
53	4/8/1998	10:20pm	2	4	0	Unknown	3.5	200
54	4/8/1998	10:35pm	2	10	1	Unknown	19.0	800
55	4/3/2000	1:00am	1	0	0	Less than $.05	7.0	100
56	4/3/2000	1:15am	1	0	0	Less than $.05	4.0	150
57	11/11/2002	Unknown	2	13	0	$5,000 - $50,000	23.0	100
58	5/6/2003	10:55am	1	0	0	Unknown	1.0	50
59	7/14/2004	4:15pm	0	0	0	Unknown	0.2	50
60	9/16/2004	3:55pm	1	4	0	Unknown	1.0	400
61	8/29/2005	4:15pm	0	0	0	Unknown	0.5	50
62	8/29/2005	4:45pm	0	0	0	Unknown	0.9	125
63	8/29/2005	9:05pm	0	0	0	Unknown	1.5	100
64	4/8/2006	1:50am	0	0	0	Unknown	2.5	50
65	4/8/2006	1:55am	1	0	0	$5,000 - $50,000	18.0	200
66	3/7/2008	6:25pm	1	1	0	$.05 - $.5	7.0	100
67	3/14/2008	7:40pm	2	30	1	Unknown	6.3	200
68	3/15/2008	10:25am	3	2	2	$5,000 - $50,000	16.9	880
69	5/11/2008	3:30am	0	0	0	Unknown	10.0	100
70	5/20/2008	4:35pm	1	4	0	Unknown	5.9	1760
71	8/26/2008	10:25am	1	0	0	Unknown	1.1	200
72	8/26/2008	1:40pm	1	0	0	Unknown	4.8	100
73	4/10/2009	4:05pm	1	0	0	Unknown	3.4	440
74	4/10/2009	5:00pm	1	0	0	Unknown	0.2	200
75	4/19/2009	9:00pm	1	2	0	$50 - $500	1.5	880
76	10/27/2010	1:35pm	0	0	0	Unknown	0.8	75
77	11/30/2010	2:40pm	2	0	0	$50 - $500	2.1	100
			Totals	854	46			

U.S. Drought Monitor

June 27, 2000
Valid 7 a.m. EST



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

- Delineates dominant impacts
- A = Agricultural
- F = Fire danger
- W = Water (hydrological)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

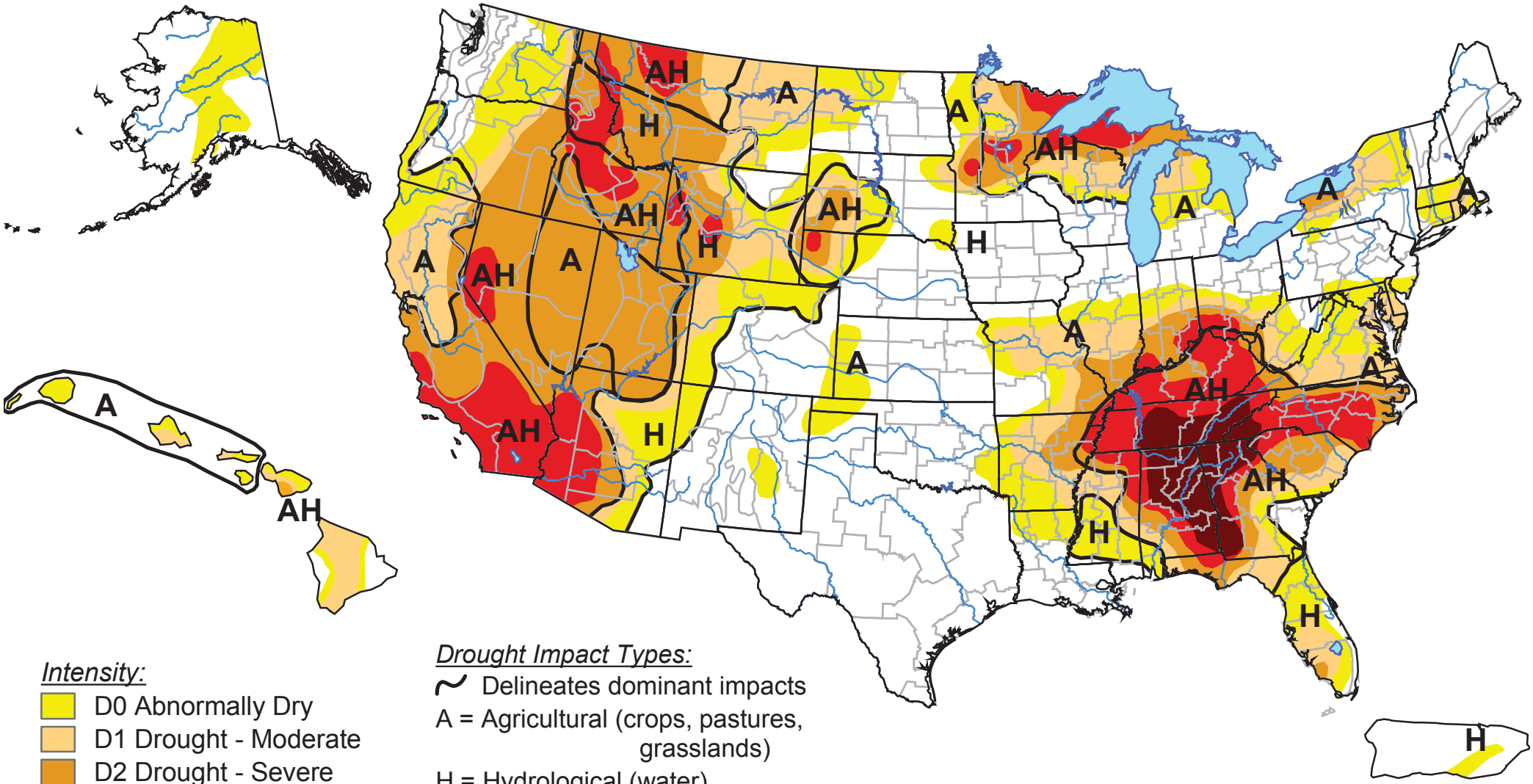
USDA National Drought Mitigation Center

Released Thursday, June 29, 2000

Author: National Drought Mitigation Center

U.S. Drought Monitor

September 4, 2007
Valid 8 a.m. EDT



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

~ Delineates dominant impacts

A = Agricultural (crops, pastures, grasslands)

H = Hydrological (water)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

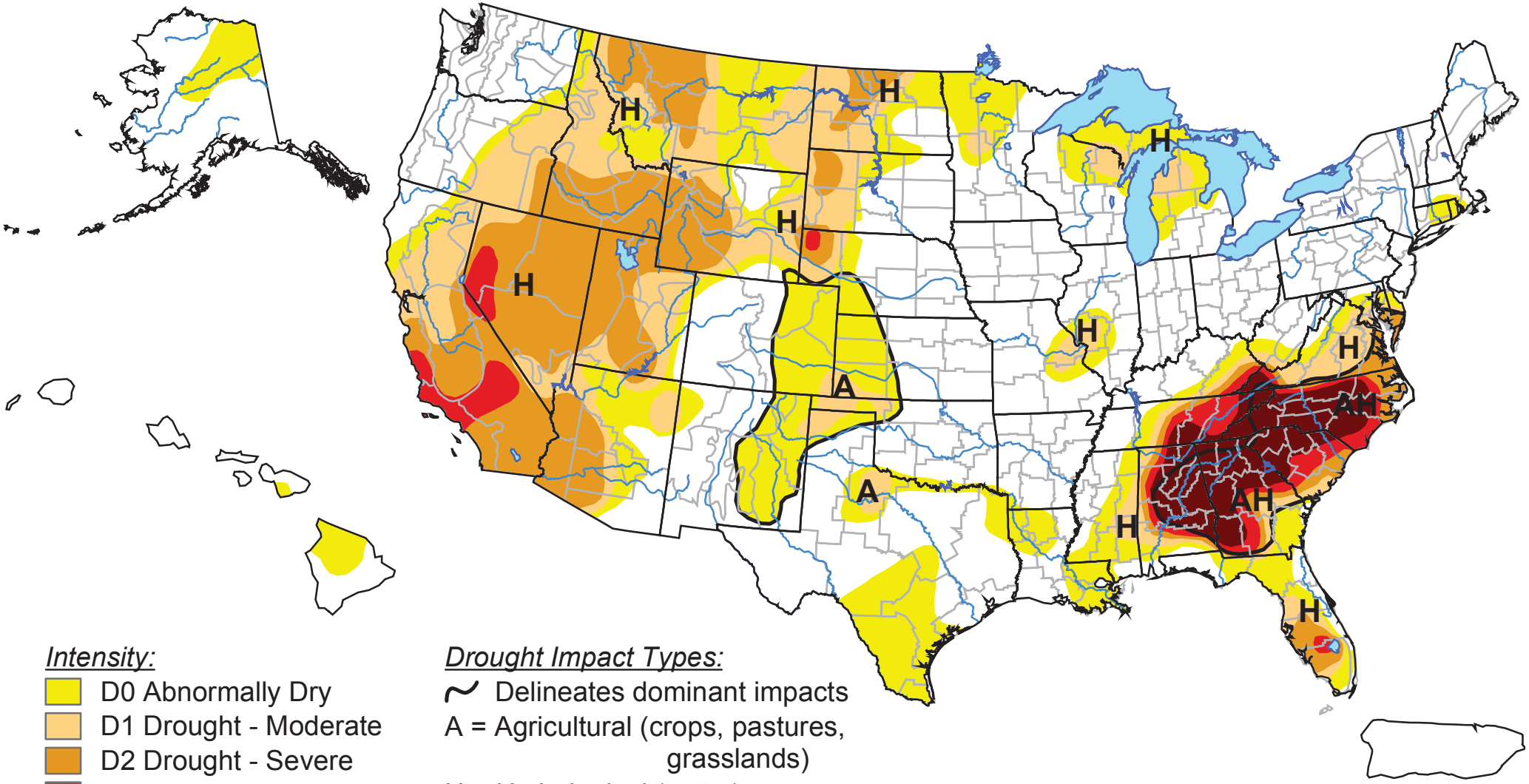
USDA National Drought Mitigation Center

Released Thursday, September 6, 2007

Author: Thomas Heddinghaus, CPC/NOAA

U.S. Drought Monitor

December 25, 2007
Valid 7 a.m. EST



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

~ Delineates dominant impacts
A = Agricultural (crops, pastures, grasslands)
H = Hydrological (water)

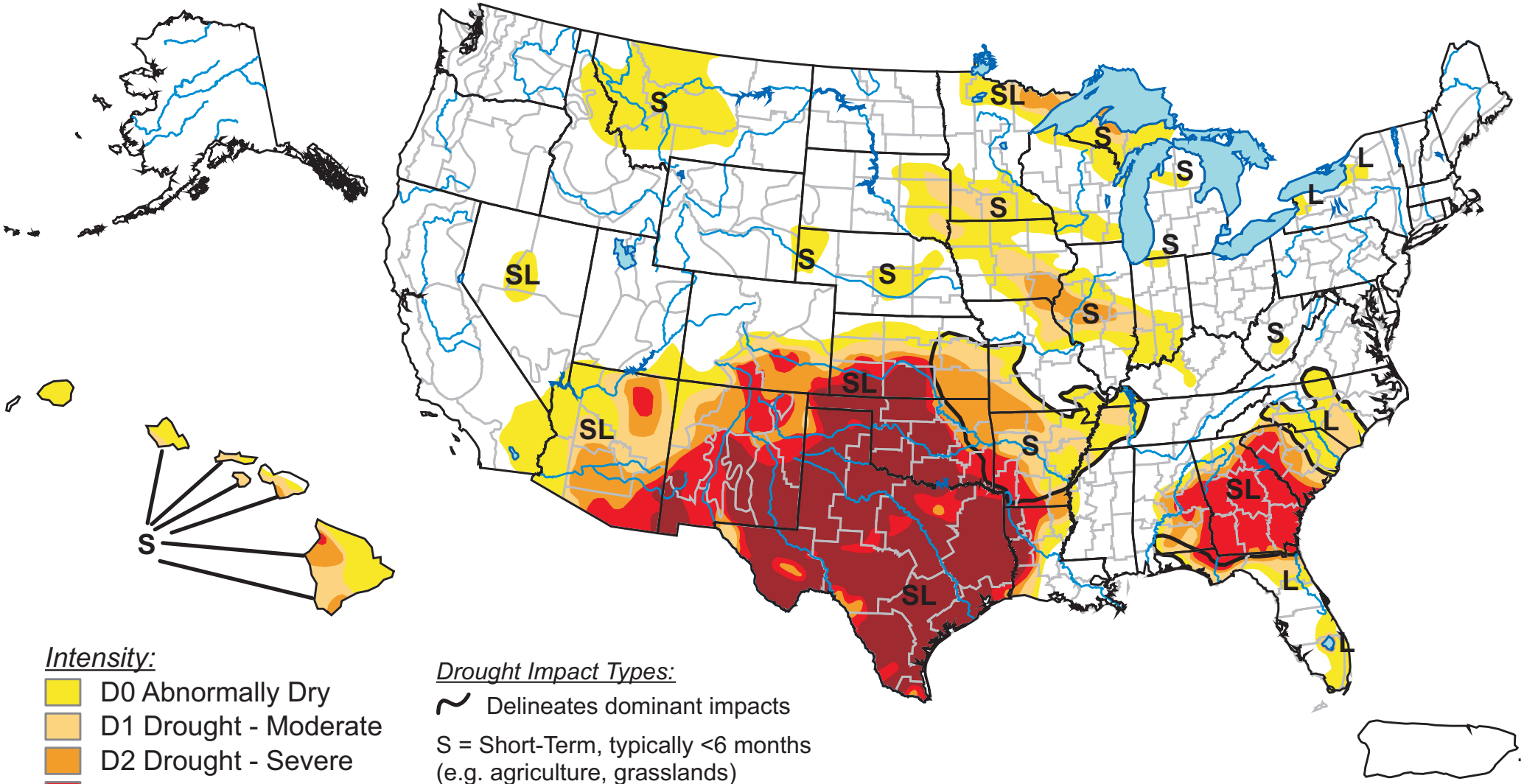
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

Released Thursday, December 27, 2007
Author: Richard Heim, NOAA/NESDIS/NCDC

U.S. Drought Monitor

September 27, 2011
Valid 8 a.m. EDT



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

Delineates dominant impacts

S = Short-Term, typically <6 months (e.g. agriculture, grasslands)

L = Long-Term, typically >6 months (e.g. hydrology, ecology)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu/

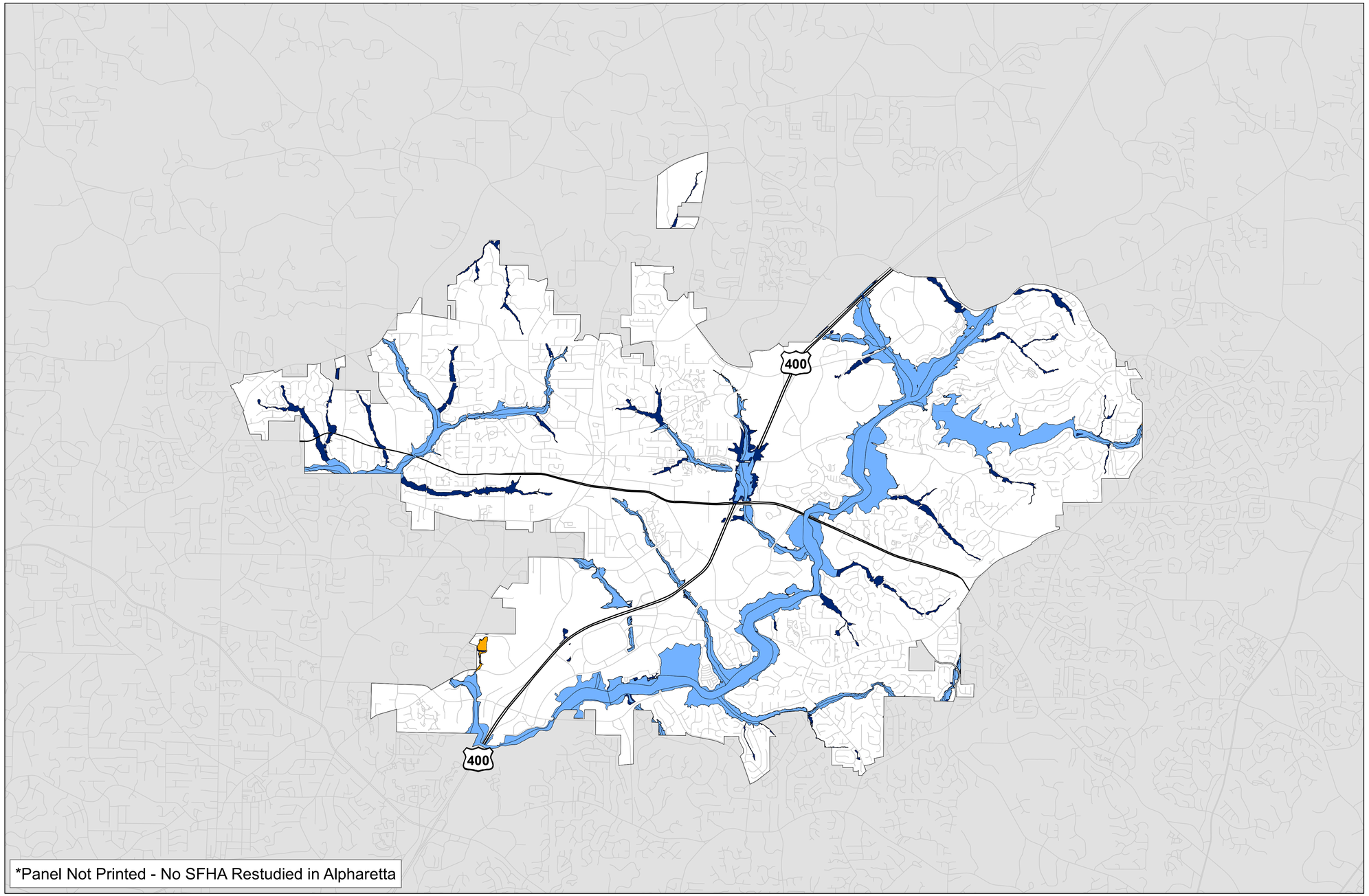
Released Thursday, September 29, 2011

Author: Michael Brewer/Liz Love-Brotak, NOAA/NESDIS/NCDC

NCDC Flooding Events Affecting the City of Alpharetta			
Location	Date	Time	Type
6 Countywide	2/4/1998	5:00 AM	Flood
7 Countywide	3/8/1998	5:00 AM	Flash Flood
13 Alpharetta	7/3/2001	2:45 PM	Urban/sml Stream Fld
28 Sandy Spgs	6/16/2003	11:30 PM	Flash Flood
34 GAZ021 - 031>035 - 041 - 045>046 - 082 - 089	9/16/2004	1:20 AM	Flood
42 GAZ005 - 012>013 - 020>021 - 031>033 - 041>047 - 049 - 053>058 - 067>072 - 078>080 - 082 - 089 - 091 - 093 - 103>107	7/10/2005	11:00 PM	Flood
44 Newtown	1/2/2006	8:35 AM	Flash Flood
46 Alpharetta	3/21/2006	12:09 AM	Flash Flood
52 Ocee	8/28/2009	10:15 AM	Flash Flood
54 Ocee	9/17/2009	15:30 PM	Flash Flood
58 Rico	9/21/2009	5:07 AM	Flood
61 Ocee	10/12/2009	9:25 AM	Flash Flood
66 Newtown	4/15/2011	21:22 PM	Flash Flood

NCDC Severe Storms Results			
Location	Date	Type	Damage (k)
5 Atlanta	7/20/2011	Heavy Rain	500
174 Atlanta	4/27/2010	Hail	0
175 Atlanta	5/28/2010	Hail	0
176 Alpharetta	7/26/2010	Hail	0
177 Sandy Spgs	9/27/2010	Hail	0
178 Roswell	2/28/2011	Hail	0
179 Alpharetta	3/26/2011	Hail	0
180 Sandy Spgs	4/15/2011	Hail	4,300
181 Sandy Spgs	4/25/2011	Hail	0
183 Atlanta	6/11/2011	Hail	0
184 Sandy Spgs	6/15/2011	Hail	0
185 Roswell	6/18/2011	Hail	0
186 Atlanta	6/24/2011	Hail	0
188 Sandy Spgs	7/21/2011	Hail	0
189 Atlanta	8/21/2011	Hail	0
32 Alpharetta	6/15/2010	Lightning	50
35 Alpharetta	10/25/2010	Lightning	75
36 Atlanta	6/27/2011	Lightning	150
5 Atlanta	7/20/2011	Heavy Rain	500
Statewide	4/5/2011	Strong Wind	20
246 Mountain Park	5/14/2010	Thunderstorm Wind	4
247 Warsaw	6/22/2010	Thunderstorm Wind	1
248 Atlanta	9/27/2010	Thunderstorm Wind	25
249 Alpharetta	4/4/2011	Thunderstorm Wind	250
250 Sandy Spgs	4/15/2011	Thunderstorm Wind	250
253 Atlanta	5/26/2011	Thunderstorm Wind	100
254 Sandy Spgs	6/18/2011	Thunderstorm Wind	30

City of Alpharetta - Floodplain Studies 2010



Legend

Flood Zone

- Existing Zone A
- Existing Zone AE
- Future Floodplain

Base Map Features

- Major Roads
- Roads

N
W E
S

0 1.25 2.5 5 7.5 10 Miles

Alpharetta
GEORGIA USA

November 30, 2010