The Flood Risk Snapshot

Using Flood Risk Datasets to Personalize Flood Risk

Jeff Butler, CFM, GISP

&

Joe Martinenza P.E.
Jeff Butler, CFM, GISP

15+ yrs. of GIS experience

10 yrs. of FEMA/CTP experience

CFM since 2008

GIS Lead State of Georgia CTP mapping consultant since 2008
Agenda

1. Background
2. Purpose
3. Building the Snapshot
4. Two Equal Parts – Mapping and Data
5. Open Houses of the Past – AKA the Old Way
6. Open Houses of the Present – Snapshot in Action
7. Conclusions
8. Questions
Background

The State of Georgia CTP and the September 2009 Floods
Georgia Flood MAP Program

- Managed by the State of Georgia DNR, Environmental Protection Division
- FEMA Cooperating Technical Partner (CTP)
- CTP since August 1999.
- Covers all 159 counties in the state
- State Population of 10.2 Million
# Historic Flooding in September 2009

<table>
<thead>
<tr>
<th>Station Identification</th>
<th>Station Name</th>
<th>Date of Peak (September 2009)</th>
<th>Peak Flow (cubic feet per second)</th>
<th>Peakgage Height</th>
<th>Annual Exceedance Probability (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>02207120</td>
<td>Yellow River at GA 124, near Lithonia, GA</td>
<td>22</td>
<td>16,500</td>
<td>27.47</td>
<td>1 to 0.5</td>
</tr>
<tr>
<td>02207220</td>
<td>Yellow River at Pleasant Hill Road, near Lithonia, GA</td>
<td>22</td>
<td>22,000</td>
<td>25.54</td>
<td>0.5 to 0.2</td>
</tr>
<tr>
<td>02207335</td>
<td>Yellow River at Gee's Mill Road, near Milledge, GA</td>
<td>22</td>
<td>20,800</td>
<td>22.54</td>
<td>2 to 1</td>
</tr>
<tr>
<td>02335000</td>
<td>Chattahoochee River near Norcross, GA</td>
<td>21</td>
<td>14,900</td>
<td>14.51</td>
<td>Regulated</td>
</tr>
<tr>
<td>02335450</td>
<td>Chattahoochee River above Roswell, GA</td>
<td>21</td>
<td>21,100</td>
<td>11.96</td>
<td>Regulated</td>
</tr>
<tr>
<td>02335815</td>
<td>Chattahoochee River below Morgan Falls Dam, GA</td>
<td>21</td>
<td>35,500</td>
<td>827.01</td>
<td>Regulated</td>
</tr>
<tr>
<td>02336000</td>
<td>Chattahoochee River at Atlanta, GA</td>
<td>21</td>
<td>40,900</td>
<td>28.12</td>
<td>Regulated</td>
</tr>
<tr>
<td>02336490</td>
<td>Chattahoochee River at GA 280, near Atlanta, GA</td>
<td>21</td>
<td>42,300</td>
<td>35.98</td>
<td>Regulated</td>
</tr>
<tr>
<td>02336840</td>
<td>Sweetwater Creek at Brownsville Road, Powder Springs, GA</td>
<td>21</td>
<td>30,000</td>
<td>31.40</td>
<td>Exceeded 0.2</td>
</tr>
<tr>
<td>02336870</td>
<td>Powder Springs Creek near Powder Springs, GA</td>
<td>21</td>
<td>8,940</td>
<td>19.91</td>
<td>Exceeded 0.2</td>
</tr>
<tr>
<td>02337000</td>
<td>Sweetwater Creek near Austell, GA</td>
<td>21</td>
<td>31,500</td>
<td>30.82</td>
<td>Exceeded 0.2</td>
</tr>
<tr>
<td>02337170</td>
<td>Chattahoochee River near Fairburn, GA</td>
<td>22</td>
<td>63,900</td>
<td>30.65</td>
<td>1 to 0.5</td>
</tr>
<tr>
<td>02337410</td>
<td>Dog River at GA 5, near Fairplay, GA</td>
<td>21</td>
<td>59,900</td>
<td>33.83</td>
<td>Exceeded 0.2</td>
</tr>
<tr>
<td>02337500</td>
<td>Snake Creek near Whitesburg, GA</td>
<td>21</td>
<td>13,500</td>
<td>19.42</td>
<td>Exceeded 0.2</td>
</tr>
<tr>
<td>02338000</td>
<td>Chattahoochee River near Whitesburg, GA</td>
<td>23</td>
<td>66,600</td>
<td>29.74</td>
<td>Regulated</td>
</tr>
<tr>
<td>02392780</td>
<td>Little River at GA 5, near Woodstock, GA</td>
<td>21</td>
<td>16,100</td>
<td>20.80</td>
<td>1 to 0.5</td>
</tr>
<tr>
<td>02392950</td>
<td>Noonday Creek at Hawkins Store Rd, near Woodstock, GA</td>
<td>21</td>
<td>11,900</td>
<td>17.28</td>
<td>Exceeded 0.2</td>
</tr>
<tr>
<td>02392975</td>
<td>Noonday Creek at Shallowford Road, near Woodstock, GA</td>
<td>21</td>
<td>11,400</td>
<td>19.66</td>
<td>Exceeded 0.2</td>
</tr>
<tr>
<td>02393377</td>
<td>Butler Creek at Mack Dobbs Road, near Kennesaw, GA</td>
<td>21</td>
<td>6,760</td>
<td>14.27</td>
<td>Exceeded 0.2</td>
</tr>
<tr>
<td>02393419</td>
<td>Allatoona Creek at Stilesboro Rd, near Acworth, GA</td>
<td>21</td>
<td>16,600</td>
<td>23.90</td>
<td>Exceeded 0.2</td>
</tr>
<tr>
<td>02398000</td>
<td>Chattooga River at Summerville, GA</td>
<td>21</td>
<td>23,500</td>
<td>21.19</td>
<td>2</td>
</tr>
</tbody>
</table>
September 2009 – Historic Flooding

The catastrophic and historic flooding that occurred greatly impacted the community and economy. $500 million in damage occurred as a result of the flooding.

20,000+ homes & businesses sustained major damage.

Unfortunately, 10 people in GA lost their lives. 90% died at night, 80% were in a vehicle.

The impact of the rainfall on the Atlanta area creek and river systems was disastrous. More than a third of river gages that observed flooding rose to never-before-seen levels.

35% crest above major flood stage
19% crest above moderate flood stage
46% crest above minor flood stage

20 river gages went underwater and stopped reporting.

79 river gages rose above flood stage.

One of the broken records was originally set in 1919.

28 new record crests were set.

80% of the Great American Scream Machine and many other rides at Six Flags Over Georgia were underwater.

National Weather Service Atlanta
For additional information www.weather.gov/atlanta

15 May 2017
Purpose

Build a ‘Better Way’ to Communicate Flood Risk
What we learned…

The State needed a ‘Better Way’ to Communicate Flood Risk. A way that would provide:

- A **statewide** platform for the **access** and **distribution** of flood risk data.
- Ability to **respond** to requests **24/7**
- Provide a **useable** platform for **both**
  - Floodplain Officials
  - Residents
- Make Flood risk **personal**
Project Goals

Build a ‘Better Way’ to Communicate Flood Risk

- Always Available
- Easy to Access
- Easy to Understand
- Comprehensive
“Communicating flood hazard risk is of paramount concern to every flood management authority in the U.S.

The most cost-effective tool to communicate risks and deliver products to the communities we serve is through the internet and social media…”

- Me
Platform

- Scalable
- Flexible
- Internet based
- Reliable
- Well-supported

HTML, CSS

Javascript API

ArcGIS Server
Design

- Clearly Convey Regulatory SFHA
- Make Flood Risk Personal
- Comprehensive and Concise
- Leverage RiskMAP Flood Risk Products
- Visually Appealing
Web Mapping 101

• Applications use a Map Service to display data layers and perform queries.
• A Map Service is defined by
  – The Geodatabase
  – The MXD which contains the symbology and labeling
• Map Services can be authored from ArcGIS Desktop
Data

WSEL  Depth  % Annual Chance  % Chance Over 30-yrs
Application – User Experience
Open House Meetings of the Past

AKA – the ‘Old Way’
Grandma’s Dilemma - Where’s MY house?

The FIRM Panel Index

- Grid based-index
- Shows only major roads
- Difficult to identify individual properties.
- Cumbersome to use
Open House Meetings – The ‘Old Way’

Meeting attendees could view the FIRM panel that covered their area, few where able to identify their particular property. The only information shown was the regulatory SFHA.
Many folks left the meeting with more questions than they arrived with.

There were no takeaway materials showing their specific flood risk.

This led to some folks to leave frustrated and unsure of their options.
Open House Meetings of the Present

Snapshot in Action
Are there any other questions I can answer for you?

It looks like he is in the flood zone.

But you can keep your flood insurance at a much lower rate.

I can answer that!

It means that you won't have a mandatory insurance requirement, once the updated study becomes effective.

Snapshot in Action

However, you are still at risk for flooding.

Great! When do the new maps become effective?

Your updated maps will become effective on June 7th of next year.

Please have him contact me, let me give you my information.

What are his options?

Welcome to your Open House!

Okay. What does that mean to me?

However, the updated study will have you mapped outside the high risk area.

It looks like you are currently mapped inside the high risk special flood hazard area.

Let me look up your address and print out your Floodrisk Snapshot.

Welcome to your Open House!

Hello maam, I'm your local floodplain administrator. Please have him contact me, let me give you my information.

Thank You!

This has been very helpful.
As a takeaway, the Snapshot brings together all the information a resident needs to effectively communicate their flood risk.

Residents can easily communicate their flood risk simply by it showing to officials.

Officials can answer specific questions based on what’s shown on the Snapshot.

Residents leave the open house with a document that provides ways to get more information.
Conclusions
An **Always Available, Easy to Access** resource to understand the **Flood Risk** for a particular property or area.

A **Comprehensive** and **Portable** document that details **current** and **changing** flood risk, including flood depths for multiple flood events.

**Personalizes** Flood Risk by tying the risk to a **individual** resident using common language in a pretty package.

**Leverages** the **wealth** of risk information that is too often **buried** in the RiskMAP Flood Risk Products.
Questions and Comments

For more information please contact:

Jeff Butler, CFM, GISP
Jeffrey.butler@atkinsglobal.com
&
Joe Martinenza P.E.
joseph.martinenza@dnr.ga.gov