Web Mapping at the Massachusetts Historical Commission

NEURISA November 16th, 2009

Joshua Rosenthal Massachusetts Historical Commission

What is the Massachusetts Historical Commission?



- Founded in 1963 by the State Legislature "to identify, evaluate, and protect important historical and archaeological assets of the Commonwealth"
- 17 member Commission is the State Review Board for state and federal preservation programs
- State Historic Preservation Office
- Office of the State Archaeologist
- A division of the Office of the Secretary of the Commonwealth

What does the MHC do?

- Review state and federally licensed, permitted, or funded projects to determine impact on historic or archaeological properties
- Maintain Inventory of Historic and Archaeological Assets of the Commonwealth
- Administer state and federal grants for historic preservation and rehabilitation
- ... and other things, but this is the GIS-Centric view

The Inventory of Historic and Archaeological Assets of the Commonwealth

- Historic Resources ~42% complete
 ~185,000 Properties, Areas, Structures, Objects, etc.
- Archaeological Sites ~100% complete ~ 12,000 Sites
- Archaeological Surveys ~85% complete ~ 3,000 Surveys

MHC (web)GIS Goals

- Get all of our inventory into our GIS
 4+ more years at current speeds
 - Alter data acquisition flow so that new data always has adequate spatial information, and gets into our GIS immediately, without backlog
- Facilitate exploring the inventory
 - For project review, preservation planning, sensitivity modeling, tourism, and research
 - Improve our WebGIS, allowing access to MHC data alongside other analytically relevant data

Historic Resources Inventory

• What is the Historic Resources Inventory ?

 Researched Forms documenting the presence and significance of historical resources

- Where does the Inventory come from?
 - Mostly, its produced by consultants, hired by towns, often paid for in part through a grant from the Massachusetts Historical Commission
 - Also produced by a volunteers, local historical commissions, and other sources.

Historic Resources Inventory

	WOB.3
vn_Woburn	RELATION OF SURROUNDING TO STRUCTURE
et address 73 Elm	Neighboring Structures
ne H.	Style: Colonial Federal Greek Revival Gothic Revival Italian Villa Lombard Rom. Venetian Gothic Mansard Richardsonian
ginal use have	Type Buildings: residential: overlaugh Conditions: Excellent Good Fair Deteriorat
sent use home NU-LEX	Use: Residential Commercial Religious Proximity:
isent owner	Landscape Features: Agriculture Open Wooded Garden: Formal/Informal
n to public	Predominent Features
e 1810-30 style foderal	
rce of date	GIVE A BRIEF DESCRIPTION OF HISTORIC IMPORTANCE OF SITE (Refer and elaborate on theme circled on front of form)
hitect	
3. CONDITION: Excellent Good Fair Deteriorated Moved Altered Added	
4. DESCRIPTION	
FOUNDATION/BASEMENT: High Regular Low Material:	
WALL COVER: Wood clapboarde Brick Stone Other	
ROOF: Ridge Gambrel Flat (Hip) Mansard	
Tower Cupola Dormer windows Balustrade Grillwork	
CHIMNEYS: 103 4 Center End End interior Cluster Elaborate Irregular	
STORIES: 1 23 4 ATTACHMENTS: Wings Ell Shed Dependency	
PORCHES: 1 2 3 4 Portico simple side Balcony Recessed:	54)
FACADE: Gable end: Front/Side Ornament:	BIBLIOGRAPHY AND/OR REFERENCE
Entrance: Side Fron Center Side Details: romodeled	
Windows: Spacing: Regular Irregular Identical Varied	- Marin
Corners: Plain Pilasters Quoins cornerboards	
OUTBUILDINGS	
 5. Indicate location of structure in relation to nearest cross streets and other buildings 6. Footage of structure from street <u>15</u> Property has <u>feet frontage on street</u> 	
Recorder DR hugh	
For MHC	
2 Photo 168,1777	RESTRICTIONS
Date PL	Original Owner:
	Deed Information: Book Number Page,Registry of Deed
NOTE: Recorder should obtain written permission from Commission or sponsoring organization before using this form. SEE REVERST SIDE	
FORM MHC-B 10M.4-67-944872	

Historic Resources Inventory

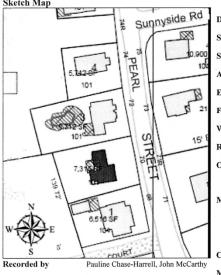
FORM B - BUILDING

MASSACHUSETTS HISTORICAL COMMISSION MASSACHUSETTS ARCHIVES BUILDING 220 MORRISSEY BOULEVARD BOSTON, MASSACHUSETTS 02125

Photograph

See continuation sheets

Sketch Map



	17-5-2 Wilming- 32	
	ton Town Woburn	
	Place North Woburn	
	Address 70 Pearl Street	
	Historic Name Unknown	
	Uses: Present Residence	
	Original Residence	
_	Date of Construction c. 1870	
	Source Historic maps and history of occupancy	
10	Style/Form No style	
-	Architect/Builder Unknown	
	Exterior Material:	
21	Foundation Field stone and concrete	
c	Wall/Trim Vinyl siding	
-	Roof Asphalt shingle	
	Outbuildings/Secondary Structures None	
-	Major Alterations (with dates)	
-	Large addition to north – mid-to-late 20 th C Vinyl siding – late 20 th C Picture window and replacement windows – late 20 th C	
ıy	Condition Fair	
iy	Moved 🖾 no 🗌 yes Date	
	Acreage 0.17 acres	
	Setting Suburban residential area	

Assessor's Number USGS Quad Area(s) Form Number

BUILDING FORM ARCHITECTURAL DESCRIPTION _______ see continuation short

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HISTORICAL NARRATIVE ree continuation show

se was built, in the late 19th century, when North Woburn was a cent subdivided lots in this area of Pearl Street. At this time, street railw ed as well. Many of 70 Peorl Street

in Eaton was living at 70 Pearl Street, which according to the 1875 Hankins man, he surred all will Edwill Edition, this externa is new more us a title annual structure of the structure

BIBLIOGRAPHY am es. F. W. and Co.

INVENTORY FORM CONTINUATION SHEET

MASSACHUSETTS HISTORICAL COMMISSION MASSACHUSETTS ARCHIVES BUILDING 220 MORRISSEY BOULEVARD BOSTON, MASSACHUSETTS 02125

PHOTOS



MASSACHUSETTS HISTORICAL COMMISSIO MASSACHUSETTS ARCHIVES BUILDIN 220 MORRISSEY BOULEVARD BOSTON, MASSACHUSETTS 02125



WOBUR

National Register of Historic Places Criteria Statement Form

Check all that apply: 🗌 Individually eligible 🛛 🔀 Eligible only in a historic district Contributing to a potential historic district Potential historic district

Criteria: 🖾 A 🗌 B 🖾 C 🗌 D Criteria Considerations: 🗌 A 🗌 B 🗌 C 🗌 D 📄 E 📄 F 🔲 G

Town

Woburn

d Significance by Pauline Chase-Harrell & John McCarthy toria that are checked in the above sections must be justified here.

Recet possesses sufficient integrity of design, setting, man on A for listing on the National Register at the local level

Property Address 70 Pearl Street

Area(s) Form No.

32

Organization Boston Affiliates, Inc.

Date (month / year) August, 2006

RECEIVED

NOV 27 2006

MASS. HIST. COMM

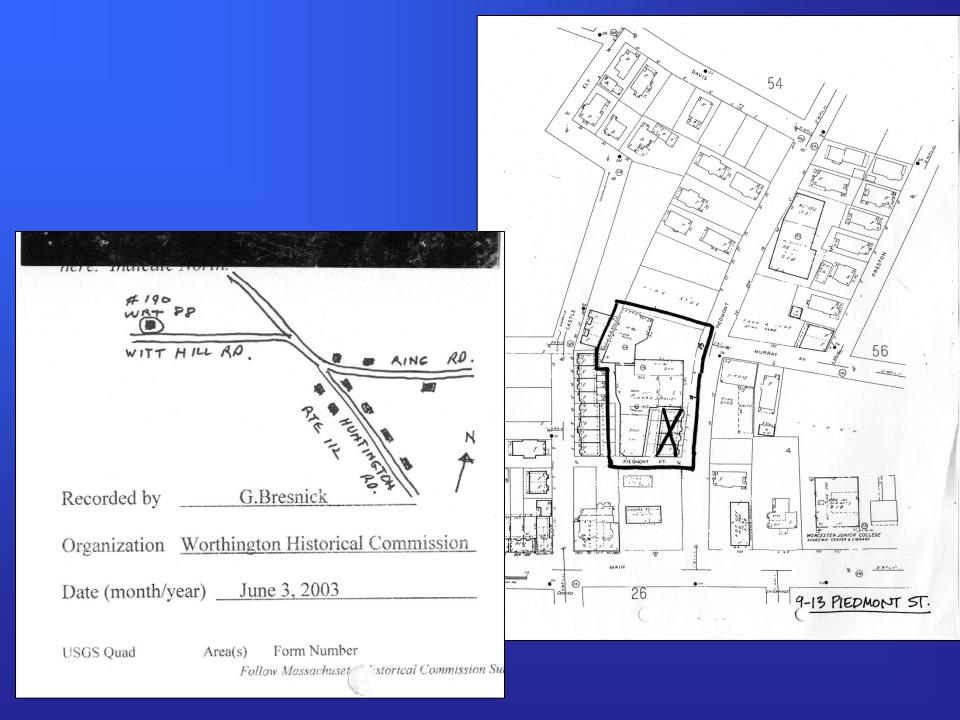
Follow Massachusetts Historical Commission Survey Manual instructions for completing this form. · · · · · · ·

Map Guidelines

• Ideally...

 GIS produced maps, including parcels, footprints, street labels, an intersection, and accompanying shapefiles

- Unfortunately...
 - Towns don't always have GIS resources, or resources aren't available to consultants
 - Sometimes forms are produced by volunteers, not consultants



Map Generator WebApplication Concept

- Search for an Address
- Get a marker on an aerial photo, with parcel lines and streets
- Move the marker to refine location
- Link to Live Local Birdseye Views to check
- Submit/Save results
- Create a printable map with Orthos, Parcels and some form of marker

Google Maps API & Google Spreadsheets

- Why Google Maps API?
 - Demo on MassGIS Wiki
 - Speed
 - Familiarity of interface to users
 - Really active and helpful email list
- Why use Google Spreadsheets?
 - A demo on the Google Maps usergroup showing how to publish data to a Google Spreadsheet without any server side scripting.
- Answer: Because it was really easy.

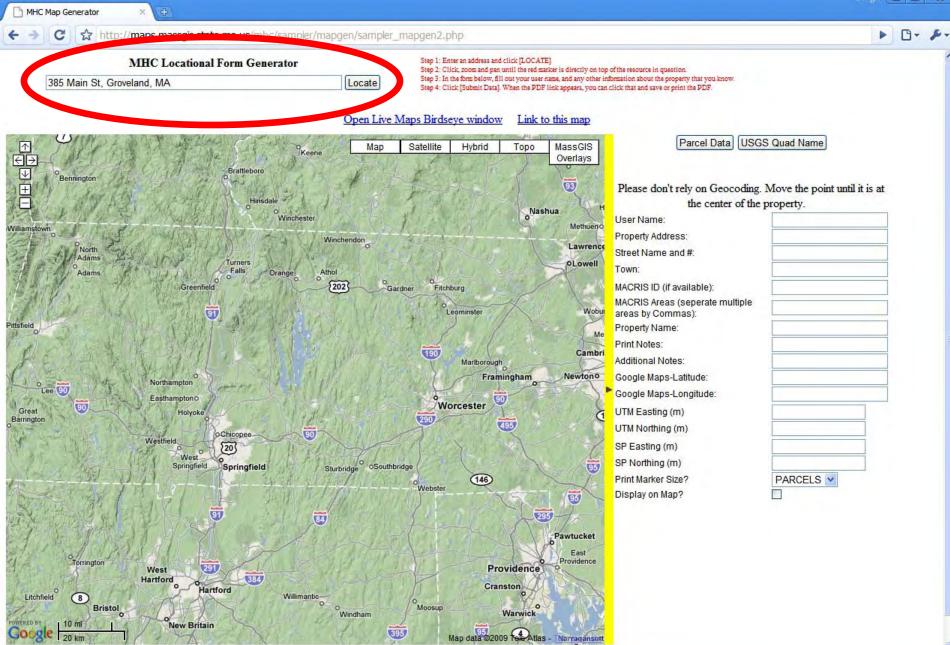
Success!

- Time to build proof of concept:
 less than 2 days
- Time to flesh out application:
 - spare time, over the course of a month
 - (and lots of ongoing experimentation and development since then)
- Time to train consultant:
 - an afternoon... but only because we had technical difficulties
- Hearing her ask to use it again on her next project:

Live demo... Mapping

- Locational Data Submission Tool

- Locational Data Submission Tool - Data



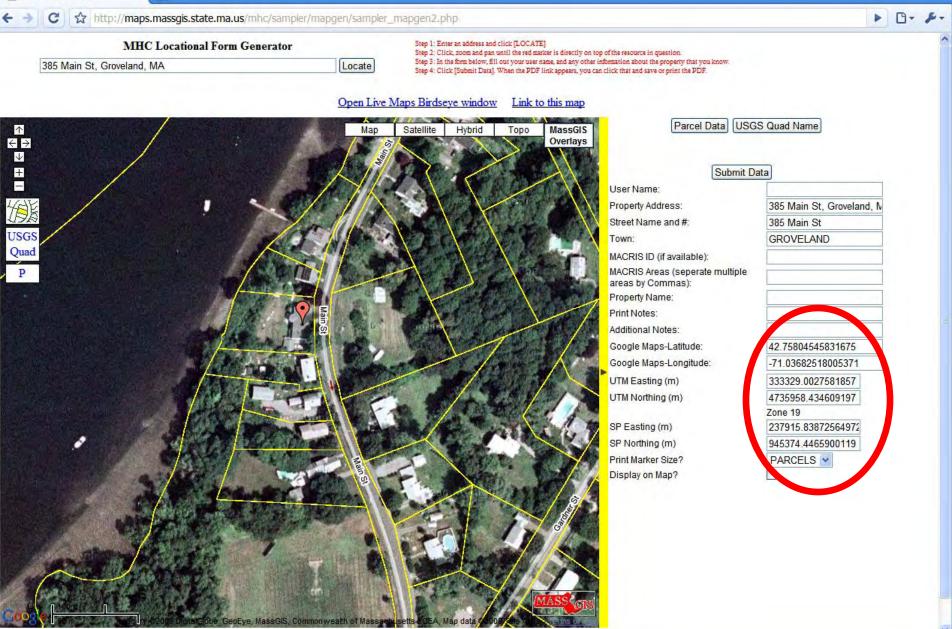
MHC Map Generator > D- +-C A http://maps.massgis.state.ma.us/mhc/sampler/mapgen/sampler_mapgen2.php Step 1: Enter an address and click [LOCATE] **MHC Locational Form Generator** Step 2: Click, zoom and pan until the red marker is directly on top of the resource in question. Step 3: In the form below, fill out your user name, and any other information about the property that you know. 385 Main St, Groveland, MA Locate Step 4: Click [Submit Data]. When the PDF link appears, you can click that and save or print the PDF. Open Live Maps Birdseve window Link t dis ma Parcel Data USGS Quad Name ∱ €→ Satellite Hybrid Map Topo MassGIS Overlays + + 1 Please don't rely on Geocoding. Move the point until it is at the center of the property. User Name: H) Property Address: 385 Main St, Groveland, N USGS Street Name and #: 385 Main St Quad Town: GROVELAND MACRIS ID (if available): Ρ MACRIS Areas (seperate multiple areas by Commas): Property Name: Print Notes: Additional Notes: Google Maps-Latitude: 42.757803 Google Maps-Longitude: -71.03684 UTM Easting (m) 333327.13992180664 UTM Northing (m) 4735931.539091326 Zone 19 SP Easting (m) 237914.7718202646 SP Northing (m) 945347.5058663376 Print Marker Size? PARCELS V Display on Map?

©2009 DigitalGlobe

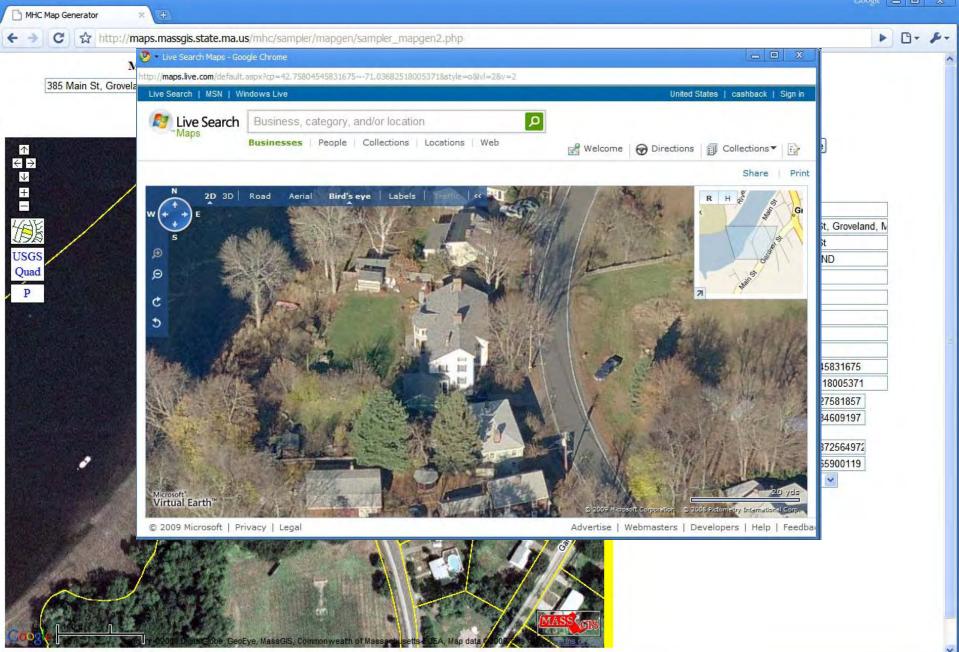
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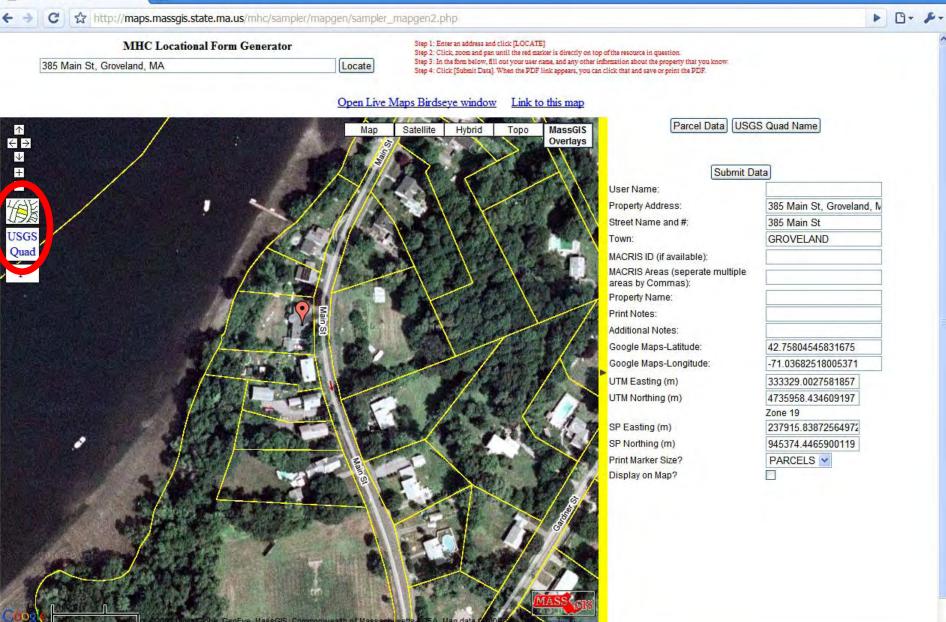
MHC Map Generator ► D- ₽-C Attp://maps.massgis.state.ma.us/mhc/sampler/mapgen/sampler_mapgen2.php Step 1: Enter an address and click [LOCATE] **MHC Locational Form Generator** Step 2: Click, zoom and pan until the red marker is directly on top of the resource in question. Step 3: In the form below, fill out your user name, and any other information about the property that you know. 385 Main St, Groveland, MA Locate Step 4: Click [Submit Data]. When the PDF link appears, you can click that and save or print the PDF. Open Live Maps Birdseye wind Link to his map Parcel Data USGS Quad Name ^ ∢ → Map Satellite Hybrid Торо assGIS verlays MassG Parcels \mathbf{V} + -Please don't rely on Geocoding. Move the point until it is at DEP Wetlands the center of the property. User Name: 倒 Π NCRS Soil Point Data Property Address: 385 Main St, Groveland, N USGS MassGIS Data Only Street Name and #: 385 Main St Quad GROVELAND Town: ACEC - Hybrid MACRIS ID (if available): P MACRIS Areas (seperate multiple ACEC - Terrain areas by Commas): Property Name: Building Footprints Print Notes: Additional Notes: Google Maps-Latitude: 42.757803 Google Maps-Longitude: -71.03684 UTM Easting (m) 333327.13992180664 UTM Northing (m) 4735931.539091326 Zone 19 SP Easting (m) 237914.7718202646 SP Northing (m) 945347.5058663376 Print Marker Size? PARCELS ¥ Display on Map?

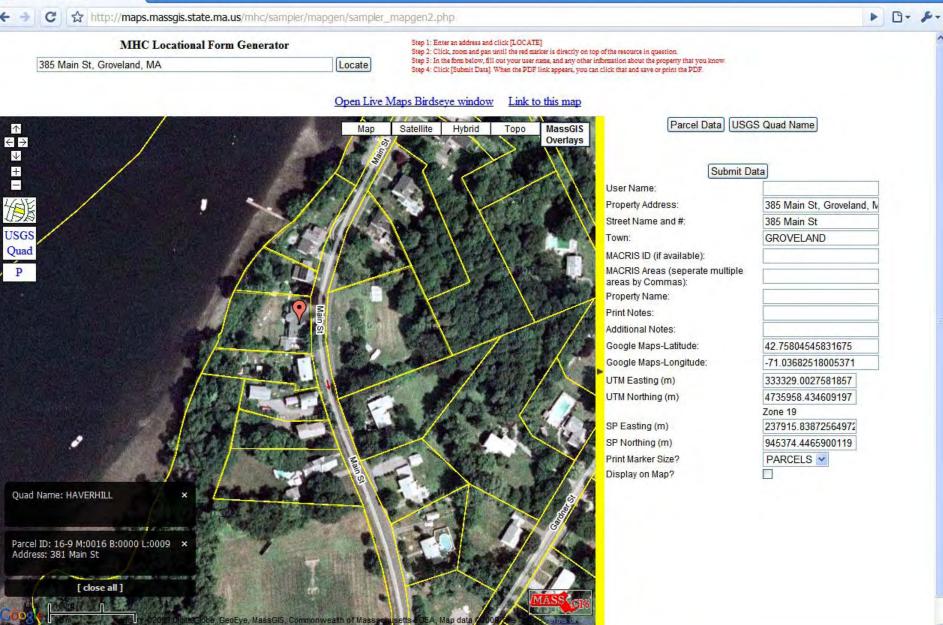


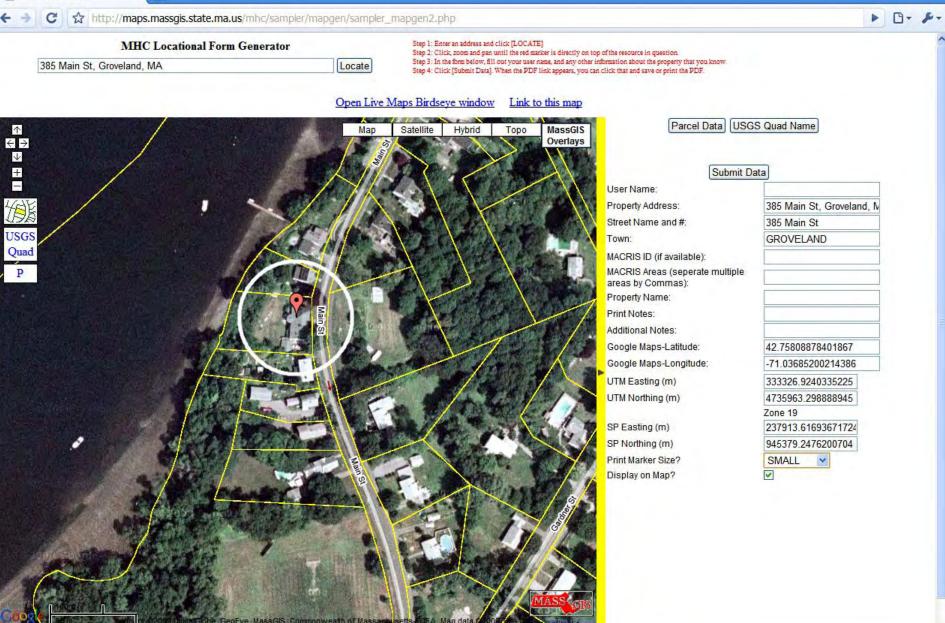


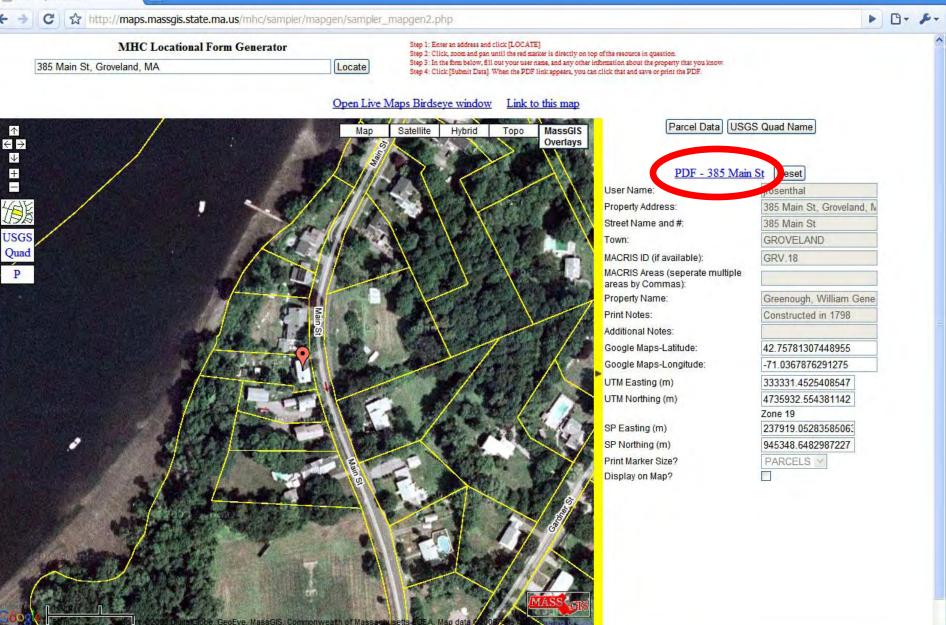


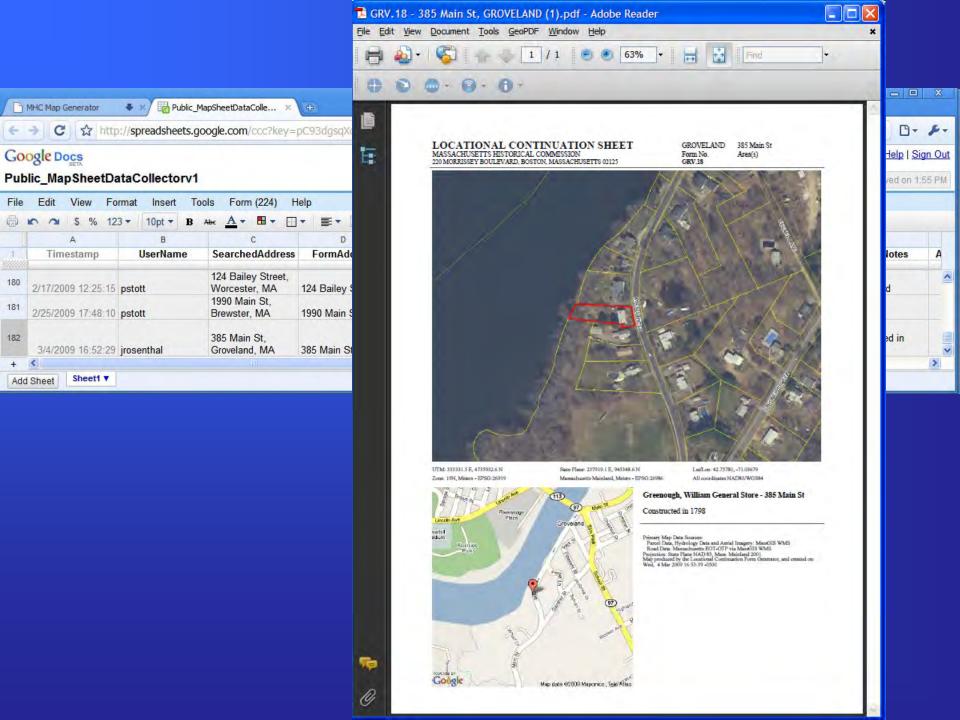












Map Generator - The Good...

- We have a tool that allows quick and easy production of pretty good, standardized maps, while recording data.
- We have a very simple tool that allows the recording of point data for someone without GIS resources/knowledge.
- We have a tool that is easily adapted to querying MassGIS data, tailored to our needs.

Map Generator - The Bad...

- Not our ideal map (parcels + footprints). Aerial photos don't b/w photocopy well.
- MassGIS doesn't have parcels for all towns, and thus we don't have adequate data for many towns.
- We're stuck with paper, and files that simply produce the paper... currently MS Word templates. These are yet another file.

Map Generator - The Ugly... Thoughts on Using Google Frameworks

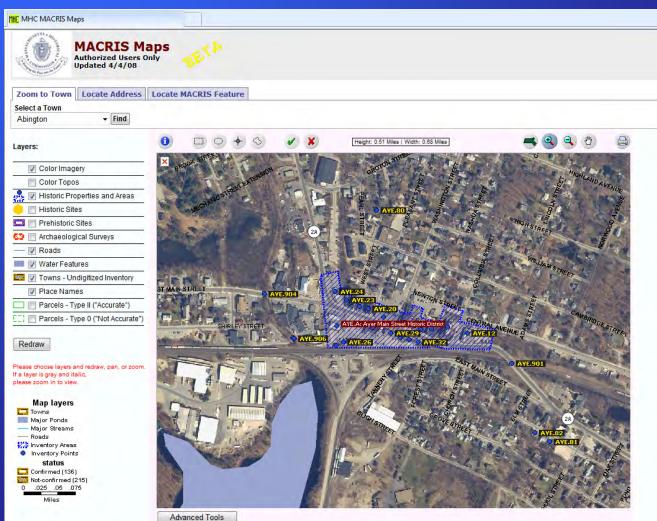
- Pros:
 - Familiar
 - Fast
 - Great user base
 - Very Easy to learn and use

Map Generator - The Ugly... Thoughts on Using Google Frameworks

- Cons
 - Terms of Use are very confusing
 - 9.1 "Free, Public Accessibility to Your Maps API Implementation."
 - Stability?
 - Will it be there tomorrow?
 - Will it work the same tomorrow?
 - Is it 'appropriate' for an agency to use a Google Map, with Logo, for something official?
 - Spherical Mercator

MHC WebGIS v.1 – Sept 2007

Maptitude \rightarrow Maptitude for the Web



MHC WebGIS v.1 – Sept 2007

- On paper it met all of our needs
 - Some custom built functions by Caliper
 - Some MHC built functions
 - Some DHTML tricks
- But.... Slow
 - One lonely underpowered server (in Texas)
 - Full Set of 2005 Color Orthos, USGS Topos, Parcels
 - Trying to do too much

MHC WebGIS v.2 –2009

- Complete redesign

 Use Maptitude for the Web for our data ONLY
- OpenLayers
 - More complicated, but much more flexible
 - Why not Google Maps? ToS + Spherical Mercator
- jQuery/jQuery UI + jQuery plugins
- Data Source: MassGIS Webservices
- Data Source: Terraserver (USGS/Microsoft)

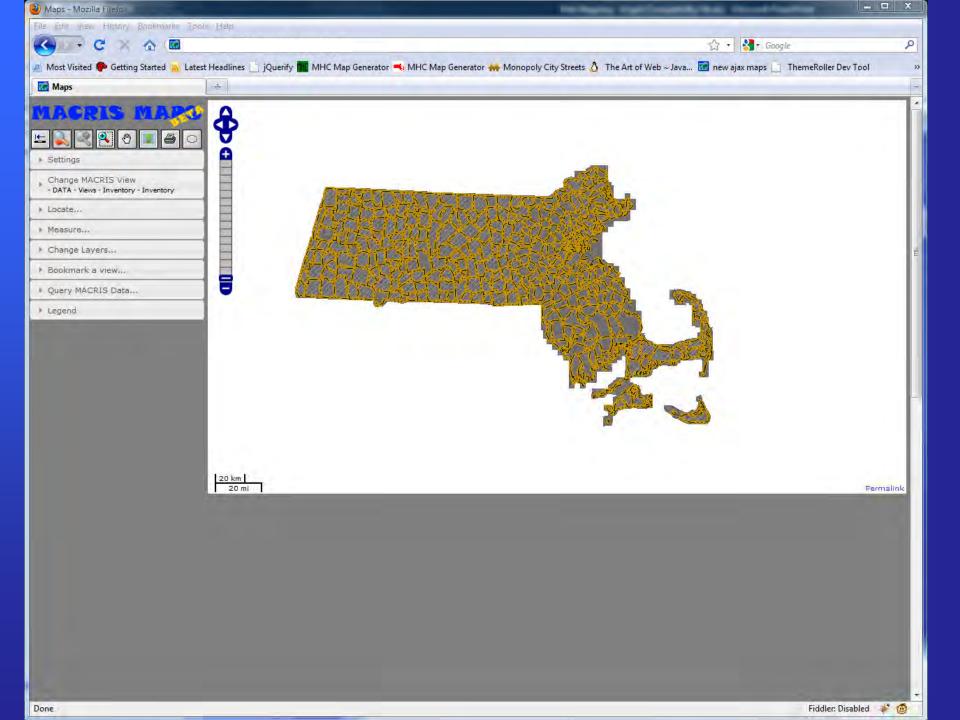
MHC WebGIS v.2 – Winter 2009

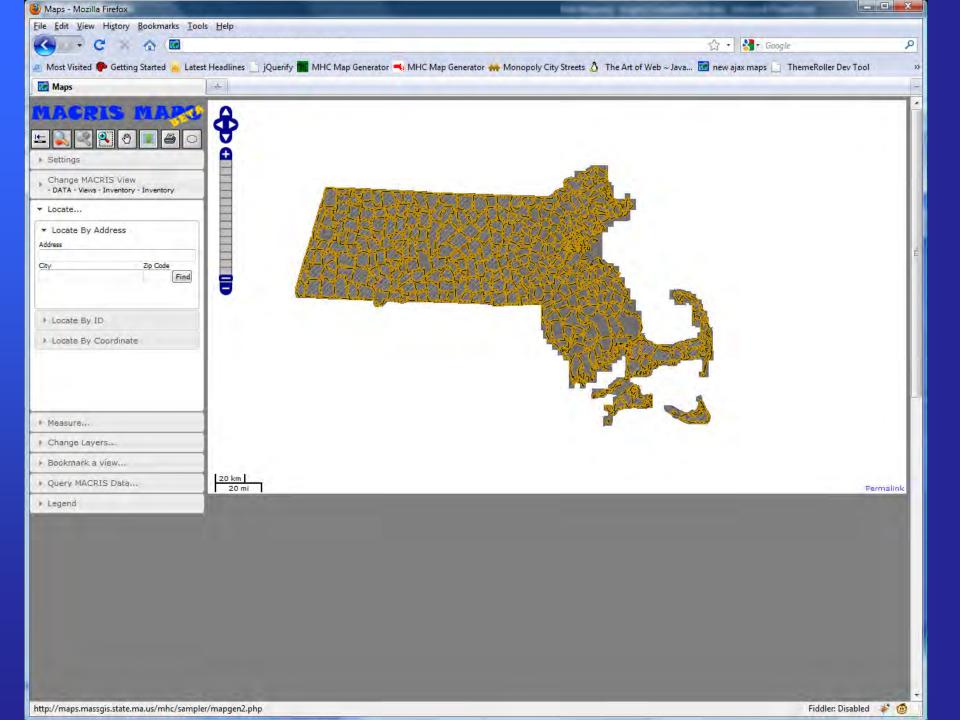
- Design/Development Goals
 - Keep it Simple
 - Complexity can (should) exist, but it shouldn't be needed
 - Default options are good
 - Remembering changed options is good (logins or cookies)
 - Encourage Browsing
 - Queries should be cheap in time and effort
 - Release minor updates often
 - Get feedback often

Live demo... WebGIS

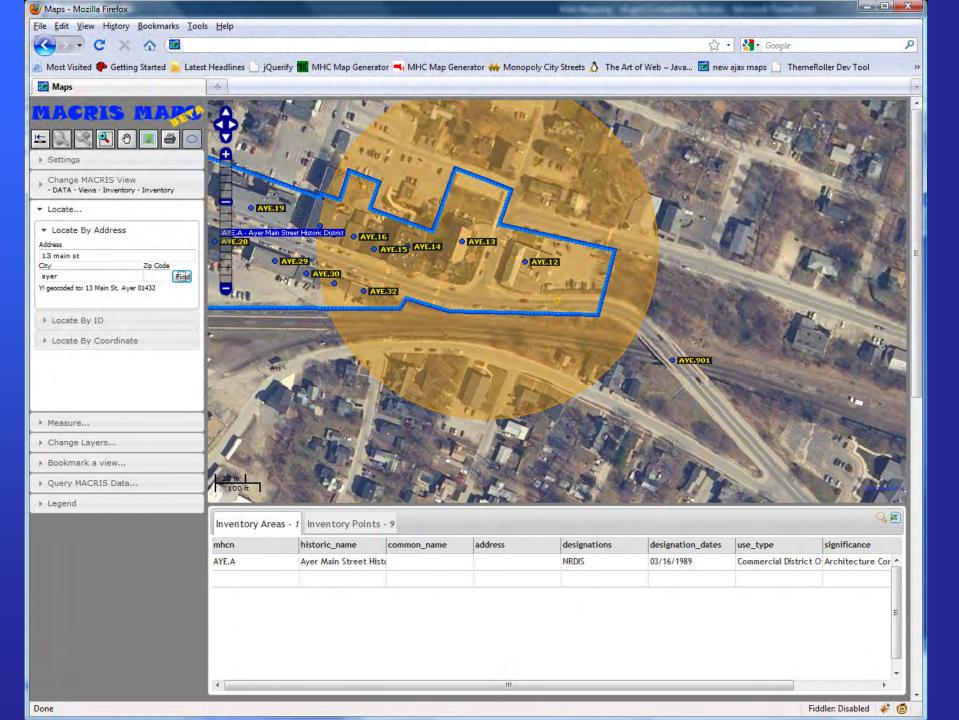
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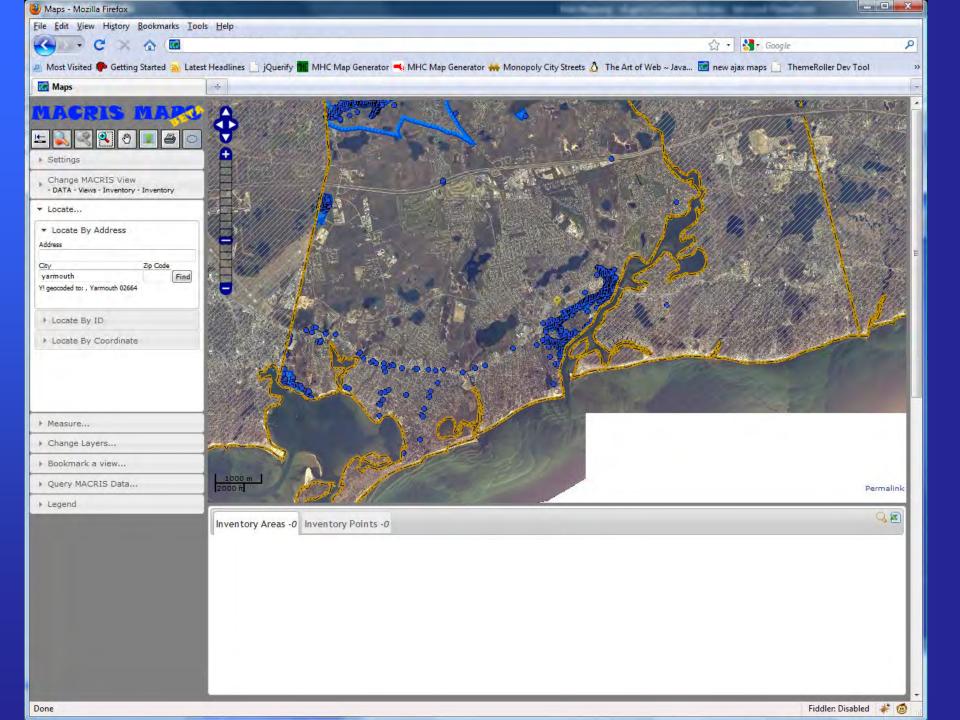


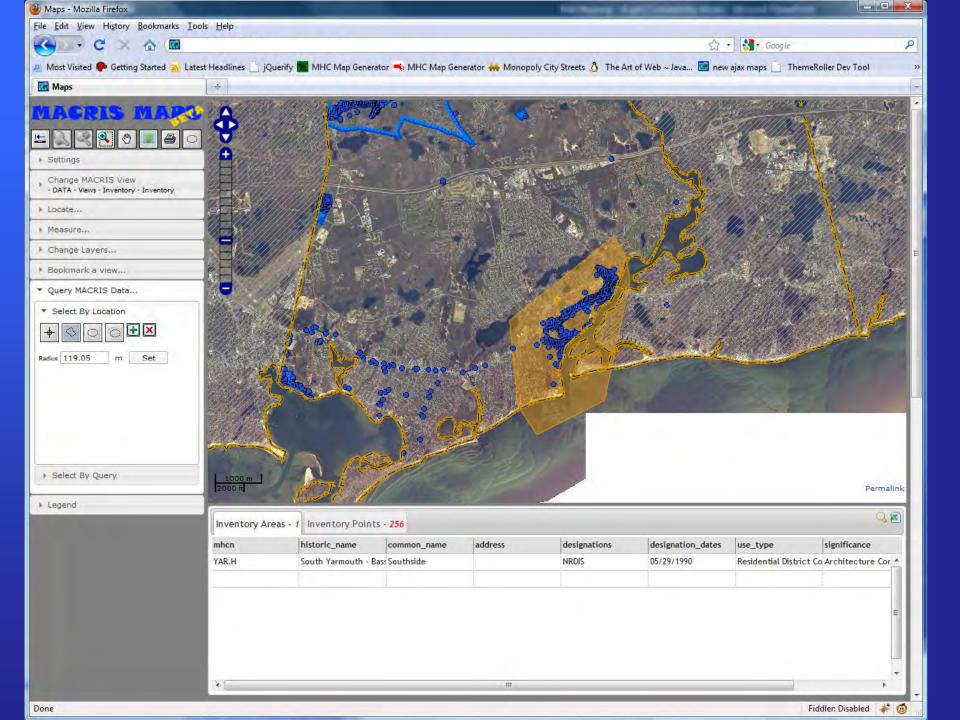


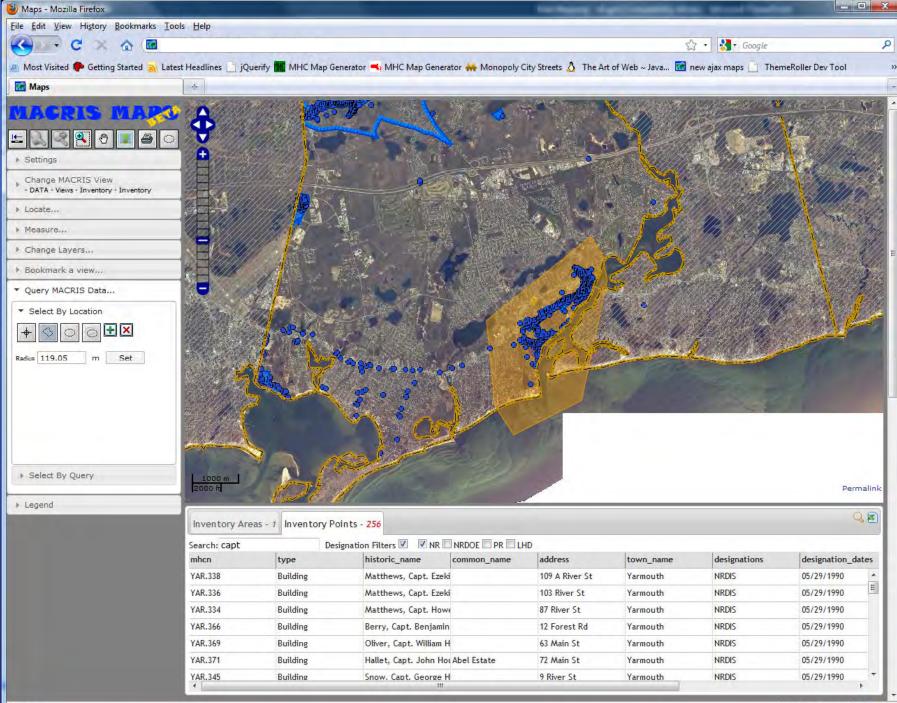


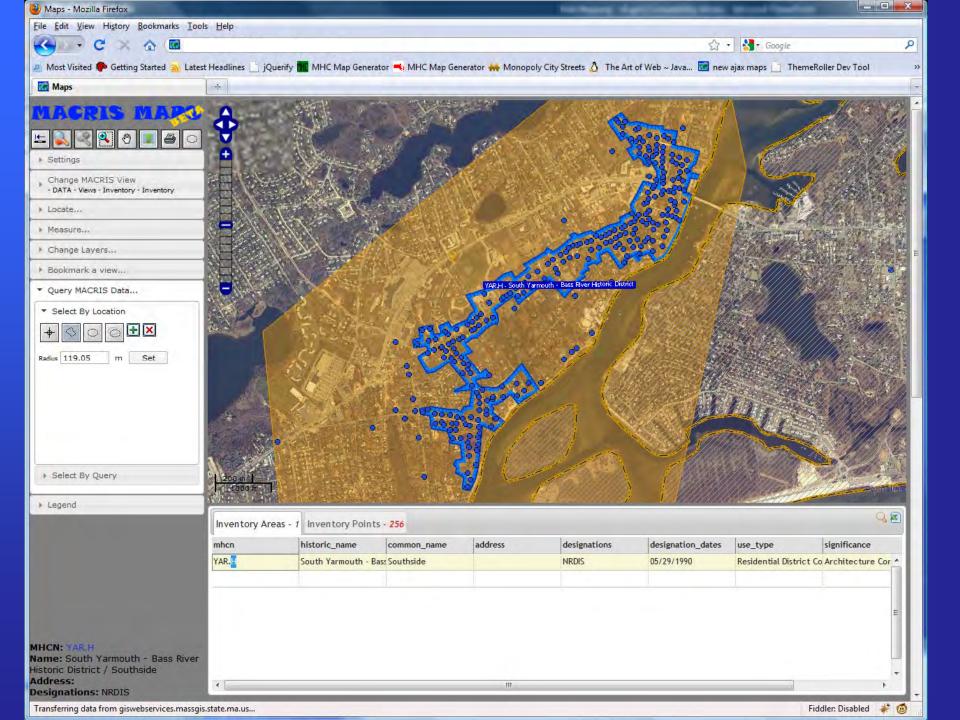
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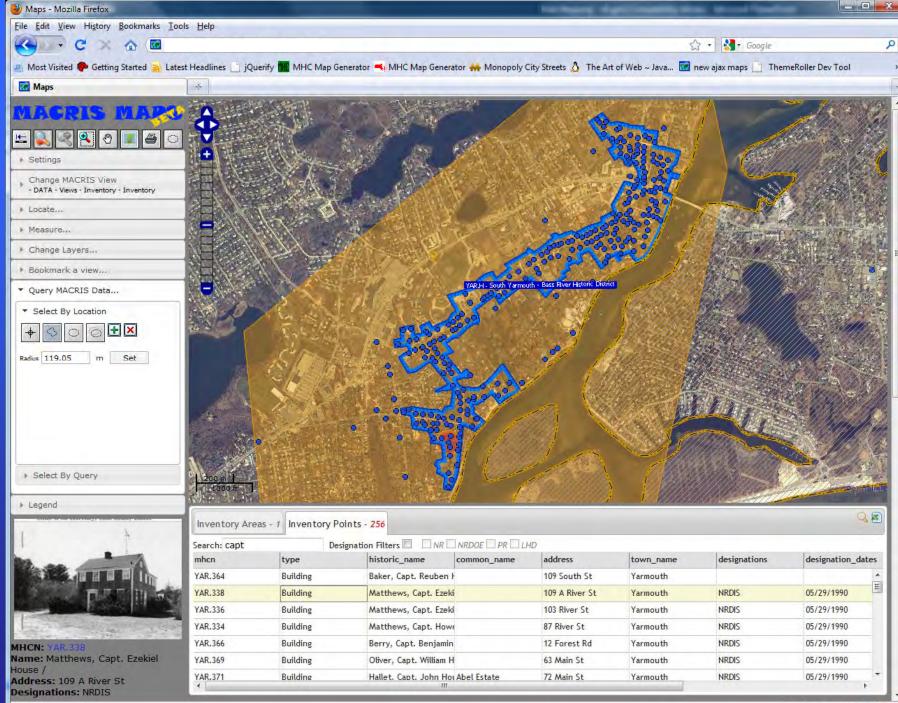




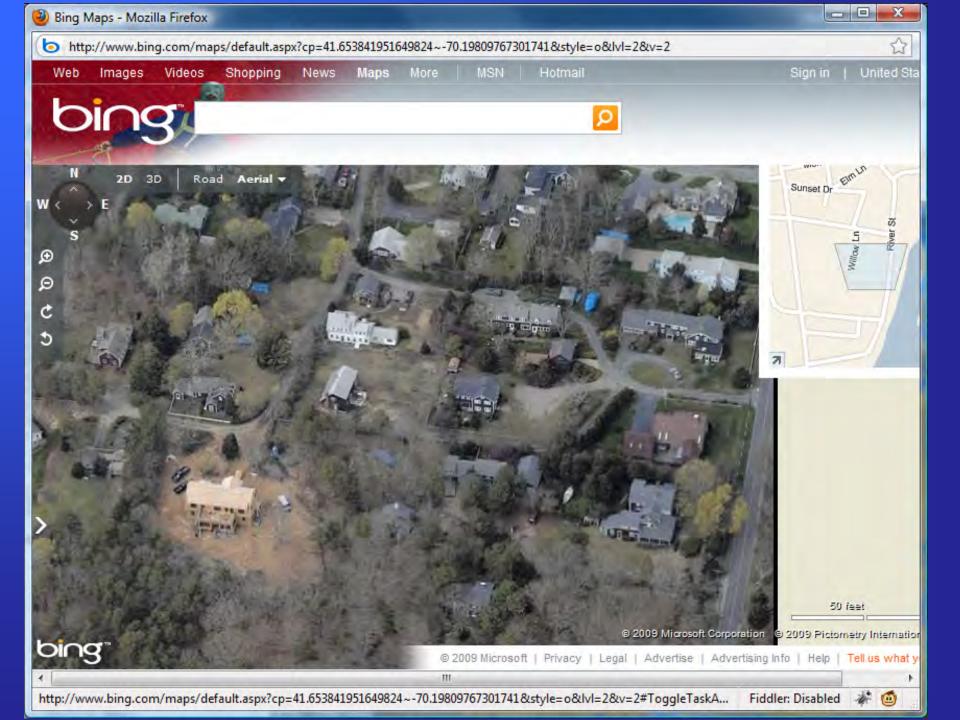


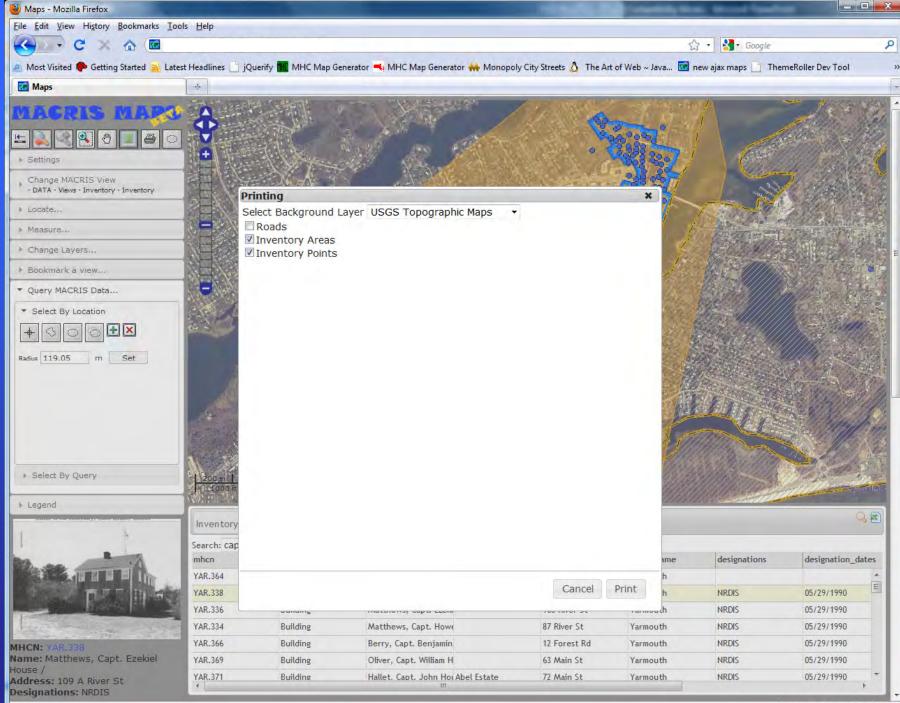


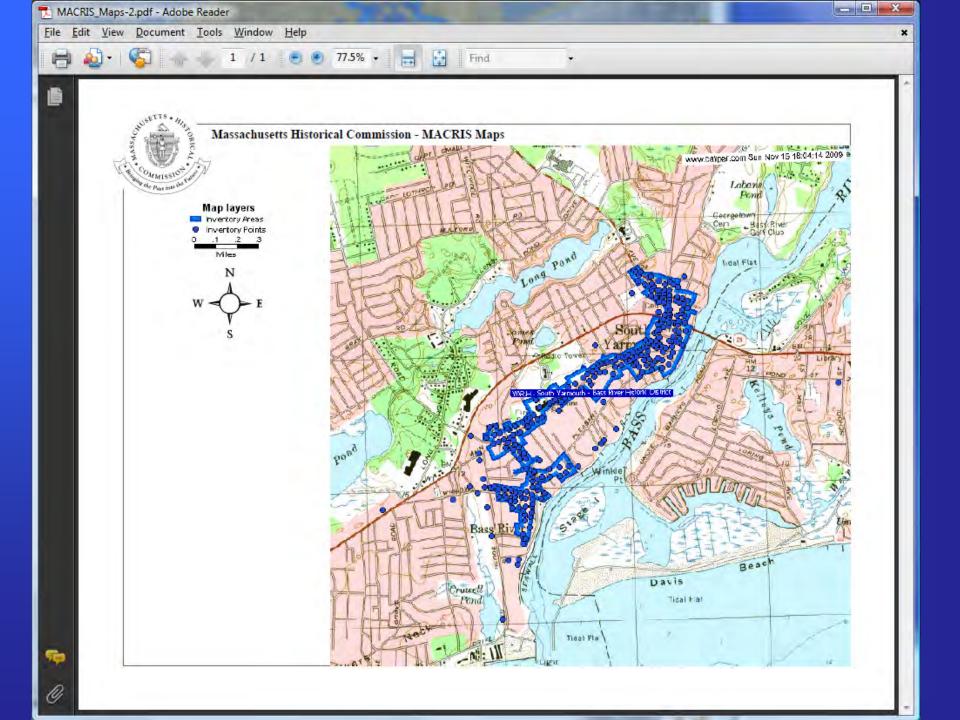




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MHC WebGIS – The Good...

- Allows users to view, query, print imagery and export attributes selections
- Fast and Responsive
- Efficient MHC only hosts our data, while including other analytic data sets
- Controlled / Predictable
 - Front end is static, our data is static, everything out of our control is based on open standards (WMS/WFS)
- Easily expandable as MassGIS makes available more relevant data

MHC WebGIS – The Bad...

- It's not finished yet
- Lack of control over additional data sets
 - We don't control which datasets are available
 - We don't control the fields the datasets have
 - We don't control how up to date the datasets are
- Learning as we go means variation in quality of our code
 - Inefficient snippets, Unsecure snippets
 - Just plain broken snippets that haven't been discovered yet

MHC WebGIS – The Ugly... Issues of Multiplicity

- Many potential points of failure
 - Our server, MassGIS, Terraserver, User's connection (& Proxy/Security), User's browser
 - WebGIS needs to either compensate for these failures, or inform user if necessary
 - How to monitor and let users know when one set of background data isn't working for 5 min, and then let them know when the dataset is available
 - Regular maintenance to adapt to changes in data sources

MHC WebGIS – The Ugly... Issues of Multiplicity

- Multiple backends to learn and watch
 - Not necessary... but huge efficiency gains (DWITHIN vs. Intersect Polygon in Geoserver)
- Complexity of Libraries
 - Lots of libraries/packages/languages involved
 - OpenLayers, jQuery (+ jQuery UI, SlickGrid, jQuery-jsonp) MT4W, PHPExcel, FPDF
 - Modular also means more projects you need to watch
 - (Simpler options: OpenGeo's stack? MapFish?)

Taxonomy of Web Mapping - Review

Front End Libraries

- Google Maps API
- OpenLayers

Data sources - Hosting everything vs. the hosting the bare minimum and pulling from preexisting 'Cloud' resources

Front End Libraries

- Google Maps API
- Pros:
 - Easy to learn very active user list, lots of tutorials, very well documented
 - Familiar UI for your users
 - Fast built-in background datasets
- Cons:
 - Code subject to change
 - Terms of Use Complex, subject to change, may limit your application's design
 - Spherical Mercator may cause problems for some data sources

Front End Libraries

OpenLayers

- Pros:
 - Very flexible, designed for custom controls
 - Robust Integrates with a variety of backend data sources, and easy to add more
 - Projection support via ProjJS
 - You host your code = Stability
- Cons:
 - Not as easy to learn less active user group, out of date examples... good, but not great
 - Shortage of tutorial examples
 - Changes between versions can get confusing