GeoMOOSE Evaluation 5/19/10

The following is an evaluation of GeoMOOSE conducted by Dean Anderson at Polk County. The GeoMOOSE software was evaluated within the design parameters established by the County/City OpenSource Web Mapping Consortium. GeoMOOSE (a Minnesota Consortium) has come out with their Version 2.2 this fall/winter. The last time I reviewed their software, it was in a previous version and it did not appear to meet our needs. However, Version 2.2 is pretty interesting. Below is a preliminary evaluation of the software product based on review of existing sites.

1. General Review

The following is a short review obtained from reviewing the GeoMOOSE web site (www.GeoMOOSE.org).

Software Used: JavaScript, PHP, MapServer, OpenLayers
      Review: Similar to what we have found

User Group: GeoMOOSE group
      Review: A consortium of users similar to ours. Active user group.

License: License is a simple open source and free to use (MIT based)
      Review: Available to us at no cost.

Documentation: Support, installation, etc.. documentation exists
      Review: This documentation is comparable or exceeds most web based GIS software
      products.

Supported Platforms: IIS and LINUX
      Review: Not sure about this.

Software Management: GeoWiki Trac 0.11.6 & SourceForge
      Review: A system exists for managing software, reporting bugs and a discussion group
      exists.

Commercial Support: Houston Engineering and Northstar Geographics
      Review: Commercial support exists for this product

Server Side: Unknown
      Review: none

Administration Tools: Unknown
      Review: none

Summary: GeoMOOSE is where I would hope our group gets to someday, only they are already there! It appears that they are using the same tools and formats that we are interested in. It appears this software warrants further review on its technical merit.

2. Design and General Requirements Review

In September the group documented and a number of general design considerations. The following is a preliminary review of the GeoMOOSE system as compared to our design considerations.

<u>2a. Design Considerations</u>

<u>Meets Specification</u>

- Data - Quickly access geo features, photos, integrated data, reports, and images
- Viewing (simple/fast)- Pan/Zoom/Goto common places/Measure distances and areas
- Query- Identify, GeoSelect, Query by attribute
- Buffer Query - Find nearby features (buffer)
- Attributes - Support query, reports,
- Graphics- Nice fast displays, turn on/off maps or features, view legends
- Print reports or maps
- Query selections should output to mail/merge type spread sheet
- Support multiple projections
- Integrate SID files (plug-ins would be OK)
- Consume/Produce OGC standard web services
- Support a "Drill down" query or "Select by overlap"
- Ensure output does not have "distorted" scales
- There should be a "strong" link to ESRI related file structures
- Attribute displays should include "hyperlinks"
- Sketch graphics on a map.
- Should have some way to quickly map feature (signs/pavement types) on roads.
- Want a "Google style" interface
- Should have a simple "theme" based view that allows for default viewing. However, also want to support ability to see a legend and turn of layers within a theme
- Ability to have a disclaimer page and options to force uses thru this page
- Ability to show only selected features and not all features (show selected only)
- Support four kinds of users - Internal, External Professional, My Mom, non-network/internet internal employee

<u>Unknown</u>

- Ability to view tables that have xy coordinates in them
- Ability to make a call to change the xy coordinate of an attribute
- Create "geo-bookmarks" so you could send someone a link and share views with others

<u>2b. Design/Interface Considerations</u>

<u>Meets Specification</u>

- The interface should be more similar to "Google Maps" then ArcView. This is a change from the original PcMaps and Ellamaps which were created to be similar to ArcView 3.2.
- We would like the ability to call a map or send a map as a URL. This would allow the application to be called from other applications and maps could also be shared by sending someone the URL of your map.
- The users will still need to graphically identify features. It is important to remember that once the user locates a feature(s) then the next step for the user will often be to explore that area.
- We still want a consistent "look and feel" to the application. However, organizations will still want the ability for some degree of customization.
- Web Services represent an interesting technology that should be utilized by this application provided that the services meet OGC standards. The application may not be

map centric but may be driven from a non-map query. We need the ability to be drive the application from a "query" where focus is not the map. Options should exist to have "front end" query where questions are asked followed by a map as a secondary action. ie: Ask to find property (English oriented question) and then as an option view a report or a map.

- Do not want any "popups"

Unknown

- We would like the ability for users to "book mark" the map.
- Any queries should be as "English Like" as possible.

2c. Tool Administration Considerations

Meets Specification

- "Easy" to support multiple users and types
- Uses standard and accepted components, programming languages & technology
- Interfaces with existing GIS technology (ArcMap)
- Graphic definitions (how maps look) are based on commonly used GIS tools (ArcMap)
- Would be nice to use "services" as a mechanism to manage information
- Support different views of information if possible.
- IIS and Apache/Linux both need to be supported
- Tile cashing is OK if it speeds up delivery
- Must have a close link to ESRI data structures
- Buffer should work in IE7
- Want ability to not display tools such as measure or coordinate display
- Helps should be available and simple to manage
- Can be administered by "non-programmers" such as a GIS professional as easily as Ellamaps is now.

Unknown

- Should be integrated with "content management" tools
- Ability to manage password or limit access to some types of users (E911, etc)

3. Business Use Case Review

I used three sites (selected at random) and two modified functional use cases to assist in a functional review of this software. I checked if the tool could do the function or not and saved simple screen shots where I thought applicable.

Three Sites Used for Review

Door Wisconsin (DCW): http://map.co.door.wi.us/map
      - GeoMOOSE 2.0 – MS4W
Pipestone Minnesota(PCM): http://co.pipestone.mn.us/GeoMOOSE/pipestonemainmap.html
      - GeoMOOSE 1.0 – MS4W (earlier version)
SWWRPC GIS (SWW): http://gis.swwrpc.org/GeoMOOSE/demo.html
      - GeoMOOSE 2.0 – LINUX server

Two modified business cases were used as part of the review.

Field Appraisal

Business Steps	DCW	PCM	SWW
1. Search for property			
a. Attribute Search	X		X
b. Geogrpahic Search	X	X	X
2. List properties	X	X	x
3. Select properties from a list	X		X
4. View attributes	X	X	X
5. View Map	X	X	X
6. Adjust map view	X	X	X
7. Select nearby property	X	X	X
8. Produce maps & Reports			
a. Maps	X	X	X
b. Reports	X	X	X
9. View Overlays	X	X	X

Planning (Mailing List & Sketch)

Business Steps	DCW	PCM	SWW
1. Search for property by attribute	X		X
2. List properties	X	X	X
3. Select property from list	X	X	X
4. View property attributes	X	X	X
5. View Map	X	X	X
6. View Map / owner labels	?	?	?
7. Adjust map view	X	X	X
8. Select properties within buffer	X	X	X
9. Sketch features on map	X		X
10. Print a list to a mail merge file	X		X

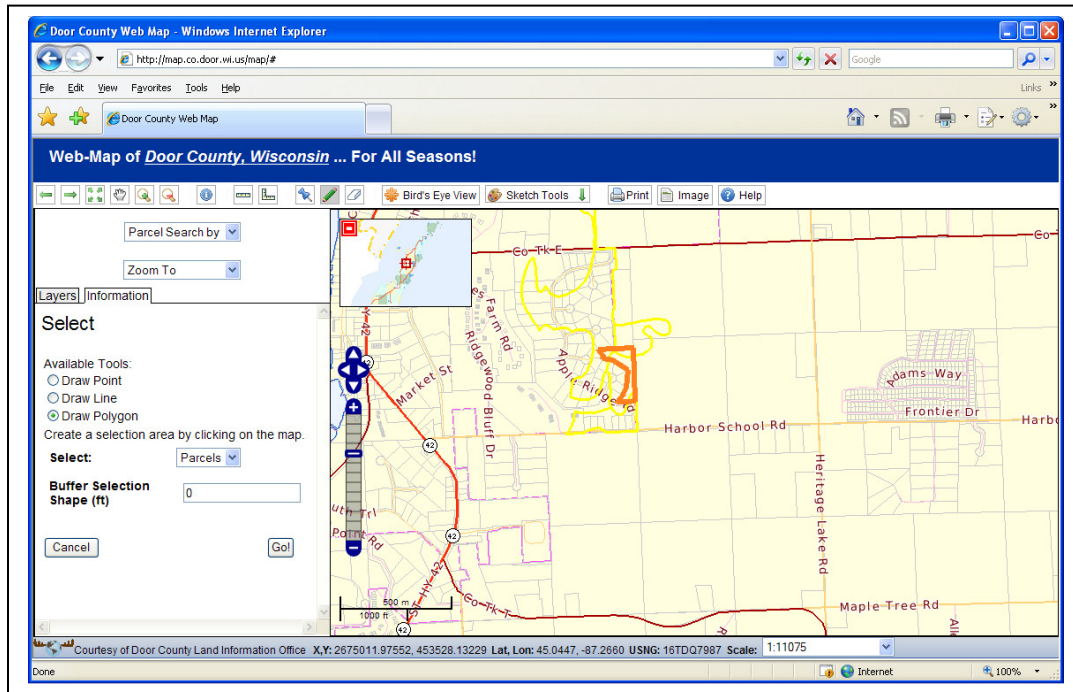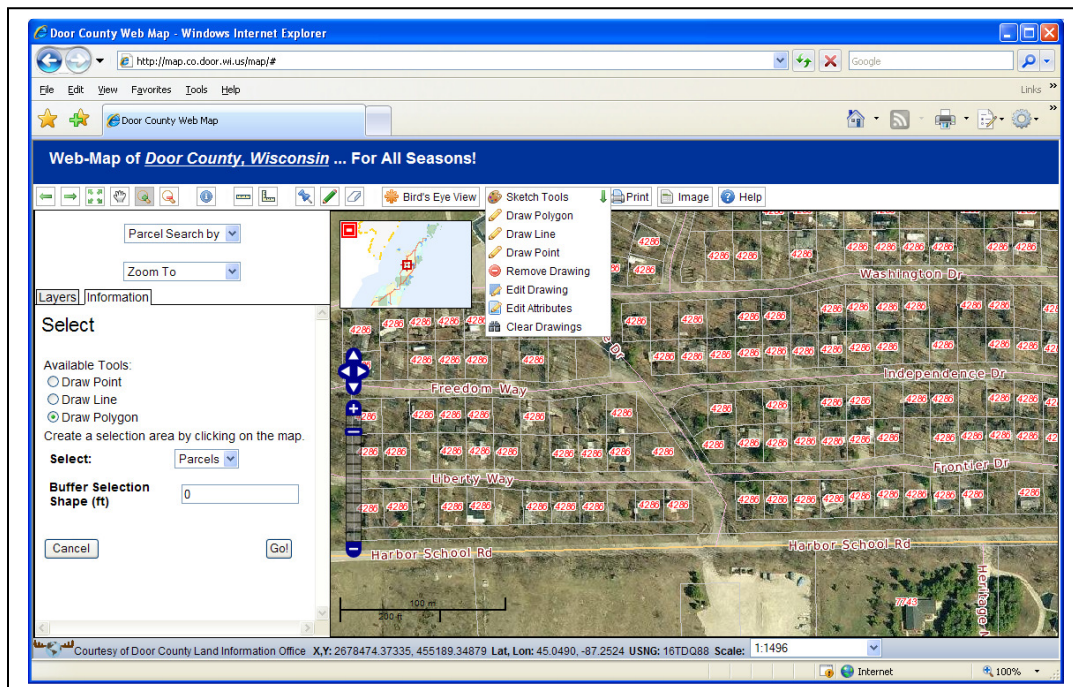## GeoMOOSE Example Screen Shots

Buffer Example
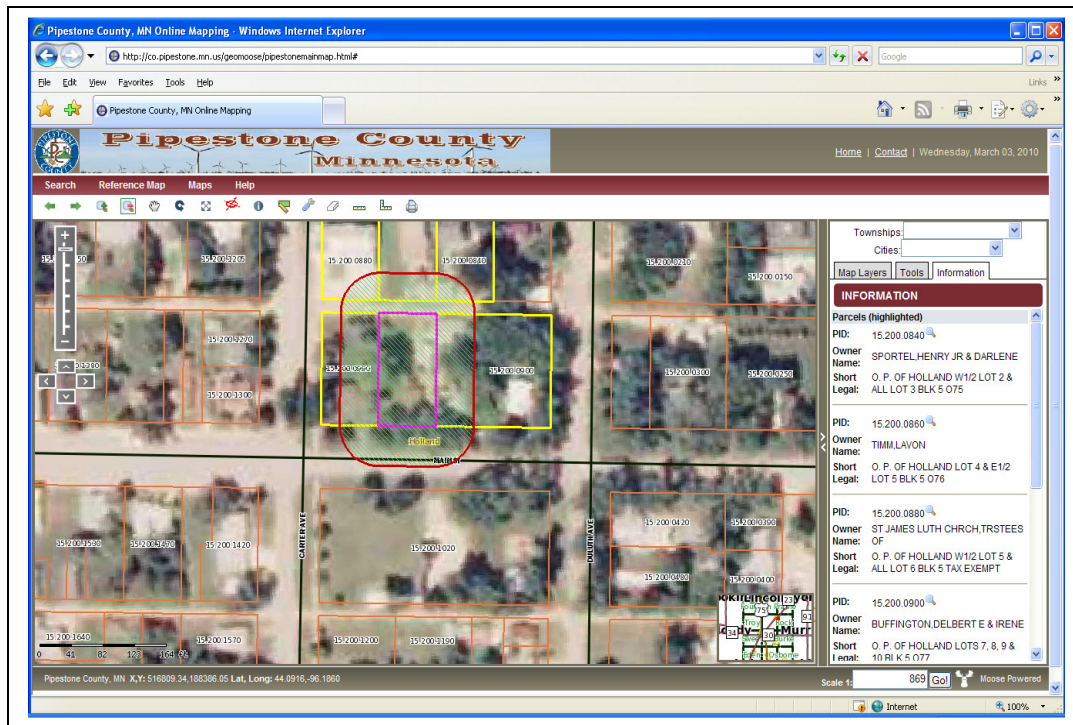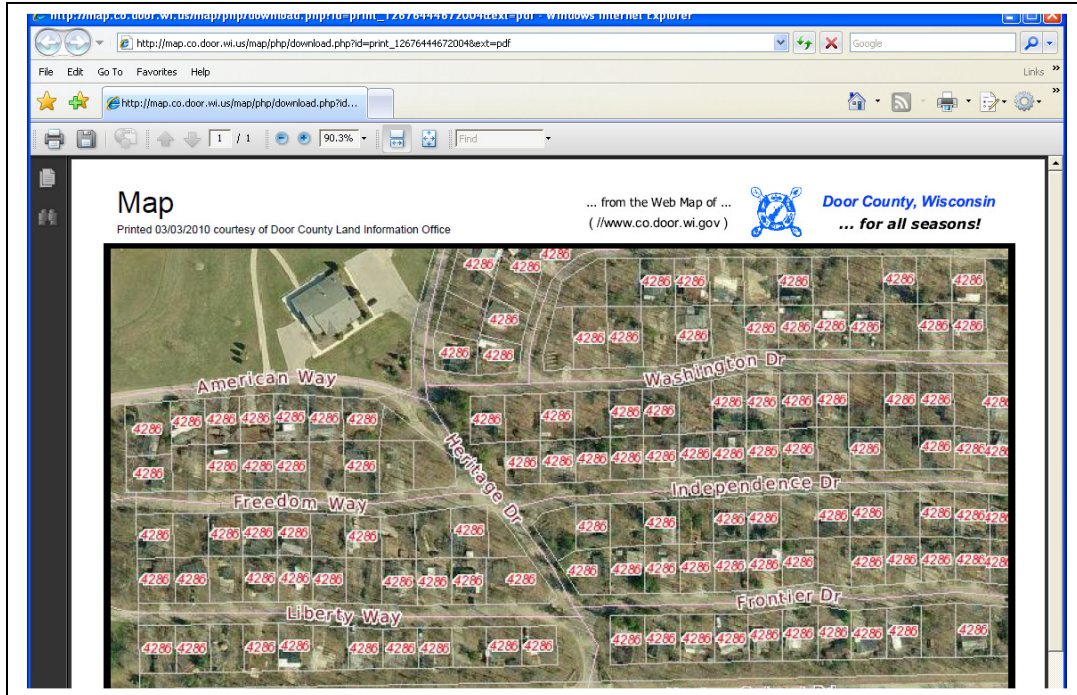

Attribute Search
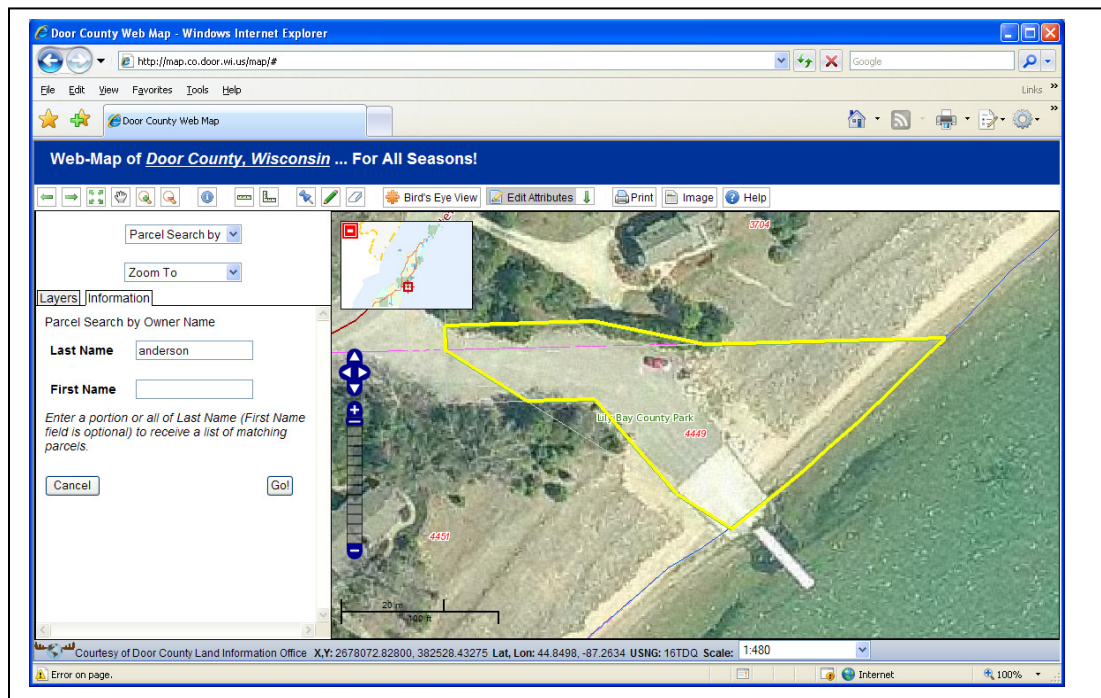
Geographic Search

Sketch Tools

Printed Map

Summary

It appears GeoMOOSE could meet our needs and warrants additional review.

4. GeoMOOSE Functional Use Case Software Review

As a functional/operational test Houston Engineering was hired to port the Polk County Ellamaps to GeoMOOSE. This was done in a day or two for a cost of $1700. The following diagrams illustrate what was done. As part of this test the mailing list and sketch tool business use cases were combined and used to review capabilities.

Mailing List and Sketch Business Use Case (Steps)

Buffer Selection

Business Use Cases Continued

Sketch Tools
- Draw Polygon
- Draw Line
- Draw Point
- Remove Drawing
- Edit Drawing
- Edit Attributes
- Clear Drawings

Use Case Steps
1. Search for property by attribute
2. List properties
3. Select property from list
4. View property attributes
5. View Map
6. View Map / owner labels
7. Adjust map view
8. Select properties within buffer
✓ 9. Sketch features on map
10. Print a list to a mail merge file

Print Mailing List

Map Layers | Results

Results: 7

PDF Mailing Labels
HTML Mailing Labels
CSV Mailing Labels
Map Tax Lot
Buffer taxlot
Click to See Assessment 653600 100
Report:
Account 834616

Use Case Steps
1. Search for property by attribute
2. List properties
3. Select property from list
4. View property attributes
5. View Map
6. View Map / owner labels
7. Adjust map view
8. Select properties within buffer
9. Sketch features on map
✓ 10. Print a list to a mail merge file

FIELD LIVING TRUST   MARX RONALD L & MARX JANICE M   LEFT COAST CELLARS LLC
11675 SMITHFIELD RD   P O BOX 1144   4225 N PACIFIC HWY WEST HWY
DALLAS, OR 97338   DALLAS, OR 97338   RICKREALL, OR 97371
WAINWRIGHT SUSAN K ET AL   WAINWRIGHT SUSAN K ET AL   MAGEE F J, REVOCABLE LVNG TR ETAL
P O BOX 95   P O BOX 95   27 ULULANI ST
OCEANSIDE, OR 97134   OCEANSIDE, OR 97134   KULA, HI 96790

Print Owner Names on the Map
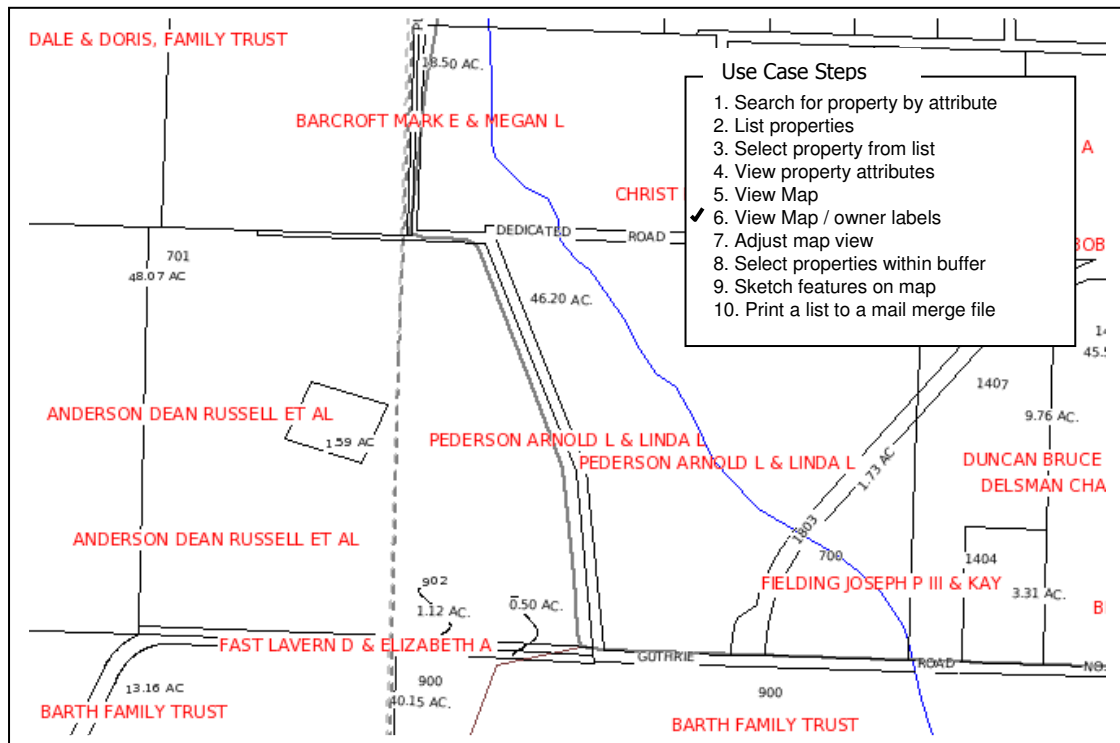
Summary

It appears GeoMOOSE could meet the needs identified in these use cases.

5. GeoMOOSE Additional Review

In addition to the functional use case three additional tests were performed as follows:

Taxmap Map Test

This test was performed to explore how well GeoMOOSE could meet cartographic requirements for producing a Taxmap. This test involved adding additional layers to our GeoMOOSE site and creating additional symbols. We were able to add taxmap "annotation" features and new symbols for subdivisions (slashes). This was fairly simple (but tedious) to do and is based on MapServer technology.
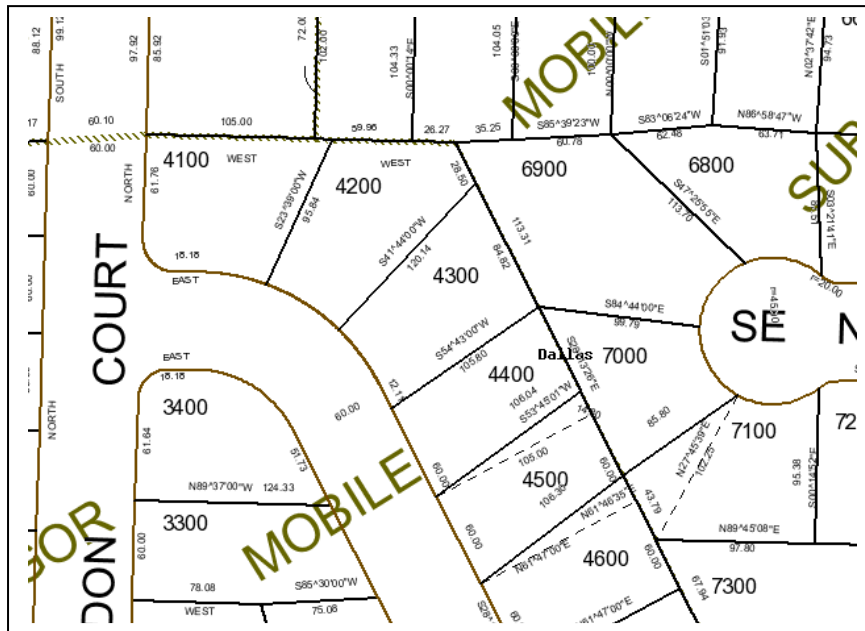
MapServer has limitations of plotting text following lines. Text can only be centered on the line. We will have to change how we produce our annotation shape files to implement this solution.

Test if WMS features could be consumed by GeoMoose

Added two WMS features to the GeoMOOSE environment. This was relatively simple to do. The aerial photo and grey taxlot lines are WMS's provided to me from Eli.
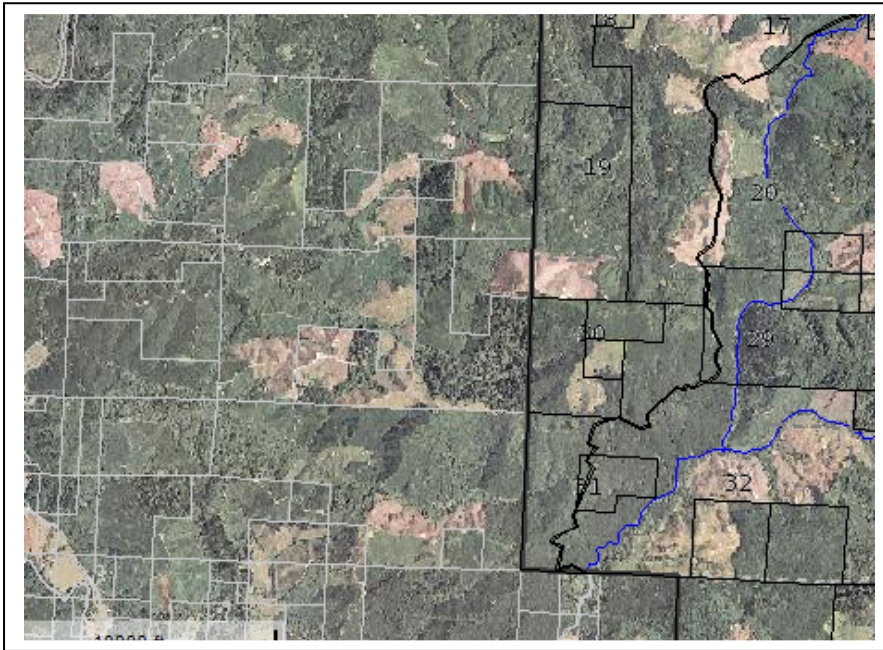
Customizing another County

The following GeoMOOSE site was created for Columbia County who currently use EllaMaps. It should take about 6-16 hours to convert to GeoMOOSE depending on options selected.
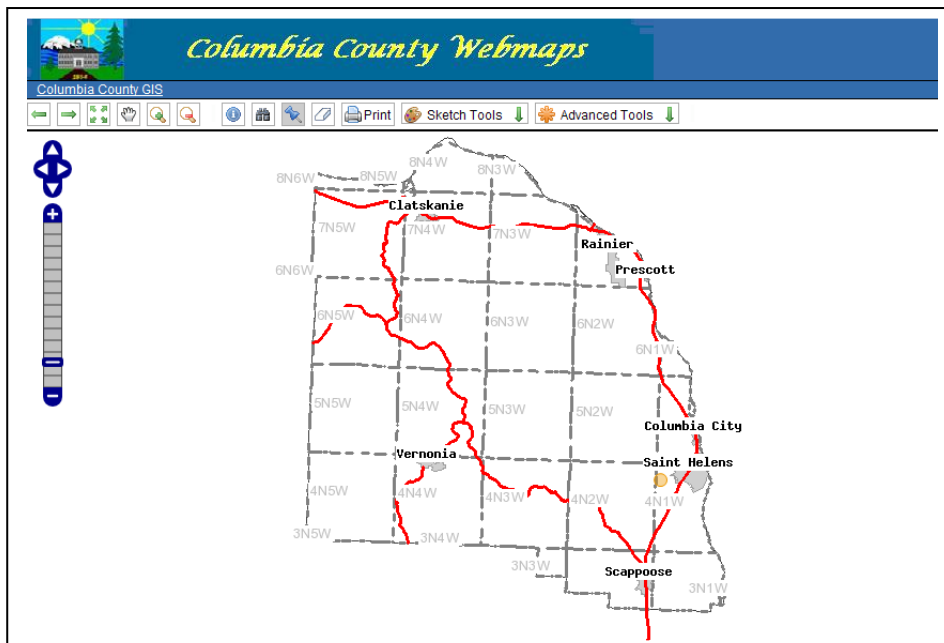
Summary

It appears that GeoMOOSE can be customized to meet our needs.

6. Functional Use Case Review

The following table summarizes the functional use cases developed by our group and how GeoMOOSE meets those functional requirements.

Functional Use Cases	Prototype	Needs Work
1. Select Layer	X	
2. Search by Field	X	
3. Searcy by Geo	X	
4. Pan/Zoom Mouse	X	
5. Pan/Zoom Bar	X	
6. GoTo Place	X	
7. HiLite Feature		X
8. Hot Link		
9. Export List	X	
10. Print List	X	
11. Print Map	X	X
12. Drill Down List	X	
13. Buffer	X	
14. Display Legend	X	
15. Measure	X	
16. Advanced Functions	X	
17. Change Draw	X	
18. Select Other Features	X	
19. Import/Export GPS		X
20. Traverse		X
21-26. Sketch	X	P1
27-29. List Functions		X
30. Start from URL Key	X	

P1 – Partially completed but needs work.

<u>Summary</u>

GeoMOOSE appears to meet many of our needs but does not meet all our needs. The question is how difficult will it be to make modifications. This could be tested in a preliminary manner. We did not test the capability of GeoMOOSE to edit features. However, this is a well documented and examples exist where this has been implemented.

7. Business Case Review

The following table summarizes the business use cases developed by our group and how GeoMOOSE meets those requirements.

Business Use Cases	Meets Needs (F/P/N)	Additional Work
1. Field Appraisal	Y	
2. Survey Research	P	Ability to enter coordinate but needs ability to load/save GPS points from files.
3. Survey Field Search	P	Ability to enter coordinate but needs ability to load/save GPS points from files.
4. Sign Maintenance	P	Ability to enter coordinate but needs ability to load/save GPS points from files.
5. Sign Change Location	NT	Not tested
6. Plan Mailing List	Y	
7. Plan Site Review	Y	
8. Plan GIS Tests	N	Needs "overlay" service built
9. Public Safety Field	Y	
10. Phone List	Y	
11. Counter/Phone Recpt.	Y	
12. Plot Plan	P	Needs better text drawing
13. General Public	Y	
14. Land Use Prof Property	N	Needs traverse tool
15. Land Use Prof Survey	N	Needs traverse tool

Y – Yes, it fully meets needs
P – Partially meets needs
N – No, needs work
NT – Not tested

8. Technical Review

Selecting GeoMOOSE will be dependent on several factors. The following summarizes questions and tests that summarize how well GeoMOOSE will meet our needs beyond the specific functional review.

1. What is the "Longevity" or Future stability of GeoMOOSE?

   a. Does it Utilize industry standard map services? <u>Yes</u>
   b. Is it easily extensible? <u>Yes (depending on needed functions)</u>
   c. Are their examples where GeoMOOSE has been used for advanced functions such as editing features? <u>Yes</u>
   d. Does it have a user community that has gotten multiple releases? <u>Yes</u>
   e. Do more then 10 organizations use the software? <u>Yes</u>
   f. Does it use industry standard database (gis data structures) and what are they? <u>MapServer Files (shapes, etc), WMS Files, ArcServer Files, etc...</u>
   g. Are their multiple organizations contributing to improving the code? <u>Yes</u>

2. Can GeoMOOSE be supported by the IS department?

   a. Can it be easily installed using provided documentation on Apache? <u>Yes (Polk County)</u>
   b. Can it be easily installed on IIS? <u>Yes – Polk updated the documentation with the GeoMOOSE folks.</u>

3. How easy (or costly) is it to install a customized GeoMOOSE version for a county ?

   a. Is it cost effective to hire an expert contractor to set it up? <u>Yes (<$1500)</u>
   b. Can a county do it on their own ? <u>Yes – Dean setup Columbia County in about a day</u>

4. Can we administer the application with minimal effort by non-programmers?

   a. How hard is it to create a new MapServer file and add it to the application? <u>Easy as long as the mapserver file is valid.</u>
   b. How hard would it be do put an administrative front end on the config files ? <u>Unknown - Dean</u>

5. Can the basic interface of GeoMOOSE be easily manipulated (icons added, menus re-ordered etc.) ?

   a. Is it cost effective to hire an expert contractor to set it up? <u>Yes – they should be able to do it very quickly (< 15minutes in sample contract)</u>
   b. Can a county easily make the same modifications? <u>Yes – Dean moved ICONS around on the site as part of a test.</u>

6. How easily can we change the core of GeoMOOSE?

   a. What is the cost or effort required to add caching to GeoMOOSE? <u>Unknown - Eli will talk to folks on how to add Caching, Dean is currently having Houston Engineering make changes to the core software.</u>

7. How hard will it be to add new functionality to GeoMOOSE using user added extensions?

   a. What is the cost to add three buttons to the table of contents (highlight, Zoomto, re-query)? <u>< $2000.</u>
   b. What is the cost to add a "Zoom to" a specific user provided coordinate ? <u>< $1000</u>

8. How independent is the GeoMOOSE client from server services ?

a. Can we add photos as a service? <u>Yes</u> - The photos were done as part of the application written for Polk County
b. Can we add the Benton County Taxlot Service graphically? <u>Yes</u>
c. How hard is it to make identify work with services? <u>Unknown</u>
d. Can we make buffer work with services from another site? <u>Not sure</u>

9. Do other tool boxes or applications provide an alternative to GeoMOOSE?

Please note we have already discarded MapFish, MapBender, and KaMap. So we would have to decide to re-look at these or explore how custom stuff can be done.

a. Is the tool a supported product?
a. Is there a release that is greater then 1.1?
b. Does documentation exist, support mechanisms, release schedule, downloaded software exist?
c. Can the software be installed and supported by IS staff on IIS, Apache (Microsoft) and Apache (Lynux)?
d. Does it meet our business use cases?
e. Does it meet a majority of our functional use cases?
f. Does meet our general design considerations ?
g. Are there more the 5 sites using the product ?
h. Is it based on the same technology the we have decided to use?
i. Does it pass the current tests we are doing with GeMOOSE?
j. We need a working DEMO/Prototype that meets many of our business use cases and functional uses to evaluate.

10 What is the estimated implementation costs for the system?

a. What is the cost for setting it up at a county? <u>< $1000 if map files built</u>
b. What are costs for making modifications to meet basic functional requirements? <u>To be answered</u>

In Conclusion GeoMOOSE represents a viable alternative for our group to consider.

The advantages are:

o the software exists and is actively supported,
o meets many of our needs,
o will be easy to transition to because we can use our MapSever map files,
o our group does not have to spend a lot of time programming basic capabilities,
o has support and can be modified.

The disadvantage for going with GeoMOOSE are:

o it is built on MS4W and I am not sure this is good,
o the design is not that radically different from EllaMaps or PcMaps and has some of the same problems,
o it does not have administration tools available,
o by joining their group we accept any unknown design limitations of the software,
o we must interact with a group that we know little about.

9. Potential Implementation Steps

If GeoMOOSE is selected by the group the following steps could used to fully implement a "GeoMOOSE solution" for the group.

Step 1: Implement preliminary modifications (Polk County is paying for this as part of our testing to see how cost effective it is to make changes to GeoMOOSE.)

Changes to the list menu
- Change the "buffer" taxlot text to an icon. - This is currently a word that states "buffer taxlot".
- Add a "Zoom to Taxlot" function- When pressed - zooms to the specific taxlot (like Brown County has in gallery)
- Add a "highlite taxlot" function/Button- when pressed will highlite the selected taxlot in "red".
- Add the "clear" button to remove the selected record from the list. - When pressed will redraw and rebuild the selected list.

Change to top of list button
- Add the "search" icon to the top of the list. - When you click on this it clears the entire selection and brings up the base taxlot query menu. This button functions exactly like the button on the main menu.

Change appearance of selected features
- Change the "yellow" for the selected set to be Aqua Blue (light blue).

Change Zoom capabilities
- Add a function to the "zoom to" menu that is "Zoom To Point". This feature would bring up a form for entry of an xy coordinate. The user would be able to select coordinates in Oregon StatePlane North, Decimal Degrees, or Decimal Seconds. It would zoom into +/_ 1000 feet. Please see the attached very simple concept menu.

Step 1 Cost: $2,200

Step 2: Training/Customize – Obtain webex/goto meeting type training from contractor in basic setup/customization. Make minor customizations to meet the organization's needs.

Step 2 Cost: $ 1,000 Consulting – (< $1500 to setup for an organization)

Step 3: Preliminary Implementation – Install in a preliminary environment at organization.

Step 3 Cost: Should be done by internal staff. Should not take more then a 1-2 hours maximum per server. Laptops should take about 20 minutes.

Step 4: Review – Review and identify any additional needed capabilities.

Step 4 Cost: Internal staff costs

Step 5: Phase I Modifications – Make modifications to support phase I functionality. This step could start sooner.

- Read/Write GPS/Coordinate files for zoom to and sketch functions
- Upgrade sketch to better meet needs (change how text is drawn and allow "drag" of feature)
- Add traverse menu
- Add template test
- Add tile caching
- Expand capability for WMS utilization
- Expand map printing to better work with WMS's, print to scale, add scale bar
- Make any additional changes to the "list" menus
- Obtain procedures to implement in secure web environment.

- Others???

Step 5 Cost: Unknown

Step 6: Phase I Implementation – Install as available

Step 6 Cost: Low