

South Carolina Geographic Information Council

Annual Report



August 2008

DNR • ORS • DOC • DHEC • SC DOT • PPP • DOR • SCFC • SMAC

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EXECUTIVE SUMMARY

August of 2007 marked the beginning of regular activity for the South Carolina Geographic Information Council (GIC) and coincided with the hiring of a State GIS Coordinator for the first time. During the initial GIC meeting that took place, seven areas of focus were identified for the year. These focus areas will provide the basic framework for the report.

Each organization was met with early on in order to provide a basic understanding of available data and needs. Several successes were immediately realized as data discovered within one organization could be shared with other GIC partners – a function of the Memorandum of Agreement (MOA) and participation in the organization. Throughout the year, additional value was provided to the partners via data investigations (ORS, Forestry Commission, PPP, etc.) as well as technical assistance (PPP, ORS E911, etc.). Coordination benefits continued to mount with the development of the coordination website and data portal. From publication of web services to identification of needed layers for efforts such as emergency response - communication played a key role in the success of the organization thus far. Further, through presentations conducted around the state, visibility of the Council increased and the State GIS Coordinator began to be viewed as a resource and point of contact – benefiting GIS partner agencies as well as local government. Development of relationships with local government was also a focus for the GIC. This has resulted in data partnering opportunities, a joint state-local data improvement program and more.

In addition to the initial focus areas, other benefits realized during the course of the year include improvement of the statewide centerline update process, and providing a unified voice for the GIC partners on issues such as the FLAIR Act, COGO and SC GIS Surveying Standards.

The process of developing state GIS coordination is not one that can be measured in a few months, but rather will take a number of years to build out. What was accomplished in the first year has already provided benefit, and the efforts of the GIC through the coming years will continue to pay dividends on an increasing basis.

FOCUS AREAS

Focus Area One – Meet with GIS Related Personnel at Each Organization in the GIC

The purpose of this activity was to gain knowledge of the GIS-based activities of each of the participating organizations, as well as gain a basic understanding of the organizations moving forward. Most of these meetings took place during the months of September and October. The information gained from these sessions helped facilitate identification of available data as well as additional data needs. Through this process several previously unknown layers of information deemed to be beneficial to participating organizations were identified, including fire stations and annexations.

Budget and Control Board –

This group is comprised of three individual groups currently using GIS. At Lew Lapine's suggestion, a meeting was held not only with his group (08/15/07), but also Will Roberts (08/24/07) and Pete Bailey (10/02/07).

Lew Lapine and Cindy Masi of Geodetic Survey showed their operations, including their SDE server and their ortho imagery project. They currently load the orthos into the SDE, but have been looking for another solution. At the time of the meeting, the only agency that was able to access the orthos via the web was SLED. Any other interested parties had to acquire hard drives and get them to the Geodetic Survey in order to make their own copies due to bandwidth concerns within ORS.

While at the Geodetic Survey building, a meeting was also held with David Morrison, and his two assistants Keith and Jason. They maintain the E911 centerline project for the state. This layer is critical for E911 operations throughout the state, and has also proven extremely important for geocoding data from a multitude of sources including DHEC, PPP, etc. The E911 group helped 8 – 10 counties throughout the state get started with GIS, and continue to assist multiple counties with "GPSing" their roads, basic assistance, etc. All counties that maintain their own GIS data have agreed to share it with the E911 group except for Richland County. This county's data is provided by the City of Columbia, where they maintain their own version of the data. David expressed concerns over the frequency of data update from the counties, and indicated how important this data layer is from a geocoding perspective for agencies across the state, including EMD.

Will Roberts of ORS spends a great deal of time on voter registration and elections-related GIS activities for the state. He uses the E911 centerline for geocoding where people live in order to determine if they are in the correct voting district. He indicated two layers that he would really like to have would be a schools/school district layer as well as an annexation layer.

Pete Bailey of ORS works with the Health and Demographics group. They have access to a huge volume of data from many different agencies in SC that ask them for assistance and analysis. Unfortunately, most of the data is protected by various privacy laws and cannot be shared openly. They have a number of web-based applications that allow them to examine data and statistics in cubes or slices of data similar to a cross tab or pivot table. Examples of analysis include distance from people to the source of medical assistance, comparing multiple variables against pregnancy looking for trends, etc. The data they hold includes data from 1995 to the present.

Department of Commerce – met 10/03/07 - Mark Heaton and Derek Graves

Mark and Derek displayed their GIS applications and ability to generate Crystal Reports documents in PDF via a web application that they developed. They also were engaged in a statewide utility

infrastructure inventory project for water and sewer lines. Another part of the organization is the Division of Aeronautics, which is directly involved in airfields throughout the state. They indicated they would benefit from an updated statewide large scale railroad layer.

DHEC – met 9/20/07 – Jared Shoultz, Becky Campbell, Jeannie Eidson, David Adcock, Elzbieta Covington
DHEC provided a listing of the agency's spatial data layers, most of which are available through the SC DHEC GIS data server. Staff emphasized the importance of continued coordination between state, federal and local agencies. This group is advanced in its GIS applications and is forward thinking in their approach. GIS applications have been incorporated into various business functions within the organization, including an emergency hurricane sheltering application, a public health data distribution application, and numerous interactive web-mapping services. In addition to the web applications, desktop GIS is available to all DHEC employees through Citrix and used extensively for permitting, planning and analysis. For DHEC's health programs, the importance of effective geocoding and how critical it is to analysis and operations was discussed. The primary geocoding resource is the E911 centerlines, as put together by the E911 group within ORS. Jared indicated the need for good fire station, school and parcel layers (an example given was for analysis of lead poisoning).

DNR – met 11/27/07 – Jim Scurry, Holly Gillam, Richard Lacy, Phil Weinbach
DNR provided a brief history of GIS data development within the organization including the construction of the original DLG layers for the state (all edge matched). The DNR has significant data holdings for the state, and like DHEC, make almost all of it available to federal agencies as well as other state organizations, local government and the general public at no cost via an Internet download server. They have partnered with numerous federal and state agencies to develop essential natural resources data such as wetlands, soils, DLG-hydrography, DLG-hypsography and Digital Elevation Models that are available at no cost through the SC DNR GIS Data Clearinghouse. In addition, they are the data stewards for fault lines (and geologic features in general), threatened/ endangered species, freshwater and marine fisheries data, satellite imagery, DNR lands (includes easements and wildlife management areas), fish hatcheries, buoys, marinas, scenic rivers, artificial reefs, and boat ramps owned by DNR. Metadata and projections are defined for the data. The DNR also has scanned topographic quads. The digital raster graphics (DRGs were originally developed by Commerce, but are currently stored by the DNR). The DNR has strong remote sensing processing capabilities in house and they are utilized in order to work with multi-spectral imagery data. The DNR receives statewide Landsat Thematic Mapper imagery every 5 years and also stores imagery as jointly developed with the USGS's National Aerial Photography Program (NAPP), Federal responsibility for this program has been transferred to the USDA's National Agricultural Imagery Program (NAIP). The Marine Resources Division of the DNR also has several remote sensing programs that have resulted in GIS and imagery data including high resolution imagery for oyster bed assessment, estuary assessment, hard bottom mapping and ocean exploration data sets for bathymetric purposes.

Department of Probation, Parole and Pardon Services – met 10/03/07 - Samuel Glover and Tony Dukes
Tony has access to both criminal and parolee information. In consideration of their business needs, he indicated PPP conducts home visits with high risk sex offenders four times per month and regular sex offenders one time per month. He indicated that development of a system that would allow for increased efficiency on visits would be extremely beneficial. GIS could provide an excellent solution to this problem, and could also assist with geographic case assignments. Data layers that are of benefit to PPP include E911 centerlines for geocoding, and daycares for analysis purposes. Additional desired layers include parcels for more accurate geocoding and analysis of individual properties, city boundaries,

and an up to date schools layer. Another layer he described that would be of great benefit was Pictometry data (aerial images taken at an angle to show the roof, sides of buildings and streets/alleys).

DOR – met 09/18/07 – Mike Garon, Teri Garber, Liz Mason

The DOR is interested in getting the best tax jurisdiction information possible. Currently they do not have a GIS operation within their organization, but they do have address standardization based on software called “Finalist” which will help facilitate GIS-enabling the information. They are looking at the potential for shifting the way taxes are handled in order to do a better job on capturing revenue from Internet sales, and to also correctly credit communities for the amount of taxes they are due. In order to do this, they will need accurate tax jurisdictions (school districts, cities, counties, etc.). They are also interested in the actual locations of businesses. This can assist them with licensing for alcoholic beverage establishments based on their proximity to schools, churches, etc. – all functions that are well suited to a GIS. The above-mentioned layers (schools, churches, school districts, cities and counties) are all layers the DOR would benefit from. Most of them are actively maintained already by various organizations. DOR also indicated they would really like to have parcel-level information made available to them in order to make the taxation process as accurate as possible. Mike also indicated that they would really like to take advantage of web services that other agencies may make available, and to tie them into the South Carolina Business One Stop portal where applicable. (<http://www.scbos.com>)

DOT – met 10/02/07 – Bill Beck, Donny McElveen, Angela Hance

The DOT uses GeoMedia and Intergraph-based products instead of ESRI-based products for most of their GIS operations. This is primarily due to the advanced level of dynamic segmentation functionality that was available in Intergraph products prior to such development by ESRI. In addition, a majority of the state DOTs around the U.S. use the Intergraph products, thereby creating economies of scale through development of industry-focused tools for transportation that meet the DOT’s business needs. The DOT assists DPS with map production (mainly 8.5 x 11, but some larger) for special projects such as dignitary routes, check points, hurricane evacuation routes, etc. During times of emergency, DOT supports EMD with one to two personnel they assign to the operations center. The DOT also has the Roadway Information Management System (RIMS) and the Integrated Transportation Management System (ITMS), which assists them in their day to day operations including real-time transportation intelligence, dynamic segmentation, bridge inventories, width of roads, interface to inventory of roads and associated information, etc. DOT indicated they could greatly benefit from local road information provided by the counties via E911. One problem currently is that they would like to update the DOT version of the roads with some of the attributes of the county roads (such as name), but this would be a violation of the licensing agreement ORS has set in place. They have spoken directly with a number of the counties and it appears that legal language (not the intent of the counties) seems to be creating the largest hold up in being able to use the data as the DOT would need to. The DOT is involved in a continual update program in order to enhance the spatial accuracy of multiple layers. This is an on-going process and will take some time to complete. Their initial intentions are to spatially correct the locations of the streets as well as bridges. They indicated they have annexations available as a layer in GIS that they currently maintain based on information provided by the secretary of state. The DOT said that they would also benefit from the development of an image server.

Forestry Commission - met 09/24/07 - Bob Schowalter, Jeff Baumann, Harry Blount

The Forestry Commission has approximately 90,000 acres they are working with. Their original goal was to develop an inventory and use GIS to assist with the process. Ultimately, they want to use the GIS to manage the lands and assist with the decision making process of what lands to cut/harvest, etc. They have several programs currently utilizing GIS – forested lands, stewardship of land, fire risk assessment,

and computer-aided dispatch (CAD). They indicated that at some point they would like to consider getting private landowners information (parcels) in GIS format for people who allow the Forestry Commission to help manage their lands.

Focus Area Two – Develop Data Inventory

Through the initial visits with the GIC organizations as well as subsequent work, data inventory listings were shared. This provided for identification of layers that can be made generally available, as well as those that cannot be placed in the public domain, but are still of key value. Moving forward, when the coordination office is contacted for particular layers of information, the group or entity making an inquiry can be pointed to the proper location for the data – be it the data portal, or in the case of sensitive information – the person in charge of the data. In addition, layers that cannot be shared due to their sensitive nature may be made available under certain circumstances such as to a qualifying organization or in the event of a disaster within the state. Further, inventorying of the data helps to ensure that organizations will not duplicate effort in developing layers of information that may already exist. Specific examples again include both fire stations and annexations.

In the fire stations example, DHEC indicated both the need for a fire stations layer, and had an incomplete listing of available stations. The Forestry Commission was already working on developing a current layer of fire stations for ongoing use. By bringing these two groups together on this project, the Forestry Commission was able to acquire the partial listing of fire stations from DHEC, and incorporate them into their layer. The Forestry Commission then was able to make a statewide layer of fire stations, correct and verify the positions of the stations, and was even able to incorporate stations provided by some local government organizations. The Forestry Commission has been identified as the data steward for this layer, and they make the data available to interested parties including DHEC. This process helped create a better overall product and ensured there was no duplication of effort moving forward. After the conclusion of this project, DNR expressed interest in an updated fire stations layer, and they were also able to benefit from the work.

The annexation layer is maintained by the DOT. Will Roberts (ORS) was working on voter registration activities and was interested in the development of an annexation layer, but did not have time thus far to develop it. By bringing these two groups together, it was determined that the information associated with the layer as developed by the DOT would meet his needs for purposes associated with the voter registration project. As the DOR further develops the need for web services and GIS-based taxation districts, the annexation layer will benefit them as well.

Several organizations (specifically DHEC and DNR) have significant data holdings – most of which can be shared with the general public. Documentation has been provided on what layers can be shared publicly and which ones cannot. ORS has several data layers that it can share with other state agencies such as voter districts, geodetic control points and aerial photos as flown by the counties. PPP is chiefly a consumer, but can provide data layers such as parolees under supervision in law enforcement related circumstances.

Some organizations have metadata (data about the data such as source, update frequency, current status, etc.) associated with the layers they maintain (DHEC, DNR and Department of Commerce). Where possible, the Coordinator developed basic metadata for the undocumented layers that were to be included in the data portal section of the website, seeking validation/correction from the data steward organization.

The full inventory in its current form can be found in Appendix A.

Focus Area Three – Publish Website for GIS Activity

The state GIS website has been created (<http://gis.sc.gov/>), incorporating design and function ideas from the members as provided in the GIC meetings and subsequent review process during development. This effort has resulted in one location where people can learn and share about GIS related activities throughout the state.

This site can be an extremely valuable communications tool to the GIC. It is anticipated that the site will continue to grow over time, but even at this early stage it includes information on available GIS standards in the state, current projects and activities of the Council, articles and write-ups associated with GIS activity in South Carolina, and contact information for not only GIC organizations but also local government. In addition, it communicates the purpose of the GIC and shares what the GIC is currently working on in order to maximize transparency and encourage participation.

Not only does the site help facilitate communication, it also provides access to data via two methods: downloads and services. Development of the data section is still under construction as additional GIC organizations data is being incorporated. Those still being incorporated are in the process of determining the best method of including their GIS data on the site. The appropriate method for each organization will differ based upon number of layers to be included, how often each layer will be updated, and how often new layers may be added. The goal is to make the user's experience seamless regardless of method used.

In addition to the main website, there is an application called MySCMap (<http://myscmap.sc.gov/>) which allows any organization to display their data and more importantly allows users to see multiple organizations' data at the same time in the same web application. This is a joint effort project involving USGS and enjoys the participation of multiple partners from city, county and state organizations as well. Due to the statewide geographic extent of the project and the inclusion of organizations at multiple levels of government, the State GIS Coordinator has been named as the primary contact for the MySCMap site. In the future, the MySCMap site will begin to take on more of the "look and feel" of the http://gis.sc.gov website in order to produce a more seamless product integrating the MySCMap project and the SCGIC's GIS information/data website. The Coordinator has promoted the site in multiple ways including a number of speaking engagements throughout the state. As new organizations become interested the project, the partnering agencies assist with registration and technical issues associated with getting the data online.

Focus Area Four – Publishing Web Services

In addition to developing the http://gis.sc.gov website, a focus was placed on publishing web services. Web services provide another method of supplying data to the user. Unlike downloading files of data (the method associated with the data download section of the website) that are static snapshots in

time, web services act like a data (or video) stream. These web services are of keen interest to organizations such as the DOR. A web service allows an organization to “consume” the service and utilize it as a source of data in their own applications. In the case of DOR, if a web service of statewide parcels was available, they would be able to use it with their Business One Stop application in order to determine proper taxation for a given business or individual based on their location. This data feed could provide the most up to date information on a continual basis. Although DOR is used as an example beneficiary, any organization needing data from a group hosting a web service could benefit, regardless of the size of the organization or if GIS is currently employed in their day to day operations.

Realization of the benefits associated with web services is not a distant prospect – it is occurring right now. For example, ORS has found great benefit in the use of the DOQQ aerial photography service from the DNR. This helped them to instantly use uniform statewide data that was extremely recent in order to work on creating a layer of schools. Although ORS already had a listing of schools, they were able to use the aerial photography to spatially correct the locations of the schools by actually seeing where each school is located in the aerial photograph. The web service helped ORS avoid storing a duplicate copy of the aerials. This is important, as the aerials would have been an extremely large data set and may have resulted in data storage issues and constraints. Instead of spending an inordinate amount of time acquiring storage space and then copying the data from one location to another, they were able to immediately connect to the data and get to the task at hand.

Web services can be viewed in a web browser or used as a data feed in a GIS application. In addition to the above-mentioned means of accessing web services, the MySCMap project also requires web services to access the data from multiple organizations. Several GIC organizations have services that support this function and they will be linked to the GIC website where possible. GIC organizations are encouraged to continue publishing web services of data beneficial to other groups. Web services are an extremely efficient and economical way to make data available for consumption to a wide audience. This benefits everyone in SC, as the value of any data or service increases in direct proportion to the number of people and organizations that use it.

Focus Area Five – Emergency Response Layers

From the very beginning of this year’s coordination activities, a focus was placed on emergency response, and great efforts spent on the inclusion of Emergency Management Division (EMD) in GIS-based operations. John Knight, recently retired from EMD, was asked to come and speak to the GIC about their emergency response layer needs for GIS. During the meeting, he identified layers deemed to be important (below). Some of these layers were available and complete, while others have been created or improved upon (e.g. fire stations, E911 street centerlines, etc.). Still others were identified as a need and are currently under development (e.g. schools). All of this has been conducted through the efforts of the GIC.

Emergency Response Layers	
Airports	Natural Gas Facilities
Highway Bridges	Ports and Harbors
Police Stations	Medical Care Facilities
Fire Stations	Wastewater Facilities
EMS	Potable Water Facilities
County Emergency Operations Centers	Communications Facilities
Electrical Power Plants	Schools

In addition, in this year’s grant application process, the GIC partnered with the Geospatial Administrators Association of South Carolina (GAASC) and EMD in order to submit a grant for data development of structures and parcels – both beneficial to emergency response. Although the grant was not funded, this joint effort involved organizations at multiple levels (GAASC almost exclusively represents local government) successfully demonstrated the need and desire to work together vertically in government in order to improve data quality in SC.

Separately, the GIC submitted an application for a different grant (50 States Initiative) that was funded. This grant will hopefully help to bolster relationships and data sharing with local government which will also benefit the emergency response layers through improved data quality. The grant will be discussed in further detail in Focus Area Seven.

EMD, with the help of FEMA, developed an online application for updating key data layers. Assistance in development of a contact list of local GIS personnel as well as coordination for training on the application was provided jointly by the GIC and GAASC. This resulted in a very successful series of training sessions (heavily attended) held throughout the state in order to train local and state level participants in the data update process. Ultimately, the training (and online application) will help improve the data quality of the layers used during disaster response, and thereby assist in making better decisions in times of need.

Focus Area Six – Growing the Council

The original eight member agencies that make up the GIC represent the full range of involvement in GIS activities. They range from the obvious participants – the super user organizations that have GIS embedded throughout their agency, to those organizations that are beginning to employ GIS and see its benefits, to those that are not currently using GIS but recognize its wide sweeping potential down the road for improved decision making and increased efficiency.

Although the GIC started out with eight state agencies it was never the design or intent of the member organizations to keep the GIC to just the original participants. In fact one of the focus areas was to identify, approach and invite additional state agencies to the Council. As stated above, members of the GIC represent all levels of usage within the GIS community. In identifying new organizations to invite to the GIC, the focus was on which organizations might most benefit from involvement. Although any type of organization can benefit from the GIC, GIS *consumer* organizations stand to gain the most. Consumer

organizations may produce very little to no GIS data that can be shared, but benefit by utilizing the data developed by the other partnering organizations. By comparison, *producer* organizations, as the term implies, produce GIS data that is beneficial to their organization as well as others. Specific organizations that fall into the *consumer* category include (but are not limited to) EMD, State Law Enforcement Division (SLED) and the Department of Public Safety (DPS). Other organizations that were approached about participation in the Council throughout the year include Clemson, Archives and History and the Department of Education.

Department of Education –Don Cantrell (Interim CIO) expressed interest in GIS as it pertained to security and cost savings. After introducing him to the concept of the GIC and providing a copy of the Memorandum of Agreement (MOA), Don indicated that he was going to address participation in the Council with the appropriate people within the organization. He had expressed interest in the organization, but also concern over the cost of participation. I provided him with information on potential return on investment, and indicated that in the long term we would be interested in pursuing other methods of funding. After internal discussion, he indicated that the organization was not prepared to participate as an active member.

Certainly the Department of Education can benefit from the use of GIS on multiple levels. They ran a pilot project with GPS on buses and found the potential fuel savings (in fall of 2007) was on the order of \$400 per bus per week. The GIC assisted both the Department of Education and the CIO's Office by acting as a technical resource while they were trying to put together an RFP for a statewide project incorporating GPS (Global Positioning System) into the school bus system. In addition, the Forestry Commission (member of the GIC) volunteered their time and facilities in order to provide the Department with in-person exposure to GIS, GPS and AVL (Automatic Vehicle Locator). Ultimately, due to staffing issues within the CIO's Office and time constraints, the project was turned back over to the Department of Education. In addition to the Department's exposure to GIS and the Council, there is value to GIS-enabling the Department's data. For example, ORS (another member of the GIC) creates maps of the school districts and is in the process of creating a map of school locations. In addition, there has been documentation on programs that can provide significant cost savings to schools based on implementation of GIS for management of equipment, calculating bus routes based on ridership, etc. Involvement of the Department of Education may be worth pursuing again in the future.

Department of Public Safety (DPS) –Barry Langley (CIO) and Tim Ray (GIS Manager) of DPS recognized the value of the GIC and planned to speak to the new Director of DPS about participating. During one of the meetings they were provided with a copy of the MOA for the GIC. They have waited thus far in order to allow the new Director time to become acclimated to his position prior to discussing the opportunity. They are currently using GIS in their operations and produce a number of web services including a Crash Map and a Fatality Map. They have made this information available to qualified personnel, and they also benefited from data layers developed and maintained by GIC organizations.

State Law Enforcement Division (SLED) - Captain Roger Owens and Lieutenant Buddy Wilkes of SLED were contacted several times regarding participation in the GIC. During a meeting at the Geodetic Survey (GS) with Lew Lapine and Cindy Masi a discussion was held regarding use of the statewide high resolution aerial photography that GS maintains. Currently the GS provides a service to SLED that allows them access to the data. The meeting focused on improving cooperative efforts for data sharing among the state agencies. At the conclusion of the meeting, they were provided with a copy of the MOA, and Captain Owens indicated that participation with the GIC would be very important to them. He indicated

he was going to raise the issue with Director Lloyd as soon as the new Director became settled in his position. Recently, SLED involved the GIC in a Google mapping demonstration meeting in order to gain the perspective of the Council. Using the GIC in order to bring together multiple agencies for discussion on potential technologies that could impact the state was an excellent use of the Council and also showed SLED's desire to work together with other organizations already using GIS. During the most recent discussion of SLED's position on participation in the GIC at the beginning of August, 2008 Captain Owens indicated that they would still like to be involved with the GIC, but that they do not have any available funding to contribute at this time. They are also in the process of hiring a person into a GIS manager/coordinator role within their agency.

Emergency Management Division (EMD) – Throughout the year, assistance has been provided to EMD on subjects ranging from technical advice on geocoding, to locating sources for GIS layers. At the end of October, Doug Calvert (GIC Chair) and the State GIS Coordinator met with Ron Osborne (Director, EMD) and his staff regarding participation in the GIC. Director Osborne indicated that EMD would support efforts of the GIC and would like to be involved. Since then, EMD has provided representation at the GIC meetings, and the GIC has assisted with their HAZUS data update training efforts among other things. Amanda Loach of EMD is working on securing funding for participation through FEMA grant opportunities. EMD has been identified as the largest *consumer* of GIS data developed by other organizations and although all organizations identified in this section stand to see great benefit from participation in the GIC, EMD stands to gain the most.

Clemson University- Neil Ogg (Associate V.P. of Public Services and Agriculture) began attending the GIC meetings and has been provided with a copy of the MOA. During the past year, they have assisted the GIC by searching for specific data layers. Although they would like to continue to participate in the GIC, they have expressed that they do not have available funding to assist with the effort. It is anticipated that they will continue to attend the meetings.

College of Charleston – Norm Levine of the College of Charleston expressed interest in the GIC and offered up assistance where possible. During a visit to their facility, he showed their training facilities and indicated they are in the process of acquiring a very large server that may be able to host some of the data holdings associated with the statewide LiDAR project. Although they will probably not be able to contribute financially to the GIC, they can provide in-kind services.

Archives and History – Brad Sauls and Chuck Cantley of Archives and History were contacted to learn more about their data holdings and to invite them to participate in the GIC. After several discussions, they indicated that they may be interested in attending the meetings, but would not be able to contribute financially to the effort.

Vocational Rehabilitation – This organization does not attend the GIC meetings but is listed here because they represent a potential partnering organization from an in-kind perspective. They have GIS training facilities and programs to benefit individuals trying to retrain and re-enter the workforce. They also can act as a resource for specific data building projects of a limited nature at their facility as well as temporary to permanent employees at GIC work locations.

Focus Area Seven – Develop Relationships with Local Government Organizations

It is important to develop and maintain a positive, ongoing relationship with local government. Although state agencies produce a large volume of data, several layers critical to GIC partner organizations (including street centerlines and most high resolution aerial photography) are produced at the local level. In addition to the potential for data sharing of existing layers, the potential exists for development of partnerships for additional mutually beneficial data layers and projects in the future. During the past year, many local organizations were contacted. Every effort was made to attend local GIS user group meetings, as these provide the single largest impact through multiple in-person contacts at one visit. This effort has not gone unnoticed. Through comments shared both directly and indirectly with the State GIS Coordinator, these actions have been received as a positive outreach activity. In addition, thus far the Coordinator has been asked to conduct a presentation at each of the user group meetings regularly attended in order to share information on what is happening within state GIS activities, etc.

In addition to individual user group meetings, the statewide GIS conference held in Greenville this year proved to have tremendous impact. It provided for face-to-face discussions with local government organizations from around the state. In addition, the GIC was well represented by conducting multiple presentations and panel discussions at the conference. The State GIS Coordinator was asked by the State Mapping Advisory Committee (SMAC) to help find a keynote speaker for the conference. Shelby Johnson, GIS Coordinator for the State of Alabama was identified and brought in to speak about GIS coordination and was very well received.

Further, at the end of May, a two day trip to the low country allowed for visits with multiple local, state and federal organizations as well as a speaking engagement at an area GIS user group meeting. This trip resulted in the sharing of some data from the Berkeley-Charleston-Dorchester Council of Governments and initiation of a potential data sharing relationship with Dorchester County regarding the statewide LiDAR project. These activities have put a face on the Coordinator position, and are seen as a positive means of working with local government. It has helped to develop the Coordinator's contacts, and also allowed the Coordinator to be seen as one office/location that local government organizations can use as a resource in order to get more information on available GIS layers from the state.

In addition to the site visits and attending the user groups as mentioned above, the Coordinator joined the Geographic Administrators Association of South Carolina (GAASC). This allowed for participation and involvement in their work group meetings, and additional exposure. Currently activities include joint authoring of a data survey with several members of the GAASC that will be sent out to local government GIS organizations in order to determine their level of data distribution, sharing, copyrighting, and licensing. This survey can act as a tool to assist with identification of potential partners for data sharing opportunities with the GIC.

The GIC submitted a successful proposal in December for a Cooperative Agreements Program (CAP) grant for the 50 States Initiative. The focus of the grant is to help develop/identify data for the National Spatial Data Infrastructure (NSDI). The NSDI is interested in a number of key layers, several of which are maintained by local government (including street centerlines). The proposal for the grant set forth a plan to hold a number of facilitated outreach sessions for local government throughout the state in order to help identify opportunities to work together as well as barriers to participation, and potential remedies to removal of those barriers. As of the writing of this document, multiple vendors are

developing responses to the RFP as set forth, and work is anticipated to begin in late September after the contract is awarded. It is hoped that through the execution of the activities associated with this grant stronger ties will be built with local government organizations and potentially increase opportunities to work together.

SMAC and the GIC technical committee held a joint meeting in July to discuss the participation of SMAC in the technical committee. SMAC voted in favor of involvement during the meeting and will now provide technical advice and bring ideas to the technical committee. It was also recognized that although SMAC may not provide the best overall representation of local government to the GIC, it is the best vehicle available at this time. This represents additional outreach of the GIC, looking for input from additional sources and SMAC participants can act as a sounding board for ideas. During the meeting, feedback was solicited for future activities of the GIC in the coming year. Two major themes arose – development of a legislative initiative for funding, and identification of a better means for local representation on the GIC.

Another opportunity arose when Mark DePenning, GIS Department Manager for the City of Greenville, expressed an interest in developing a joint data improvement program between state agencies and local government. This project recently kicked off and currently involves the City of Greenville and DHEC (GIC partner organization). The idea behind the program is to utilize local resources in order to improve the spatial accuracy of some of the state's GIS layers. Execution may involve local government personnel travelling into the field in order to collect GPS coordinates of the locations. In the current economy involving higher fuel prices and necessary travel restrictions, the project will provide a definite cost savings. Of initial interest are the locations of storage tanks (both underground and above ground) as well as day care centers. In addition, the City of Greenville has offered up their point level address data in order greatly improve the accuracy of future operations involving geocoding (automatically placing points on a map to represent address locations of businesses, residences, etc.). The value of this project is the increased accuracy of data that will benefit the state organization creating the data, as well as any organization (including local government) that wishes to make use of the data.

In addition to the above-mentioned activities, the Coordinator helped co-chair the statewide Crime Mapping and Intelligence Analysis Conference in order to help facilitate the sharing of ideas and practices of mapping and analysis within the law enforcement community. It was a well attended two day conference with over 100 attendees from many agencies representing South Carolina police departments, sheriff offices, as well as state law enforcement, PPP (a GIC partner) and federal agencies.

ADDITIONAL COORDINATION EFFORTS AND BENEFITS

The Focus Areas included above provide an outline of activities as deemed important to the GIC during the initial year of operation. As interviews and meetings progressed throughout the year, other areas of need and interest came to light. These areas that are not associated with a particular Focus Area are highlighted in brief below.

E911Centerline Data Improvement Project

E911 centerlines (roads) are one of the cornerstones of the GIS operations within the state. It is used by the state agencies for making maps and geocoding (the process of taking an address and automatically plotting it on the map, using streets as a reference). GIC partners with active GIS operations utilize this layer on a regular basis. The E911 centerlines data is unique in nature in that it is one of only a handful of layers built predominately at the local level that almost all counties share with the state. For those

counties that do not have GIS operations the E911 group within ORS (GIC partner) maintains the roads. Additionally, the City of Columbia provides the roads to the E911 group for Richland County. Data from multiple sources such as this creates several challenges including different field structures and storage methods.

In order to increase the efficiency of the operation, ORS's Dave Morrison worked with the State GIS Coordinator and ESRI in order to develop data tools that helped reduce the processing time from roughly sixty hours down to three or four hours. This now allows the E911 team to focus their time on updating centerlines for counties that do not have their own GIS, and contacting GIS-based counties for updated copies of their data. The result will provide more frequent updates of centerline data to state agencies, with increased coverage of the data – especially in high growth areas. DHEC (GIC partner) was already engaged in a data evaluation program with the E911 group to examine the ability of the centerlines to effectively geocode addresses throughout the state. This program will continue, and represents another example of GIC partnering agencies working together in cooperative efforts.

Moving forward, DOT has expressed interest in identifying a means of getting a few additional fields of information critical to their federal funding effort for highways, and this is currently being examined. Additionally, it is recognized that taking the centerline data and bringing the roads together spatially on the map for adjoining counties would be extremely beneficial to both state and local organizations and would represent another phase in the project.

State Point of Contact for GIS

The creation of the State GIS Coordinator role by the GIC has produced a number of key benefits. These include an effective means to get help and advice on projects through NSGIC and ESRI. Another benefit is the ability to coordinate the involvement of multiple agencies in providing joint feedback on GIS impact (e.g. the Google presentation of their product offerings, the FLAIR Act, etc.). Furthermore, the Coordinator can act as a central knowledge repository for GIS data holdings within participating state agencies and contact point for local and state government with questions on data holdings and GIS activities throughout the state. If the data layer being requested is not already known, the Coordinator can investigate to see if a source can be found. Additionally, on multiple occasions the Coordinator has been asked to provide technical advice on various GIS and GPS related issues. This also allows for the inclusion of GIC partners more knowledgeable in specific areas (e.g. Geodetic Survey for VRS questions, etc.).

This allows for significant cost savings for the partnering GIC organizations as the Coordinator can quickly and effectively help identify the locations of existing data sets. This does two things: 1) allows personnel to continue working on other projects instead of spending time trying to identify sources of data, 2) helps to ensure that similar data sets are not created by multiple organizations, thereby helping to remove potential duplication of effort. An additional benefit as observed by Jared Shoultz of DHEC is that the filling of the Coordinator position has coincided with a reduction in calls to his department, while the number of calls has been increasing in the Coordinator's Office. This was not a policy decision, but rather a reflection of recognition of the Coordinator as a resource by both local and state organizations.

Increased Communication

Through the overall efforts of the GIC, communication among participating agencies has significantly increased. This has been marked by identification of pre-existing data layers that can be shared among

the agencies, development of strategies for joint benefit (such as the data portal). The State GIS Coordinator has worked toward being a catalyst for meetings of the partner agencies to address specific concerns and needs in order to help move projects and initiatives forward that are important and beneficial to the GIC, but may fall outside the direct responsibility of any one agency.

Probation and Parole Sex Offender Study

With Tony Dukes of PPP we were able to develop a study of proposed legislation for the State of South Carolina and examine its potential effects. Passing of either of the two pieces of legislation would have had significant impacts on PPP and other agencies. Ultimately, the legislature passed the version that contained a smaller restriction zone. The study underscores the effectiveness and efficiency of analyzing public policy prior to implementation. Future activities analyzing public policy options prior to a decision could provide significant cost savings through identification of more effective enforcement measures and avoidance of potential costly litigation. The study was published in Criminal Justice Policy Review in late summer 2008.

Minimum GIS Surveyor Standards

This year the South Carolina State Board of Registration for Professional Engineers and Surveyors asked the GIC to review the minimum standards document for GIS Surveyors. This was not an opportunity to review the actual legislation in order to make modifications, but rather to provide feedback on proposed regulations associated with the practice of GIS Surveying in South Carolina. The GIC technical committee reviewed the document and provided suggested changes through several edits. The State GIS Coordinator attended a meeting of the Board in order to provide feedback. While some changes the GIC sought were not included, other suggestions were accepted. The Board's solicitation of the GIC's feedback recognized the importance of the Council and the technical expertise residing within it.

Establishment of the State Contract for ESRI

The CIO's Office worked on getting a state contract in place for ESRI software and service. While this was a long process, the execution of such a contract would provide quick purchasing options to state organizations, and would have an important impact on the GIC partnering organizations. The Coordinator worked with the CIO's Office in order to share with them what this would mean to the Council, and continued to follow up throughout the process in order to help keep things moving forward where possible. Thanks to the tireless efforts of Shirley McCandless at the CIO's Office, this contract was placed into operation in early August, 2008.

APPENDIX A: SC Geographic Information Council GIS Data Inventory

Organization	GIS Layer	Sharable
Commerce	Utility Service Areas - gas and electric - provides approximate service areas based on sites and buildings projects	Yes
Commerce	Government Buildings - GPS locations for many government-owned buildings were collected. This layer is no longer being maintained.	Yes
Commerce	New Market Tax Credit Areas - new market tax status of census tracts within the state is being maintained - project is focused on business development in rural areas	Yes
Commerce	Average Hourly Wage - data at the county level	Yes
Commerce	Average Yearly Wage - data at the county level	Yes
Commerce	Community Development Corporations	Yes
Commerce	Foreign Trade Zones - includes preferential taxing criteria	Yes
Commerce	Job Tax Credit Status - data at the county level	Yes
Commerce	Business Recycling Centers - businesses that recycle and goods recycled - same database as DHEC has	Yes
Commerce	Airports - maintained by Division of Aeronautics - information on runways, obstructions, fuels, access to AutoCAD drawings of the facilities themselves, etc.	Yes
Commerce	Railways - layer under construction. Taking the ESRI railway data and using the orthophotos to spatially correct the positions - perhaps 25% complete	Yes
DHEC	Air Monitoring Stations	Yes
DHEC	Inactive Air Monitoring Stations	Yes
DHEC	Air Regulated Facilities	Yes
DHEC	Above Ground Storage Tanks	Yes
DHEC	Comprehensive, Environmental Response, Compensation	Yes
DHEC	Compliance and Enforcement Sites	Yes
DHEC	Dry Cleaners	Yes
DHEC	Formally Utilized Defense Sites	Yes
DHEC	Hazardous Waste Generator Sites	Conditional
DHEC	Infectious Waster Generators	Yes
DHEC	Leaking Underground Storage Tanks	Yes
DHEC	Mines (Points)	Yes
DHEC	Nuclear Power Stations	Conditional

Organization	GIS Layer	Sharable
DHEC	Radiological Waste Generators	Conditional
DHEC	Non-Commercial Recycling Sites	Yes
DHEC	Solid Waste Landfills	Yes
DHEC	Hazardous Waste Treatment, Storage and Disposal	Yes
DHEC	Underground Storage Tanks	Yes
DHEC	Permitted Agricultural Facilities(Animal Farms)	Yes
DHEC	Ambient Ground Water Quality Stations	Yes
DHEC	Microinvertebrate Stations	Yes
DHEC	Capacity Use Wells	Conditional
DHEC	Fish Tissue Monitoring Sites	Yes
DHEC	Fish Advisory (Polygonal)	Yes
DHEC	Fish Advisory Streams	Yes
DHEC	Hazardous Dams	Conditional
DHEC	Modeled Stream Segments	Yes
DHEC	Navigable Lakes	Yes
DHEC	Navigable Streams	Yes
DHEC	National Pollutant Discharge Elimination System	Conditional
DHEC	Navigable Water Permits	Yes
DHEC	Nationwide Water Permits	Yes
DHEC	401 Certifications	Yes
DHEC	Public Water Supply Wells	Conditional
DHEC	Recreational Waters	Yes
DHEC	SC Eight Major Basin Boundaries	Yes
DHEC	Shellfish Harvest Classification	Yes
DHEC	Shellfish Monitoring Stations	Yes
DHEC	Surface Water Intakes	Conditional
DHEC	Water Quality Monitoring Stations	Yes
DHEC	American Red Cross and Hurricane Shelters 2007	Yes
DHEC	SC Live Births by County 1990 - 2003	Yes
DHEC	SC Live Births for 1999 by ZIP Code	Yes
DHEC	SC Live Births for 2000 by ZIP Code	Yes
DHEC	SC Live Births for 2001 by ZIP Code	Yes
DHEC	SC Live Births for 2002 by ZIP Code	Yes
DHEC	SC Live Births for 2003 by ZIP Code	Yes
DHEC	SC Live Births for 2004 by ZIP Code	Yes
DHEC	SC Live Births for 2005 by ZIP Code	Yes
DHEC	Day Care Facilities	Yes
DHEC	SC Deaths by County 1990 - 2003	Yes
DHEC	SC Deaths for 1999 by ZIP Code	Yes
DHEC	SC Deaths for 2000 by ZIP Code	Yes

Organization	GIS Layer	Sharable
DHEC	SC Deaths for 2001 by ZIP Code	Yes
DHEC	SC Deaths for 2002 by ZIP Code	Yes
DHEC	SC Deaths for 2003 by ZIP Code	Yes
DHEC	SC Deaths for 2004 by ZIP Code	Yes
DHEC	SC Deaths for 2005 by ZIP Code	Yes
DHEC	Health Regional Offices	Yes
DHEC	Funeral Homes	Yes
DHEC	Health Departments and Clinics	Yes
DHEC	Licensed Health Facilities	Yes
DHEC	Health Districts (Old Classification)	Yes
DHEC	Environmental Quality Control Districts Boundaries	No
DHEC	Environmental Quality Control District Office Locations	No
DNR	Digital Line Graphs (1:24,000-scale) includes Hydrography, Hypsography, Transportation and Boundary layers (16 layers total) – Partnered development with USGS	Yes, on GIS Data Clearinghouse
DNR	Digital Raster Graphics (1:24,000-scale) – provided by the SC Dept. of Commerce	Yes, on GIS Data Clearinghouse
DNR	Digital Elevation Models (1:24,000-scale) – Partnered development with USGS	Yes, on GIS Data Clearinghouse
DNR	Digital Orthophoto Quarter Quadrangles (1:12,000-scale, Color infrared) 1994 (Coastal only), 1999 and 2006/07 – Partnered development with multi-agency consortium	Yes, on GIS Data Clearinghouse
DNR	Wetlands & land cover (1:24,000 scale) – National Wetlands Inventory with Anderson, Level II uplands – Partnered development with USFWS	Yes, on GIS Data Clearinghouse
DNR	Soils (1:24,000-scale) SSURGO level from NRCS (SCS) county soil surveys	Yes, on GIS Data Clearinghouse
DNR	DNR land inventory and managed lands	Yes, with some restrictions
DNR	DNR boat ramps	Yes, on GIS Data Clearinghouse
DNR	Threatened/Endangered species (known locations)	Some limited distribution w/restrictions
DNR	Geologic structures	Yes, when completed
DNR	Hydrologic ground water wells	Yes, when completed

Organization	GIS Layer	Sharable
DNR	Freshwater fisheries stream assessment surveys	Yes, when completed
DNR	Natural color high resolution oyster bed imagery (one-quarter meter ground resolution)	Yes, on GIS Data Clearinghouse
DNR	Artificial reef locations	Yes, on GIS Data Clearinghouse
DNR	SC Gap Analysis Products (raster-based products for land cover and 454 predicted species distributions)	Yes, on GIS Data Clearinghouse
DNR	LIDAR - high resolution digital elevation data, Partnered development with multi-agency consortium	Yes, when completed
DNR	Land cover from Landsat Thematic Mapper (30x30 meter pixel) - 13 classes for 1983/86, 1992/93, 1997/98, 2002/03 and 2008.	Yes, when completed
DOT	Traffic Count - tabular information that is available denoting the traffic count for particular roads sampled. This layer is one of the data improvement projects currently underway. Upon completion, this layer will be spatially enabled and will be shared. Until then it is available in tabular format and the user can spatially enable it.	Yes
DOT	Bridges and Culverts - layer of all bridges and culverts maintained by the DOT	Yes
DOT	Annexations - contains all approved annexations for municipalities in SC	Yes
DOT	Evacuation Routes - contains all hurricane evacuation routes as devised by the DOT	Yes
DOT	Highways - contains all roads as maintained by the DOT	Yes
Forestry Commission	Southern Wildfire Risk Assessment (SWFRA) model layers:	Yes
Forestry Commission	SWFRA Fire occurrence area	Yes
Forestry Commission	SWFRA Fire effects index	Yes
Forestry Commission	SWFRA Fire response accessibility index	Yes
Forestry Commission	SWFRA Level of concern	Yes
Forestry Commission	SWFRA Suppression difficulty rating	Yes
Forestry Commission	SWFRA Values impacted rating	Yes
Forestry Commission	SWFRA Wildfire susceptibility index	Yes
Forestry Commission	SWFRA Wildland Urban Interface (WUI) communities	Yes
Forestry Commission	South Carolina Fire Stations	Yes

Organization	GIS Layer	Sharable
Forestry Commission	Wildfire Occurrence	Yes
Forestry Commission	Smoke Management Prescribed Fires	Yes
Forestry Commission	Best Management Practices (BMP) inspections sites	Yes
Forestry Commission	SCFC Regions	Yes
Forestry Commission	SCFC Units	Yes
Forestry Commission	SCFC Zones	Yes
Forestry Commission	SCFC Sectors	Yes
Forestry Commission	SCFC Facilities	Yes
Forestry Commission	SCFC Personnel Standby Locations	Yes
Forestry Commission	SCFC State Forest Boundaries	Yes
Forestry Commission	SCFC Automated Fire Weather station locations	Yes
Forestry Commission	Southern Forest Land Assessment (SFLA) layers - contains approximately 10 layers on forest resource richness, and approximately 3 layers on forest resource threats, as well as the priority forestlands composite	Yes
Forestry Commission	State Forest Lands Forest Boundaries	Yes
Forestry Commission	State Forest Lands Stand Boundaries	Yes
Forestry Commission	State Forest Lands Road	Yes
Forestry Commission	State Forest Lands Environmental Classification	Yes
Forestry Commission	State Forest Lands Research Areas	Yes
Forestry Commission	State Forest Lands Facilities	Yes
Forestry Commission	State Forest Lands Water bodies	Yes
Forestry Commission	State Forest Lands Gates	Yes
Forestry Commission	State Forest Lands Stream crossings	Yes
Forestry Commission	State Forest Lands Practices/Treatment Areas	Yes
Forestry Commission	State Forest Lands Artificial regeneration	Yes
Forestry Commission	State Forest Lands Natural regeneration	Yes
Forestry Commission	State Forest Lands Prescribed Burning	Yes
Forestry Commission	State Forest Lands Chemical treatment	Yes
Forestry Commission	State Forest Lands Fertilization	Yes
Forestry Commission	State Forest Lands Intermediate harvest	Yes
Forestry Commission	State Forest Lands Rotation harvest	Yes
Forestry Commission	State Forest Lands Mechanical site preparation	Yes
Forestry Commission	State Forest Lands Other treatment	Yes
Forestry Commission	State Forest Lands Pruning	Yes
ORS	Control Points - built and maintained by the Geodetic Survey, this file indicates where the control points are located throughout the state, their level of accuracy, etc.	Yes

Organization	GIS Layer	Sharable
ORS	Orthophotos - completed on a county by county basis typically at the 6 inch to one foot level of resolution. State agencies can acquire the statewide data set from Geodetic Survey, while other organizations must contact the county directly. The imagery remains the property of the county.	Conditional
ORS	Voter Districts	Yes
ORS	Schools - currently under development, this layer will include both public and charter schools from information provided by the SC Department of Education, as well as information on private schools acquired from the federal government. This layer will be made available upon completion	Yes
ORS	School Districts - currently under development. This layer includes modifications made by the legislature, etc. This layer will be made available upon completion.	Yes
ORS	Street Centerlines - compiled by the E911 group of ORS, this includes county-built street centerlines as well as centerlines maintained by E911 for those counties who do not currently maintain their own data. Since this data set contains data developed by counties, it is made available to state agencies. Any other interested parties must contact the appropriate county directly.	Conditional
ORS	Health and Demographics Section - many layers of data - most of it confidential in nature and cannot be shared. Results of analysis utilizing certain layers may be of great benefit, and could potentially be shared on a case-by-case basis.	Conditional
PPP	Sex Offenders - a GIS layer of sex offenders currently being monitored is available for law enforcement related activities. The listing for all registered sex offenders is maintained by	Conditional
PPP	Offenders - a GIS layer of offenders is available for law enforcement related activities. Due to the sensitive information contained in the file, this layer is not available for general download. If you work for a law enforcement agency, please contact us and we can make arrangements to provide the information to your organization.	Conditional

