NJDEP's i-MapNJ GeoSpatial Data Miner: Serving Customized Profiles and Web Reports

Lou Jacoby, GIS Specialist, NJDEP, OIRM, BGIS
Dnyanada Bhide, Programmer, NJDEP, OIRM, BGIS
Lawrence L. Thornton, Manager, NJDEP, OIRM, BGIS

The New Jersey Department of Environmental Protection (NJDEP) is establishing an enterprise Internet ArcIMS/ArcGIS Server application that serves unique program profiles containing GIS layers and related custom reports. *i-MapNJ GeoSpatial Data Miner* (GSDM) integrates the NJDEP's internet mapping application with NJDEP's Data Miner, an online environmental report generating application.

Using *i-MapNJ GeoSpatial Data Miner*, the public and regulated community will now view geographic and other departmental databases as an integrated product, in the same fashion employed by staff in the NJDEP programs. The public can research data concerning the environmental quality and departmental activities related to facilities and monitoring stations in their backyard, municipality or sub-watershed. This application also will allow applicants to review the data and criteria that establish the basis for NJDEP approval, and submit plans with spatial data to NJDEP as part of the regulatory digital submittal.

Introduction

NJDEP and its many programs create and update environmental data for the benefit of the State of New Jersey and its citizens. These data provide insights into the regulatory and statutory duties that comprise the department programs' efforts. NJDEP Commissioner Bradley M. Campbell, recognizing the importance of linking spatial data with tabular data from other database sources relative to the environmental decision-making process, has directed the Bureau of Geographic Information Systems (BGIS) within the Office of Information Management (OIRM) to develop a new Internet tool, called i-MapNJ GeoSpatial Data Miner (GSDM). i-MapNJ GSDM will be available to the public this summer.

i-MapNJ GSDM is a new twist on i-MapNJ and DEP Data Miner. It combines the Internet mapping application, i-MapNJ, with the department's public access reporting tool DEP Data Miner and allows users to view GIS data with data from NJDEP's data systems. Users will be able to pick from a list of DEP profiles in i-MapNJ that predefine the default GIS layers and Data Miner reports available to view environmental data from different perspectives. For example, one profile will allow users to easily determine ground water contamination near existing or proposed wells. The user can locate a well or location of a proposed well, determine if groundwater contamination is in the vicinity through the defaulted GIS layers, and with a click of a button launch a Data Miner report showing the actual contaminants and levels of contaminants found. Or the user may launch DEP Data Miner and locate all water quality monitoring stations where a particular parameter was detected, use the report filtering features to further refine the report to only certain limits, and with the click of a button send the station points to i-MapNJ to be viewed with Watershed data layers to assess impact. This bridge between i-MapNJ and DEP Data Miner results in an incredible reporting and analysis tool. Profiles will also include ones similar to the current i-MapNJ DEP and i-MapNJ NJEMS and i-MapNJ Geology, so that users only need to use one i-MapNJ to access all DEP data.

i-MapNJ GSDM will be the most feature and data rich of NJDEP's web-based environmental mapping tools and will provide the public with program specific information about an area of interest, neighborhood, county, or state (NJ). With this easy-to-use application, the public will be able to view and query the NJDEP's Geographic Information System (GIS) data along with related environmental data from NJDEP's New Jersey Environmental Management System (NJEMS) and NJ STORET.

NJEMS is the DEP's department-wide enterprise database system that integrates all data related to its regulated activities for the purposes of sharing and reporting data, improving workflow and business practices, and making better environmental decisions. NJEMS serves as the day-to-day business tool for over 3000 staff. NJEMS stores, tracks and reports data related to all certifications, registrations, permits, cases, inspections, violations, enforcement actions and assessments and collections. NJEMS tracks the data associated with those activities, as well as documents (ie. Word, Excel) related to the activities, and the DEP workflow tasks, staff assigned and processing time for each of those activities. NJEMS tracks each permit requirement, facility submittal and inspection requirement to provide for automated compliance determination where possible. For example discharge monitoring reports, air emissions, water withdraw requirements and monitoring reports are captured in NJEMS so that Nightly Cycle processing can evaluate the data for missing submittals or exceedances and autogenerate violations for the department's response and enforcement action. NJEMS provides all staff with access to any DEP data related to regulated entities and provides the department a way to track and

report this data easily to the public. NJ STORET is NJDEP's version of the U.S. EPA water quality STOrage and RETrieval database, which includes water-monitoring data. i-MapNJ GSDM is designed in such a fashion that the application can easily access any major NJDEP environmental database.

In i-MapNJ GSDM custom program profiles are being developed for serving information from the Water Allocation, Safe Drinking Water, Historic Preservation, Water Monitoring and Standards, Site Remediation, Geological Survey, and Land Use Regulation programs within NJDEP. Due to the sensitive nature of some spatial data layers, some profiles may only be accessible to authorized public users. There will also be profiles for general NJDEP GIS data browsing and NJEMS queries. NJDEP plans to expand the number of profiles available in the i-MapNJ GSDM application through the use of a profile building and maintenance tool, which will provide the means to quickly develop new program profiles that can be rapidly deployed. Each profile can be customized and saved for future sessions by a public user.

Background

Since mid-2000, the Bureau of Geographic Information Systems (BGIS) within NJDEP's Office of Information and Resource Management (OIRM) has been developing Internet ArcIMS applications for serving environmental data to the public. These applications (www.nj.gov/dep/gis/newmapping.htm) have been developed to provide the public with a means to survey the environmental landscape in an area of interest, to arrive at answers to environmental questions, and to address specific environmental concerns. Over time, these applications have become overwhelmingly popular with the public, and demands by programs within NJDEP have increased for consideration in future ArcIMS applications development.

While NJDEP was deploying its first ArcIMS applications on the Internet, the department began implementing Business Objects reporting tools for internal use on the department's NJEMS database. Staff in BGIS recognized the great potential of integrating an ArcIMS application with the Business Objects web-client, WebIntelligence. Through this integration, users of applications built with ArcIMS could pass information related to selected features to a WebIntelligence report. This report could be augmented with additional data, edited, filtered, and exported for further analysis. WebIntelligence users could build new, or take an existing report, filter the data to arrive at a selected record set, and then relate the record set to features from a GIS layer in ArcIMS, and display the features on the map.

While the early ArcIMS applications enjoyed remarkable runs of success, it became clear to BGIS that a more efficient long-term solution was required for serving ArcIMS applications on its Intranet and the Internet. Each of the existing applications at the time had separate map services, even though most of the applications used many of the same spatial data layers. Most of the applications had similar GIS tools and general querying functions for enabling a user to arrive at an area of interest. The differences among the applications were marked by the inclusion of application specific spatial data and queries developed to provide answers to specific questions of the spatial data. Rather than building entirely new applications for each program, NJDEP decided to investigate ways in which one application, with a single map service, could serve multiple program modules or profiles as an enterprise application.

In 2004, NJDEP released i-MapNJ ArcIntelligence, an application that provided a link between i-MapNJ and WebIntelligence, and which served customizable NJDEP program profiles for several NJDEP program groups on NJDEP's Intranet. NJDEP's immediate goal was to provide a similar application, i-MapNJ GeoSpatial Data Miner (GSDM), to the public. NJDEP realized that porting this Intranet application to the Internet would not be as simple as others had been in the past. Among the challenges: redesigning the application using ASP .NET and a potential mix of ArcIMS and ArcGIS server technologies, adapting the application to a new web services architecture, incorporating a user authentication/authorization service, developing new profile building and management modules, limiting access to sensitive data in selected GIS layers, and incorporating NJDEP's DEP Data Miner application as the Internet replacement for WebIntelligence. NJDEP released DEP Data Miner (www.nj.gov/dep/opra/online.html) in 2004 in response to the state Open Public Records Act (OPRA) law, as an Internet based reporting application, enabling public access to NJDEP's environmental data. Using DEP Data Miner the public can run any of a number of environmental reports, and download the report data to desktop applications they have running on their local PC. In its first year DEP Data Miner has generated over half a million reports.

Development Plan

In order to more easily achieve NJDEP's objective of taking the application to Internet, the project was divided into three phases. Phase I objectives included completing the needs assessment which determined the application's requirements. The objectives were going to be in most cases very similar to the requirements of the Intranet application, however since the intended audience was the public, there were usability, educational, and public access/data security issues that needed to be addressed. The Phase II objectives include building the core functionality and a functional prototype program profile. The Phase III objectives include building the remaining program profiles, and integrating DEP Data Miner reports.

Phase I – i-MapNJ Geospatial Data Miner: Determination of Requirements

ESRI and NJDEP program staff met for ten days to review the existing i-MapNJ ArcIntelligence application and discuss changes and enhancements needed for the Internet i-MapNJ GSDM application. Program staff presented each program's profile, highlighting requirements for spatial data, queries, reports, and GIS tools. In addition, staff from BGIS and the Office of GIS within the New Jersey Office of Information Technology (NJOIT) met with ESRI to discuss the more general requirements relating to the system architecture and technologies that were going to be employed. NJOIT is the agency within the state that coordinates, supports, and approves all state government Internet applications.

All Internet application must adhere to development standards set by NJOIT, and must go through a comprehensive approval process. NJOIT requires that Internet application development consist of proof of concept testing, integration testing, system testing (stress tests), and a council review (Application Architectural Planning Survey) before release to a production environment. NJOIT also requires that data servers, application servers, and web servers be contained in a three-tier architecture.

Early on it was decided that the i-MapNJ GSDM application would be rewritten using a .NET ASP framework. The existing Intranet i-MapNJ ArcIntelligence application was written using ASP. NJDEP's decision to redesign the application using ASP .NET was made to take advantage of greater language support and a larger set of new controls and XML based components. ASP .NET also provides increased performance by running compiled code, and is more scalable.

While it was a given that NJDEP's BGIS wanted to use ArcIMS technology in building the application, there was also interest in exploring the use of ArcGIS Server for performing more "heavy-lifting" tasks. ArcGIS Server provides capabilities for enabling server-based GIS processing, and delivering advanced GIS Web services. NJDEP anticipated a need to use ArcGIS Server for processes such as on-line data input/editing and submission, spatial analysis, and for additional GIS web services. Since ArcGIS Server is a new technology, not already tested and approved by NJOIT, there remains a review and testing process before ArcGIS Server can be used.

In order to serve the application on the Internet, NJDEP needed an entry point for the public and regulated community to interact with the application. Fortunately NJOIT had already developed the MyNewJersey portal with user authentication. By linking the application with the portal, NJDEP could direct users to access the application through the portal. Users would be required to register and login if they wanted to customize an existing profile and save those changes to a personal profile. In addition, the login would control access to profiles that NJDEP programs want to limit to an approved list of users. In this way NJDEP could limit the access to sensitive data to a specific community of users.

NJDEP needed a solution for developing new and maintaining existing profiles. Each program profile uses the same ArcIMS map service, but is customized to initially include only GIS layers relevant to the interests of the NJDEP program. Custom queries, reports, and tools that run against the program data are also part of the profile. NJDEP required a tool that would enable the rapid creation of new program profiles that could quickly be deployed. Users of i-MapNJ GSDM would also have the capability to further customize a program profile and save those changes to a personal profile. The Intranet i-MapNJ ArcIntelligence application provided a tool for tracking users, layers, queries, and reports. NJDEP is considering a similar functioning tool or a third party solution for i-MapNJ GSDM.

NJDEP needed to come up with the best strategy for passing information between ArcIMS and DEP Data Miner. The existing strategy used for Intranet i-MapNJ ArcIntelligence involved passing unique feature IDs from a table to WebIntelligence reports. Discussions were held to determine if this was the best solution for the Internet. Another proposed strategy called for the passage of XML files between applications.

Phase II - i-MapNJ GeoSpatial Data Miner: Core and Prototype Development

The second phase of the i-MapNJ GSDM development requires the building and testing of the application's core functionality and the building of a prototype profile using ArcIMS and ArcGIS server technologies. Of the eight existing i-MapNJ profiles, the Bureau of Water Allocation (BWA) profile was selected to serve as the prototype. The BWA profile was selected since it was the most

complex. In addition to having unique queries and links to DEP Data Miner reports, the profile needs to be designed in such a way so that only users authorized by the BWA program can access it, since it provides access to data being held secure for domestic security purposes.

Authentication/Authorization Through MyNewJersey Portal

Users of the i-MapNJ GSDM application will access the application through the State of New Jersey web site. Visitors to the site can register on-line, enabling them to access the MyNewJersey portal, which allows users to customize the available content. A role manager from the Bureau of Water Allocation program in NJDEP will be responsible for granting access to the Water Allocation profile within the i-MapNJ GSDM application, and granting access to restricted GIS layers. The role manager sends via email an authentication code to users that request access to profiles. The authentication code is used to provision a user's MyNewJersey account with a profile within the i-MapNJ GSDM application. Associated with the authentication code is an "external key" which is initiated by the role manager while generating authentication code. This key is used to authorize users, enabling them to access the profile, layers, queries, tools, and reports. Once the user receives the email they may enter the authentication code while logged into the portal. This adds the link to the profile to the user's MyNewJersey portal profile. By clicking on the link, the user logs on to the application automatically. Authorization is required for the BWA profile, since some of the data elements in the profile are sensitive and should not be made available to the general public.

Map View Interface

The basic user interface layout of the application is branded across all profiles. The layout includes a large map frame, and frames for layers, legend, queries, and reports. The user has the ability to designate what specific toolbar tools are to be included in their customized profile. The user may opt to include any number up to twenty tools, which are maintained in a toolbar frame. The tools include many of the more traditional tools (panning, zooming, identify, and selects), and a number of more customized tools developed for specific functions including:

- *Set Origin*: Allows users to set a point origin location that can be fed into a query. A user can set an origin either by using the "Set Origin" tool and clicking on map or by running the "Find Location of Interest" query and entering an xy coordinate or address.

- *Measure Area*: Measures the area of a polygon that has been graphically entered by the user, in map units of square miles, feet, or meters.

- *Clear Selection*: Provides the user the option of clearing the graphics associated with:
    - Selected features
    - Selection line
    - Measure line
    - Origin point
    - Entered coordinate marker
    - Address match coordinate marker
    - Clear all

- *Attribute Data*: Displays the attribute information of the selected features from the active layer. Only the attributes that exist in the attribute table of the layer are displayed. The attribute data window indicates which layer the selected features are from, how many features are currently selected, and how many pages of attribute data were generated.

- *Capture Coordinates*: Allows users to capture New Jersey State Plane Coordinate values (in US Survey Feet units) for point locations that have been clicked on the map. These locations can be displayed and saved for future sessions. A user can view all the points on map, add/remove points from the stored set, save them to a file that can be read by an external application, and print them.

- *Symbology and Labels*: Allows users to set fill color, fill style, fill interval, boundary color, boundary width, boundary style. It also gives user a choice of adding labels and selecting the attribute field for labels.

- *Create Feature*: Allows users to create a point/line/poly feature and save it as shapefile.

- *Extract*: A modified version of the existing Extract ArcIMS tool, the user can extract layers that are not restricted. The user has a choice of extracting all layers in the current map extent, or selected layers in current map extent, as well as extracting the entire layer or the portion of the layer which is displayed in the current map extent.

- *Overview Map*: Allows the user to turn on/off the overview map.

- *Set Units*: Allows the user to change the displayed map units of the application. The user can select feet, miles, meters, or kilometers. This setting changes the units for the map's bar scale, and changes the units displayed when the measure tool is used.

The interface also provides buttons to allow users to access context-sensitive user help, FAQs, tutorials, links to layer metadata, and links to online documents.

GIS Layers, Tools, Queries, and Reports

i-MapNJ GSDM is truly a unique application since the user has great flexibility in customizing their personal profile. After a user has been granted authorization to a profile by a NJDEP role manager, the user can log into the MyNewJersey portal, and click on the link. Each profile has a default set of GIS data layers, tools, pre-defined queries associated with the included GIS layers and/or data from NJEMS or NJ STORET, and links to DEP Data Miner reports. Users have the option of adding/removing GIS layers to/from the existing profile set. Users may also designate which tools to include in their personal profile's toolbar.

GIS Web Services

As part of Phase II development, NJDEP is working with NJOIT to coordinate the development GIS web services that could be leveraged by this and future New Jersey state government applications. Using ArcIMS and ArcGIS Server the potential exists for building services that can be called by many applications. Among the services being explored are geo-coding, labeling, symbology, geo-processing, data extraction, and location verification.

Profile Administration Tool

NJDEP is exploring solutions to enable BGIS staff to easily develop and maintain program profiles for the i-MapNJ GSDM. NJDEP may leverage the work done for the tool created for i-MapNJ ArcIntelligence, explore third party solutions, or develop a new solution. The solution will allow the application's administrator to define what data layers will be present, what tools and functions will be available, and security parameters for each profile.

Prototype i-MapNJ 3 BWA Internet Profile

The Bureau of Water Allocation within NJDEP's Water Supply Administration is responsible for ensuring that surface and ground water diversions do not exceed the sustainable yield of available water resources and do not adversely impact existing users of the resource. It is also responsible for protecting the ground water resources of the State through proper well drilling activities.

The BWA regulates all ground and surface water diversions in New Jersey that are in excess of 100,000 gallons of water per day. This includes water diverted for public water supply, industrial processing and cooling, irrigation, sand and gravel operations, remediation, and power generation.

The Bureau of Water Allocation's planned use for its i-MapNJ GSDM program's profile includes providing to approved users over the Internet a means by which they can analyze existing water withdrawal locations (wells and surface water intakes) in relation to new applications for withdrawal permits. The profile enables users to search for existing water allocation permits within a one, five and ten mile radius of the coordinate of a proposed withdrawal location. Users can analyze impacts of proposed activities (e.g., diversions) on surrounding features (wells and intakes). For example, a user can enter the location of a proposed new well or intake, and immediately see which existing withdrawal points may be affected. Fixed-scale maps can be generated for printing. Additional searches are available for selecting water allocation permits that fall within an existing GIS layer polygon. Users can pass the results of the searches to one of three DEP Data Miner reports: a water withdrawal general information report, a notification mailing list, and a water quality monitoring report.

Anticipated users for this profile include:

- NJDEP staff and certain other programs (Watershed and Site Remediation Program)
- USGS—data for department-funded studies
- County agricultural agents (involved in the application process)
- Contractors re-certifying Classification Exception Areas (CEAs)
- Contractors involved in site SRP characterization/remedial investigation studies
- Delaware River Basin Commission—requests for data in the Delaware database
- Local government officials—mayors, council members, state senators, etc., who request data for diversions in their area
- Water allocation applicants and their consultants
- Consultants/contractors bidding on water allocation application jobs
- Local/regional environmental groups
- Open Public Records Act (OPRA) requests
- General public.

Layers

The key layer for the BWA profile in i-MapNJ GSDM is the Subject Items (Water Supply) layer. The Subject Items layer (feature class in ArcSDE) is generated from an Oracle database view that accesses NJEMS data over a database link. The Subject Items layer consists of over 1.5 million point features, among which there are over 22,000 Waters Allocation diversion points. Additional key GIS layers in the BWA profile include:

- 2002 Orthophotography
- Bedrock Geology
- Streams
- Water Bodies
- Watershed Management Areas
- Sub-watersheds
- Streets
- Counties
- Municipalities
- Highlands (regional protection and preservation area)
- Pinelands (regional protection area)
- Well Program Grid

Queries

There are four queries or searches that are available to the user in the BWA profile:

- Find Location of Interest
- Locate Water Withdrawal Points Around a Point
- Locate Water Withdrawal Points within an Area
- Withdrawal Points Radial Search Map

Find Location of Interest is a general "get me to my area/point of interest" search and will be incorporated into all program profiles. Using this query, a user can search by address or xy coordinate to get to a point of interest; or by county, municipality, place name, watershed to get to area interest. After running the query, the application zooms to the area/point of interest.

Locate Water Withdrawal Points Around a Point is designed to locate wells and surface water intakes from the Subject Items layer within a radial distance of a designated location. The location to be used as the center of the radius can by found by entering a coordinate (NJ State Plane, US survey feet or latitude/longitude, DMS), address, or a set origin resulting from a mouse click on the map.

The Locate Water Withdrawal Points within an Area query is designed to allow users to locate and select either Water Allocation water withdrawal points or all wells within a particular area of interest. The Water Allocation withdrawal points are wells and intakes that are withdrawing more than 70 gallons per minute, or more than 35 GPM in the Highlands Area (a vital source of drinking water for more than half of New Jersey's residents). The area of interest can be a county and/or municipality; a Water Region, Watershed Management Area, or sub-watershed; or any currently selected polygon feature from a GIS layer.

The Withdrawal Points Radial Search Map query is designed to generate a standardized map of Water Allocation water withdrawal points (wells and intakes with more than 100,000 gallons per day yield) within a radial distance of five or ten miles of a user designated origin location. A separate map window is created, which the user can print. The Water Allocation withdrawal points are plotted and labeled on the map in red. The labels correspond to the Sequence Number in the Withdrawal Points Tabular Data DEP Data Miner report, which is associated with the map. The origin location can be a coordinate (NJ State Plane, US survey feet or in latitude/longitude [DMS], or an already established selected origin

Reports

There are three reports in DEP Data Miner related to the BWA program that can be launched from i-MapNJ GSDM BWA profile: Withdrawal Points Tabular Data, Water Allocation Mailing List, and the Water Monitoring Report. These reports were constructed initially using Business Objects WebIntelligence software. The foundation on which the reports are based is a Water Supply Business Objects data universe that consists of defined database objects (fields from tables) and the joins between the native tables in NJEMS. This and other Business Objects universes were originally developed to support the NJEMS and NJ STORET report generating activities in NJDEP. The universes include many more objects than normally would be maintained in a GIS layer's attribute table. Passing unique IDs from a selected set of features from the Subject Items layer enables the reports to populate with data related to the selected features.

The Withdrawal Points Tabular Data report displays water withdrawal data associated with water allocation features (wells, intakes) selected from the Subject Items layer. It is generally used with the custom map generated by the "Print Radial Search Map" query, as labeled points on the map correspond to the sequence number field in the report. From this report, users can see who owns the diversion, the distance in feet from the entered origin point, the aquifer that is being tapped, and the rated pump capacity.

The Water Allocation Mailing List report displays a list of potentially impacted existing water diversion permitees' addresses. It is generally used after the "Print Radial Search Map" query has been run, which returns Water Allocation permits within a five or ten mile radius of an entered origin, and the distance between each existing permit and the origin. This list can be used to generate notification mailings of the planned new well or intake.

The Water Allocation Monitoring Results Report displays water allocation monitoring results data associated with the currently selected set of water allocation features (wells, intakes). It is also normally used after the "Print Radial Search Map" query has been run, which returns Water Allocation permits within a five or ten mile radius of an entered origin. The monitoring results are grouped by monitoring parameter: chloride, static water level, and water diverted.

Phase III (Future) – i-MapNJ GeoSpatial Data Miner: Remaining Profiles Development

After the completion of Phase II, NJDEP will begin building the remaining profiles using the profile building and maintenance tool developed in Phase II. The tool should enable NJDEP to quickly develop the remaining profiles for the Bureau of Safe Drinking Water, Historic Preservation Office, Land Use Regulation Program, NJEMS, New Jersey Geological Survey, Site Remediation Program, and Water Monitoring and Standards programs. Unique to each program profile will be the program's queries and reports, which will have to be developed. Additional Phase III work will include customization of DEP Data Miner to allow the passing of information from DEP Data Miner reports to i-MapNJ GSDM profiles.

On the horizon, there are several new profiles that will be developed as part of the future Phase III. The states of NJ, DE and NY are working to exchange Ambient Air Quality Monitoring data, collected every minute from hundreds of air monitoring stations, utilizing web services over the national Exchange Network. The states will use NJ's i-MapNJ GSDM to integrate and display this data in real time. The profile will display the regions' air shed in an easy to use "one-stop-shopping" interface. Once a user selects an area of interest, maps showing monitoring locations and concentrations of monitored parameters will be displayed, including stations where levels exceed standards. Associated data would be linked to each mapped layer so users can access more information about each layer (e.g. specifics of each monitoring location). This tool is needed for environmental trend analysis, health tracking and homeland security.

A Smart Growth (SG) interactive mapping profile for screening locations in New Jersey for targeting growth and for environmentally sensitive areas (ESA) analysis is also going to be developed. The SG profile will allow users to select an area of interest and determine if the area is targeted for growth based on the State Plan and/or other state sanctioned criteria. Users will also be able to identify ESA including freshwater wetlands and preserved dedicated open space and others as appropriate. The result of this search will quickly and efficiently screen areas for the general level of permit scrutiny required by the NJDEP. In addition, the Bureau of Geographic Information Systems (BGIS) will work with the ePermit arm of NJDEP's Office of Information Resources Management (OIRM) to develop a SG friendly spatial component to appropriate NJDEP ePermit Internet applications. ePermit friendly

applications will assist users in determining where a proposed activity is to take place in the state, and then render any departmental ESA issues or growth incentives that are applicable, in a user-friendly GUI. The ePermit module will build on the work from the SG profile. Once a point or area identified, the spatial services running in the background will assist the user in answering spatial questions in the permit, as; is my location in the Highlands? EPA Region II has piloted this model with NEPAssist. The SG profile and ePermit module will *screen* for departmental levels of scrutiny and will assist the DEP Office of Smart Growth and other appropriate NJDEP permit programs in making final determinations.

Conclusion

With the development of i-MapNJ GeoSpatial Data Miner, the NJDEP will be able to deliver a very useful and powerful Internet application to the public that will provide unsurpassed capabilities and functionality. By integrating i-MapNJ with DEP Data Miner, users will be able to easily access environmental data using spatial and reporting tools. Users will be able to access customizable profiles within the application, locate an area of interest, and view spatial data. Additionally they will be able to run pre-defined queries on the GIS layers and data in related environmental databases and see the results on a map. Users of DEP Data Miner will be able to run environmental reports and display the locations of features associated with the report data. Targeted user groups will be instructed though tutorials how to use the queries and unique tools in specific profiles in i-MapNJ GSDM for better environmental planning and decision making. NJDEP over time will be adding new profiles to address current and emerging environmental concerns.

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Appendix

For more information about this topic and other NJDEP GIS activities, go to:

www.nj.gov/dep/gis

i-MapNJ related papers submitted to annual ESRI User Conferences over the years:

2002 (i-MapNJ and WebIntelligence) - http://gis.esri.com/library/userconf/proc02/pap0155/p0155.htm
2001 (i-MapNJ NJEMS) - http://gis.esri.com/library/userconf/proc01/professional/papers/pap177/p177.htm

Author Information

Lou Jacoby, GIS Specialist, New Jersey Department of Environmental Protection, Office of Information Resources Management, Bureau of Geographic Information Systems, P.O. Box 428, Trenton, New Jersey, 08625. (609) 633-1203, (609) 292-7900 (fax), Lou.Jacoby@dep.state.nj.us

Dnyanada Bhide, Programmer, New Jersey Department of Environmental Protection, Office of Information Resources Management, Bureau of Geographic Information Systems, P.O. Box 428, Trenton, New Jersey, 08625. (609) 633-1109, (609) 292-7900 (fax), Dnyanada.Bhide@dep.state.nj.us

Lawrence L. Thornton, Manager, New Jersey Department of Environmental Protection, Office of Information Resources Management, Bureau of Geographic Information Systems, P.O. Box 428, Trenton, New Jersey, 08625-0428. (609) 633-8144, (609) 292-7900 (fax), Lawrence.Thornton@dep.state.nj.us