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GEOGRAPHIC INFORMATION SYSTEMS FOR LAND USE LAWYERS 101

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Geographic Information Systems for Land Use Lawyers 101

Patricia E. Salkin and Michael Donohue[1]

The development of computerized mapping and the global positioning system has resulted in the creation of Geographic Information Systems (GIS), powerful data sets that can significantly aid land use practitioners. Most land use lawyers have heard of GIS, few have actually used the technology and most have not yet experienced first-hand how to use. With very little legal literature published to date on GIS, this article is designed to introduce the technology, explain its applicability to planning and zoning decision-making, and offer some insights on potential legal issues that may arise within the context of GIS. Emphasizing the importance of GIS technology as essential for effective decision-making at local, state and federal governmental agencies, a year ago on September 17, 2003, Governor Pataki issued a proclamation designating the day as Geographic Information Systems Day.[2] With more and more local governments across the State purchasing GIS software, the reliance by land use consultants on GIS technology and data to develop recommendations for the public and private sector, and the ready availability of GIS data from New York State's GIS Data Sharing Cooperative,[3] this article is the first of what we hope will be ongoing contributions in the field of GIS for New York land use lawyers.

Background

GIS is a form of computerized mapping, yet it is not limited solely to map form as information about a location can be represented through charts, graphs or tables in ways that are unavailable to traditional paper "maps".[4] A GIS system is designed to "capture, manage, manipulate, analyze, model,

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and display spatially referenced information to solve complex management and planning problems."[5] Its purpose is to store and analyze objects and "phenomenon where geographic location is an important characteristic or critical to the analysis."[6] GIS has also been defined as "a spatial abstraction of the real world, including infrastructure, cultural, social, physical, economic, and other spatially related information, which abstraction is used to solve problems associated with the data whose common attributes are related to space and geography."[7] The NYS GIS Clearinghouse explains, "The value of GIS and spatial data can be seen most dramatically in applications...that promote economic development, public health and safety, and environmental quality."[8]

Initially used in federal military projects for approximately twenty-five years,[9] GIS is now used throughout the country in a variety of helpful ways. For example, GIS has been used to plot the best hurricane evacuation route,[10] to plot the shortest route from a fire station to an accident scene,[11] and to overlay specific crimes on a map in an attempt to glean patterns.[12]

GIS data collection is aided through the use of the Global Positioning System (GPS). The GPS was "developed by the United States Department of Defense (DOD), and utilizes a constellation of twenty-four satellites that orbit approximately 11,000 miles above the earth."[13] The system is designed so that at any pont in time there will be at least four satellites "in view" of a GPS receiver anywhere on earth.[14] The receiver measures the distance from the satellites and calculate its position on earth.[15] In 1995 GPS was made available for use by the general public.[16]

It is important to note that since GPS was originally designed for military purposes, the DOD "deliberately placed errors in the transmissions to ward off enemies."[17] This results in accuracy of approximately 300 feet.[18] While accuracy of this level may be useful to some, it is not precise enough to be used by surveyors and to correct this 300 foot margin of error, the transmission must be corrected through a Differential Global Positioning System (DGPS).[19] DGPS requires the use of a radio receiver that will capture a corrected signal broadcast from a radio tower here on earth.[20] A receiving unit can be attached to a car driving through the municipality to record streets, intersections, and the location of other features such as telephone poles, manholes, or fire hydrants, those features can be captured and input into a GIS.[21] According to a recent newsletter of the New York State Tug Hill Commission, it is using GPS to offer municipalities in the region the ability to map recreational trails and other infrastructure.[22] The Commission also reported a pilot project underway in the Town of West Monroe where collected data will be used for planning purposes.[23]

Currently forty-two states along with the District of Columbia and Puerto Rico have laws relating to GIS systems. The majority of the laws require the establishment of a statewide GIS system or clearinghouse,[24] some state laws relate to freedom of information,[25] and the remainder establish a center for information technology,[26] discuss qualifications for a GIS mapper,[27] or discuss liability.[28]

There are great benefits associated with making large amounts of data visually available using GIS in the planning and zoning context. For example, maps depicting parcel boundaries can include characteristics of each parcel, with over a hundred different pieces of information for each parcel, such maps can be of great use to land use lawyers.[29] The ability to promptly and efficiently obtain data along with the increase in GIS use has "begun to dramatically alter the method by which local, state, and federal agencies, as well as private companies form and implement public programs."[30] Ultimately, the use of GIS is quickly becoming essential to the effective inventory and anlysis of community assets, the ability to simulate the results of changes in local land use policies, and the exploration of intricate community dynamics, all a part of the comprehensive planning and zoning process.[31] Part I of this article illustrates how to use, read, understand GIS data for land use lawyers. Part II addresses a number of interesting legal issues that may confront practitioners in the use, misuse, and failure to use GIS. These include qualifying experts in GIS, the applicability of FOIL and security, privacy and liability for developing or distributing inaccurate data.

Part I - How to Use, Read, and Understand GIS Data

In its simplest form GIS is a computer system with the traditional requirements of hardware, software, data, and a human resource to input the data.[32] The hardware, consisting of a computer, keyboard, and plotting device (such as a mouse) to input data etc, is needed to run one of the various GIS software programs. The GIS software products

enable planners and municipalities (through the use of maps, schematic drawings and other spatial information) to understand where there are significant natural resources such as groundwater acquirers, significant geographic topography, (e.g. steep slopes) and significant environmental hazards (e.g. areas prone to flooding, earthquakes, etc). The data consists of two major types: spatial and tabular. "Spatial information contains data regarding the location of features" and "tabular information contains data associated with spatial features."[33] The data and its collection are the most integral components of a GIS package.[34] Inaccurate data collection, or failure to update data on a timely basis, will ultimately affect the reliability of the final data.[35] New York State maintains an on-line "GIS Helpdesk" as a pilot program intended to provide support regarding the technical use of GIS products for all New Yorkers.[36] Administered by the NYS Office of Cyber Security and Critical Infrastructure Coordination and sponsored by the the NYS GIS Coordinating Program, the site offers an on-line knowledge base of previously asked questions and answers, frequently asked questions, and the ability to submit new questions.[37]

Accuracy

When reading GIS output it's important to appreciate that to a certain extent, all maps are somewhat inaccurate.[38] For example the symbols on a map may represent a larger area than exists in reality for example, "a 1/50 inch wide line representing a road on 1:100,000 - scale map is the graphic equivalent of a corridor 167 feet wide", if the road is only forty feet wide then the map is not precise.[39]

The accuracy of a map is only as good as the data it relied upon. If data was collected years ago, or even in a different season, a resulting GIS map could be inaccurate. For example, data collected about wetlands must be examined based upon the date and time of year of collection of the data since wetlands are a constantly changing resource and data collected, for example, after a winter thaw could yield maps that may not be entirely accurate in the summer.[40] Again, for accuracy purposes, it may further depend upon the purpose for which the particular data set(s) is put forth. Information about the data, or metadata can be helpful in determining not only when the data was collected but how.[41] Should reliance on particular GIS maps or other output result in litigation, it is critical for attorneys to ascertain as much as possible about how the data sets were created and used.

Part II - Legal Issues in the Use of GIS

With the use of GIS on the rise in the planning profession there is little doubt that a new body of laws surrounding the use and abuse of GIS will result in litigation and an increase in legislative activities.

A. Finding an Expert Witness in GIS

"GIS, like every type of computer system has the potential for producing tremendous benefits. It also has the potential to cause harm or disruption from negligent or intentional misuse or design defects."[42] Further, users of GIS may not be properly trained to input, read or analyze data, and false or inaccurate data may be placed into the system. Any of these occurrences could result in decisions made in reliance on the bad GIS outputs. These decisions may then be implicated in a lawsuit challenging the land use decision based at least in part on the GIS data or the interpretation thereof. Land use lawyers may find it necessary to obtain an expert who can testify. The ideal witness might carry an advanced degree in GIS[43], and be certified in its practice.[44] There are a number of places to find GIS professionals such as the Who's Who is GIS Directory located on the NYS GIS Clearinghouse website[45] and GISMO (Geographic Information Systems and Mapping Operations), and a user-oriented group of professionals from the public, private and non-profit sectors in the New York Metropolitan area.[46]

B. Admitting GIS Data Into Evidence

The use of GIS as evidence during trial requires extra steps be taken to properly admit the evidence, considering that GIS is a document that can also fall under many different hearsay exemptions, such as the business records rule, public records, or computer generated exhibits.[47] Courts may admit into evidence only those computer-generated maps that accurately represent what they purport to show.[48] Other courts may allow computer-generated evidence as a basis for expert testimony.[49] While there are not yet any New York cases on point, what follows are some examples of how these issues have been addressed in other state courts.

In one case, a defendant argued that the GIS evidence used to convict him had been improperly admitted, that the state had not laid the proper foundation to show the accuracy of the map, where the data came from and, the technology used to generate the map had not proved to be reliable.[50] In addressing the first issue, the court held that the exhibit, a map depicting a 1500 foot boundary

around a school, was properly admitted under the business record exception to the hearsay rule in that the following three conditions were met: 1) that the record was made in the regular course of business, 2) that it was the regular course of business to make such a record, and 3) that it was made at the time of the act described in the report or within a reasonable time thereafter.[51]

In addressing the accuracy of computer records, the court recognized that computer exhibits present "structural questions of reliability that transcend the reliability of the underlying information that is entered into the computer."[52] The court stated that the party seeking to admit the evidence must meet two criteria: 1) the witness must have knowledge of computers sufficient to enable direct and cross-examination "concerning the process used to generate the exhibit; 2) the party must lay a foundation sufficient to "support a finding that the process and equipment involved in generating the exhibit were adequate for that purpose."[53] When addressing the extent of the witness's knowledge the Connecticut court noted that the witnesses job description is not important, but rather his knowledge about the basic elements that "afford reliability to computer printouts."[54] The person must be familiar with computerized records "not only as a user but also as someone with some working acquaintance with the methods by which such records are made."[55] In addressing the reliability of the system, the appeals court simply looked at the record where the witness testified that the map in question fairly and accurately depicted the area they alleged to. "That testimony, together with [a] detailed description of the city's computer system … gave rise to an inference that the hardware and software used to generate the map were not only adequate for that purpose but also had been designed for that purpose."[56]

Using GIS information in land use proceedings can be very persuasive. For example, GIS data was successfully used to show the lack of any alternatives for the placement of military housing by the U.S. Marine Corps who used the available GIS data to comply with NEPA requirements.[57] In support of its conclusion that a full environmental impact statement was not warranted, the USMC provided a series of maps from its GIS illustrating "topographic constraints, mission constraints, land-use constraints and national resource constraints."[58] Together, this was sufficient to show the lack of any feasible alternative to the project.

C. Freedom of Information

The use of GIS and computerized mapping by municipalities is prevalent.[59] These maps not only represent a benefit to the municipal employees and boards by eliminating the need to pour through non-electronic maps, but access to the system through freedom of information laws may also help the community at large. For example, a corporation wishing to build around pre-existing gas/electric lines which may already be mapped on a municipal GIS database could save thousands of dollars and months of time in locating the ideal building site if the municipal data is accessible to the private developer.

When determining whether GIS data is available under freedom of information laws, the first step is to identify whether computer records are accessible. A record is defined under New York law as:

> any information kept, held, filed, produced , reproduced by with or for an agency or the state legislature, in any physical form *whatsoever* including, but not limited to, reports, statements, examinations, memoranda, opinions, folders, files books, manuals, pamphlets, forms, papers, designs, drawings, maps photos, letters, microfilms, *computer tapes or discs,* rules, regulations or codes.[60]

The emphasis is not on the form the information takes but its content. As "information is increasingly being stored in computers … access to such data should not be restricted merely because it is not in printed form."[61] While "there is virtually unanimous agreement among state courts that electronic formats are covered by" freedom of information laws,[62] the electronically stored information raises questions regarding some of the FOIL exemptions, such as the creation of new records. Under FOIL an agency is not required to create a record to fulfill a request.[63] Extracting the data from an existing GIS database can arguably be viewed as creating a new document; this may not represent the aim of FOIL. It is an area of law that is certain to be addressed by the Committee on Open Government and by the courts in this State as more and more municipalities rely on GIS data.

D. Is all GIS data a Record?

Although there is no land use case directly on point in New York yet, *New York Public Interest Research Group v. Cohen,* offers a glimpse into at least one lower court's rationale for access to GIS records where the plaintiff requested "childhood blood lead level screening" records from a state GIS database.[64]

The case centered on whether the redacting of confidential information (names of children) constituted the creation of new records.[65] The department of health stated that it was impossible to provide the information in electronic format while redacting the private information, in the alternative the department offered to print the information at 25 cents per page while redacting the confidential information by hand. Since the record was comprised of approximately 50,000 pages it would cost the plaintiff roughly $12,500.[66] Even the health department scientists concluded that the process of redacting by hand would take several months whereas redacting by computer would take only a few hours and be more accurate.[67] The court reasoned that it made "little sense to implement computer systems that are faster and have massive capacity for storage, yet limit access to and dissemination of the material by emphasizing the physical format of a record."[68] Sustaining the respondents position would have meant that "any time the computer is programmed to provide less than all the information stored therein, a new record would have been prepared."[69] Ultimately the court held for the plaintiff requiring the disclosure of information in electronic form with necessary redactions.[70]

E. Inter or Intra-agency Exemptions

New York's FOIL allows agencies to withhold records that are inter-agency or intra-agency materials that are not *inter alia* statistical or factual tabulation of data.[71] While a GIS may be an inter-agency or intra-agency record, disclosure could be required under the factual tabulation exemption.[72] Even if the system only provides estimates or projections, the records still constitute statistical tabulations and must be disclosed.[73]

F. Copyrights

Perhaps the most complicated FOIL issue centers around copyright protection. Imagine a client who is seeks spatial information from a state agency and is provided with a copyright agreement form. The state agency is required by law to collect and store that information but now seeks to have its creative efforts protected.[74] There are two very contradictory positions to this issue. The first states that some[75] state agencies cannot that copyright the work that they have been statutorily ordered to create, that the copyright clause of the constitution[76] has been interpreted by the Supreme Court to encourage personal gain[77] and that agencies who are directed by statute are not seeking personal gain, need no incentive and should not receive copyright protection.[78] The opposing view is represented in *County of Suffolk v. First American Real Estate Solutions*, unfortunately the case leaves the issue somewhat unresolved.[79] In First American Real Estate, Suffolk County was arguing that its copyrights in official tax maps had been infringed when the respondent published them. The court found that the plain language of FOIL does not prohibit an agency from copyrighting its maps since FOIL allows for a member of the public to copy records but does not speak as to what they can or cannot do with them.[80] The court held that based on the record the maps were most likely not within the public domain, nevertheless they remanded the case for further proceedings where it was settled out of court leaving the question of whether the maps were in fact in the public domain since inception and hence not subject to copyright protection to be answered another day.[81]

While exceptions to freedom of information laws do exist, the burden of proving the exception rests with the agency claiming it,[82] and an agency cannot claim an exemption to a GIS database simply because it is a computerized version of the agencies records.[83]

> [A] GIS database is a convenience to the town so that all department's records can be accessed from one system. This convenience should also benefit the public.... Open government is not promoted when the public is required to sift through voluminous documents in various departments and the municipality can counter this by push button automation.[84]

G. Privacy

Overlapping a database with a map (GIS) can reconstruct an individuals movements over time, a feature that is useful in determining the last events of a missing person, the events leading up to a crime, or shopping trends.[85] While this article does not review personal privacy concerns that are raised within the GIS context, it does explore one land use/environmental related privacy issue to illustrate how privacy issues may come into play.

Dow Chemical v. United States offers insight into how GIS technology compares against the privacy concerns of a chemical manufacturing plant.[86] The Dow Chemical Company (Dow) operated a 2,000-acre chemical manufacturing facility with "manufacturing equipment and piping conduits" that were partially exposed to observation from the air.[87] Dow had maintained elaborate security that prevented ground based observation along with

investigating any low level flyovers however the plant but did not take steps protecting from aerial views due to the cost involved.[88] Dow chemical allowed a walkthrough inspection by the EPA but denied the EPA's request for a second inspection.[89] The EPA then hired a commercial aerial photographer, using a standard floor-mounted, precision aerial mapping camera, to take photographs of the facility from altitudes of 12,000, 3,000, and 1,200 feet."[90] Dow sued arguing that they had an expectation of privacy in the exposed plant areas because it "intentionally surrounded them with buildings and other enclosures."[91]

The court held that the while Dow maintained a reasonable expectation of privacy within its buildings but their expectation was not legitimate over the entire 2,000-acre complex.[92] They viewed the areas between the buildings as resembling of the common law notions of open fields, (where privacy protection is non-existent) as opposed to the curtilage doctrine that provides a higher level of protection.[93]

H. Liability

Liability for GIS data can originate from one of three different areas: when inaccurate data is used; when incomplete data is used; where data outputs are misapplied.[94] "Since these types of errors occur in any data compilation, courts generally determine liability based on whether an information producer exercised due care in producing and maintaining the information."[95]

Since GIS is based around a computer system it faces similar problems and issues that one might encounter in computer law, such as inaccurately entered data.[96] Using inaccurate data can result in unforeseen calamities and bugs in the computer software will only compound errors."[97] One doesn't have to look hard to find examples of incorrectly entered data causing problems for individuals. The Pennsylvania Department of Environmental Conservation was forced to withdraw a website listing facilities with underground storage tank violations when it learned the list was "massively in error".[98] The results may also have significant financial consequences when inaccurate information damages ends up damaging reputations.[99] Errors may arise due to the lack of a central standard in GIS data,[100] when multiple databases overlap the data may differ in scale and accuracy.[101] The errors from one GIS database may transfer over to another and magnify the problem.[102] As a result lawsuits can develop under "overlapping contract, warranty, and tort laws."[103] Currently there are no reported cases dealing with liability for reliance on inaccurate GIS data. Additional questions arise over what area of law is controlling - contract, tort, computer, or some combination of each.[104] Questions surrounding data ownership will also likely be resolved in the future by the courts.

Part III - Conclusion

The use of GIS is an exciting technology application in the field of land use and environmental law. The ability to access multiple records from a single system, to quickly correct information, and interpret large amounts of spatial data into a form that can be understood at a glance are among some of the benefits that are bringing this technology into planning and zoning board meetings across the state and country. Despite its development throughout the past three decades GIS is still coming into it's own and local, regional, state and federal governments will be required to further define and refine regulations to ensure uniformity, data integrity and access to GIS records as the law continues to evolve with the growing reliance on GIS at the local government level.

Correction:

In the July/August 2004 issue, Robert Bristol was the author of the article "Determining the Significance of a Visual Impact – is This Simply a Matter of 'I Know it When I See it?'" However, the footnote identified Robert Batson. We here at West apologize for the mistake.

Robert Bristol, FASLA, is a founder of The Saratoga Associates Landscape Architects, Architects, Engineers and Planners, P.C., with offices in Saratoga Springs, NY, New York City, and Boston, MA. He is currently Chair of the Board and Chief Executive Officer.

NOTES

1. Patricia E. Salkin is Associate Dean and Director of the Government Law Center of Albany Law School. Michael Donohue '05 is a student at Albany Law School and a research assistant with Dean Salkin.
2. The proclamation is available at www.nysgis.state.ny.us/proclamation03.htm (site visited September 2004). The proclamation also recognized the NYS GIS Coordinating Body, which, since 1996 has worked to develop, promote and coordinate the use of geographic information technology and data for State agencies and local government.
3. See, www.nysgis.state.ny.us (site visited September 2004). The site contains available datasets from members of the GIS Data Sharing Cooperative and is organized according to participating State agencies, county governments, other local governments, and other members.

4. See generally, Andy Mitchell, Zeroing In, 23 (Environmental Systems Research Institute, Inc. 1997).
5. Board of Assessment Appeals v. AM/FM Intern., 940 P.2d 338, 339 (Colo. 1997), as modified on denial of reh'g, (July 28, 1997); *see also*, Jennifer L. Phillips, Comment, *Information Liability: The Possible Chilling Effect of Tort Claims Against Producers of Geographic Information Systems Data*, 26 Fla. St. U.L. Rev. 743, 745(1999).
6. Jeremy Speich, Comment: *The Legal Implications of Geographical Information Systems (GIS*), 11 Alb. L.J. Sci. & Tech. 359, 361 (2001).
7. Board of Assessment Appeals v. AM/FM Int'l, 940 P.2d 338 (1997).
8. See, http://www.nysgis.state.ny.us/briefing.htm (site visited September 2004).
9. Jennifer L. Phillips, Comment, *Information Liability: The possible Chilling Effect of tort claims against Producers of Geographic Information Systems Data*, 26 Fla. St. U.L. Rev. 743, 745 (1999).
10. Scott D Makar, and Michael R. Makar Jr., *Geographic Information Systems: Legal and Policy Implications*, 69 Fla. Bar J. 44 (1995).
11. Mitchell, Supra, Note 4 at 4.
12. Makar, Supra, Note 10. A database could contain spatial information on the Eisenhower Interstate System. Each interstate could have tabular information associated with it, including volume, average width and bridge tonnage. The spatial information is arranged in layers, or overlays, and each added layer, for example, flood plains, is laid out across the other. The tabular information is then linked with the spatial information, allowing each to be accessed by the other at a coordinate. This would enable an operator to map the safest and most efficient shipping route for sixty-ton trucks during the rainy season in Iowa, while also identifying possible trouble spots. Speich, Supra, Note 4 at 362.
13. James R. Walter, Note, *A Brand New Harvest: Issues Regarding Precision Agriculture Data Ownership and Control*, 2 Drake J. Agric L. 431, 436 citing, Grant Mangold, *How does Global Positioning Really Work?*, Successful Farming, Feb. 1996, at 14.
14. James R. Walter, Note, *A Brand New Harvest: Issues Regarding Precision Agriculture Data Ownership and Contro*l, 2 Drake J. Agric. L 431, 436 (1997).
15. Id.
16. Id.
17. Id.
18. Id.
19. Id.
20. Id. This means that a surveyor with a GPS and DGPS receiver will be able to calculate her latitude and longitude to within three to four feet. *Id*.
21. Mitchell, Supra, Note 4 at 6.
22. New York State Tug Hill Commission, Headwaters: 2004 Newsletter-2003 Annual Report (Issue 42) (August 2004).
23. Id.
24. Ariz. Rev. Stat. Ann. § 37-173 (2004); Ark. Code Ann. § 15-21-504 (2004); Cal. Gov't. Code § 51017 (West 2004); D.C. Code Ann. § 50-921.04; Idaho Code § 58-33-0 (Michie 2004); 415 Ill. Comp. Stat § 20/6 (2004); Ind. Code § 2-1-9-10 (2004)); Iowa Code § 446.7 (2004); Mass. Gen. Laws Ann. ch. 21A § 4B (2004); Minn. Stat. § 466.03 (2004); Neb. Rev. Stat.§ 86-563 (2004); N.H. Rev. Stat. Ann. § 4-c:8 (2004); N.Y. Envtl. Conserv. Law § 44-0117 (McKinney 2004); § N.C. Gen Stat §. 89C-3 (2004); Okla. Stat. tit. 82 § 1501-205.1 (2004); OR. Rev. Stat. § 196.575 (2004); 25 P.R Laws Ann. 1917 (2004); R.I.Gen. Laws § 42-11-2 (2004); Vt. Stat. Ann. tit. 10 § 122 (2004); Wash. Rev. Code. Ann. 43.63A.550 (West 2004).
25. Conn. Gen. Stat. § 7-148s (2004); Ga. Code Ann. § 50-29-2 (2004); Haw. Rev. Stat. § 92-21 (2004); Kan. Stat. Ann. § 149.338 (2004); Md Code Ann., State Gov't § 10-905 (2004); Miss. Code Ann. § 25-61-7 (2004); Mo. Rev. Stat. § 82.1035 (2004); Nev. Rev. Stat. § 239.054 (2004); N.J. Stat. Ann. § 58:10B-23; N.M. Stat. Ann.,§ 7-38-9 (2004); Wis. Stat. Ann. § 16.966 (2004); Mich. Comp. Laws Ann. § 54.261 (2004).
26. Ark. Code. Ann. § 14.40.095 (2004); La. Rev. Stat. Ann. § 1051 (West 2004); Me. Rev. Stat. Ann. tit. 5 § 1881 (2004); Tex. Water Code Ann. § 16.021 (2004).
27. Colo. Rev. Stat. § 12-25-202 (2004); S.C. Code Ann. § 40-22-225 (2004); Tenn. Code Ann. § 4-3-5501 (2004); Utah Code Ann. § 63A-6-201 (2004); Va. Code Ann. 2.2-2025 (2004); W. Va. Code § 24E-1-1 (2004); N.C. Gen . Stat § 89C-3 (2004); Ohio Rev. Code Ann. § 1504.02 (2004).
28. Kan. Stat. Ann. § 75-6104 (2004).
29. Mitchell, Supra, Note 4 at 30. For instance parcel information can include value of the property, size of living area, value per square foot, phone number and name of resident, and shortest/quickest route to the parcel *Id*. at 6, 23, 30. Other methods of using GIS data for land use planning include monitoring economic development, mapping road and traffic patterns, sewer and water infrastructure modeling, and inventorying parks and trails. Oneida County Planning Department, Geographic Information Systems, *available at* http://www.oneidacounty.org/oneidacty/gov/dept/planning/gis.html (last accessed, Aug 3, 2004).
30. Makar, Supra, Note 10.
31. http://www.nysgis.state.ny.us/briefing.htm (site visited September 2004).
32. Speich, Supra, Note 6 at 361 (2001). For general information about GIS, see http://www.gis.com (site visited September 2004).
33. Id. at 361 - 362.
34. Phillips, Supra Note 9 at 746.
35. Id. at 745.
36. See, http://www.nysgis.state.ny.us (site visited September 2004).
37. Id.
38. Mark Monmonier, How to Lie with Maps 1 (The University of Chicago Press, 1991).
39. Id. at 25.
40. See, New York State Department of Environmental Conservation, *What Freshwater Wetlands Act Means to Wetland Owners*, *available at* http://www.dec.state.ny.us/website/reg8/wild/wetlands.html (site visited July 2004).
41. See, National Oceanic and Atmospheric Administration, *Costal Metadata Reference Guide*, *available at* http://www.csc.noaa.gov/metadata/ (site visited July 2004).
42. Makar, Supra, Note 10 at 46.
43. Geographical Information System Graduate Schools in the United States, http://www.gradschools.com/listings/all/GeoInfoSys.html (site visited June 2004).
44. Certificate programs are available for training in GIS; *see* GIS Training and Resource, *available at* http://www.nysgis.state.ny.us/resource.htm (site visited September 2004).
45. See, http://www.state.ny.us/index.htm (site visited September 2004).

46. See, http://www.geography.hunter.cuny.edu/gismo/about.htm (site visited September 2004).
47. State v. Polanco, 69 Conn. App. 169, 797 A.2d 523 (2002).
48. Phillips, Supra, Note 9 at 751.
49. Id.
50. Connecticut v. Polanco, Supra, Note 47. The government created a computerized map consisting of 799 small maps (grids) that were stored in a digital library. "Those grids can be assembled in various ways." The State's exhibit was assembled by assembling several contiguous grids. A 1500-foot circle was created from the center point of the school. The school was blackened and a rectangle was generated around the defendant's house. The map was generated using data relied on by Waterbury for utility information, zone information and soil information. *Id*.
51. Connecticut v. Polanco, Supra, Note 47 While the rules of admitting evidence will change based upon jurisdiction, for purposes of the Connecticut case, the business record exception is interpreted liberally, due to the "inherent trustworthiness of documents created for business rather than litigation purposes. *Id*.
52. Id.
53. Id.
54. Id.
55. American Oil Co. v. Valenti, 179 Conn. 349, 426 A.2d 305, 28 U.C.C. Rep. Serv. 118 (1979).
56. Connecticut v. Polanco, Supra, Note 47.
57. Surfrider Foundation v. Dalton, 989 F. Supp. 1309 (S.D. Cal. 1998), judgment aff'd, 196 F.3d 1057 (9th Cir. 1999).
58. Id. at 1329.
59. *See*, Mitchell, Supra, Note 4.
60. N.Y. Pub. Off. Law § 86 (4) (2004) (emphasis added).
61. Babigian v. Evans, 104 Misc. 2d 140, 427 N.Y.S.2d 688 (Sup 1980)
62. Henry H. Perritt, Jr. *Sources of Rights to Access Public Information* 4 Wm. & Mary Bill of Rts. J. 179, 191 (1995).
63. N.Y. Pub. Off. Law § 89 (3) (McKinney 2004).
64. New York Public Interest Research Group, Inc. v. Cohen, 188 Misc. 2d 658, 729 N.Y.S.2d 379 (Sup 2001).
65. Id.
66. Id.
67. Id.
68. Id.
69. Id.
70. Id.
71. N.Y. Pub. Off. Law § 87 (2)(g) (2004).
72. New York State Department of State, Committee on Open Government Advisory Opinion, GIS. *available at* www.dos.state.ny.us (site visited July 2004).
73. Dunlea v. Goldmark, 54 A.D.2d 446, 389 N.Y.S.2d 423 (3d Dep't 1976), order aff'd, 43 N.Y.2d 754, 401 N.Y.S.2d 1010, 372 N.E.2d 798 (1977); New York State Department of State, Committee on Open Government Advisory Opinion, GIS. *available at* www.dos.state.ny.us (site visited July 2004).
74. See, e.g. N.Y. Real Property Tax Law § 503(1)(a) (2004); N.Y. Transp. Law § 21(14)(b) (2004), Federal agencies are prohibited from copyrighting their works under 17 U.S.C. § 105.
75. An exception is made for the Department of Health, which engages in research and the discovery of new drugs and medicines along with its position as a competitor in the marketplace. The state agencies in question compile factual data and are not comparable to the Department of Health. New York State Department of State, Committee on Open Government Advisory Opinion 11992 March 14, 2000, *available at* www.dos.state.ny.us *Last accessed* July 15, 2004.
76. U.S. Const. Article I § 8.
77. Mazer v. Stein, 347 U.S. 201, 74 S. Ct. 460, 98 L. Ed. 630 (1954).
78. New York State Department of State, Committee on Open Government Advisory Opinion 11992 March 14, 2000, *available at:* www.dos.state.ny.us (site visited July 2004).
79. County of Suffolk, New York v. First American Real Estate Solutions, 261 F.3d 179 (2d Cir. 2001).
80. Id. at 189.
81. Id. at 195.
82. Director v. Freedom of Information Com'n, 36 Conn. L. Rptr. 338, 2004 WL 113627 (Conn. Super. Ct. 2004).
83. Id.
84. Id.
85. Mark Monmonier, Spying with Maps, 2 (2002).
86. Dow Chemical Co. v. U.S., 476 U.S. 227, 106 S. Ct. 1819, 90 L. Ed. 2d 226 (1986).
87. Id.
88. Id.
89. Id.
90. Id.
91. Id. The expectation of privacy developed from Katz v. United States 389 U.S. 347 (1967) and while a great deal could be (and has been) written on the subject the main idea is that if an individual manifests a subjective expectation of privacy, and that expectation is one society is prepared to accept as reasonable, then the fourth amendment is implicated and a warrant would be required. Here Dow is arguing that they manifested an expectation of privacy, one society would consider reasonable, and the EPA should have obtained a warrant.
92. Id.
93. Id. The curtilage doctrine protects areas that are outside the home but yet receive similar protection. If the Supreme Court found that the areas constituted curtilage instead of open fields it is possible that the areas could have received some privacy protection.
94. Phillips, Supra, Note 9 at 760 (1999).
95. Id. at 745.
96. Makar, Supra, Note 10 at 46 (1995).
97. Id.
98. James W. Conrad, Jr. *Information Disclosures By Government: Data Quality and Security Concerns Symposium: The information quality Act - Antiregulatory Costs of Mythic Proportions*? 12 Kan. J.L. & Pub. Pol'y 521, 530 (2003).
99. Id.
100. Http://www.opengis.com (site visited June 2004) is a website devoted towards developing a uniformed GIS standard.
101. Makar, Supra, note 10 at 46.
102. Id.
103. Id.
104. Phillips, Supra, Note 9 at 761.