

One County's Experiences with Digital Parcel Data

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Development of a parcel-based GIS system is often prohibitively costly and a daunting expense to smaller or more rural counties with fewer Real Estate transactions than their larger, more metropolitan counterparts. In the interest of encouraging those counties that currently don't have a parcel-based GIS system, we have assembled some examples of cost and time saving efforts facilitated by the implementation of parcel data GIS.

The benefits and uses of the parcel data described in this paper is the result of work done under the auspices of the Minnesota Digital Cadastral Data Committee and is an aggregation of cadastral GIS data uses from *many* counties, not just a single county. Most of the counties reviewed were rural counties with medium sized municipalities and the compilation creates a typical county view of potential uses and benefits. This typical county is a relatively small population base with a mix of small urban and rural lands so many of larger urban uses are not captured in this list.

The following is a brief description of some of the uses for parcel data in one county. This is not a comprehensive list of uses, but effectively describes some quick benefits to the implementation of a parcel data set.

Notification of residents along a road right-of-way:

When the County is doing major upgrades to an existing road or constructing new roads, one of the first tasks is to notify adjacent property owners of the projects. This task used to take hours of work searching the County's tax system and retyping the appropriate names and mailing addresses for these residents. Now, through the use of parcel maps that are linked to the tax system data by parcel number, this process takes merely seconds to query those parcels adjacent to the roads and create labels or envelopes for those individuals. A database of this selected information can also be created thereby saving the information for future use.

Notification of an individual's application for a variance:

Planning and Zoning is responsible for notifying all residents within a specified area of the affected parcel when an individual applies for a variance or is developing a plat. The process of selecting the appropriate parcels from within the County's tax system and retyping that information in a word processing software used to take hours. Through the use of GIS, we are able to buffer the affected parcel a specified distance, select all parcels that intersect that buffer and generate the names and mailing addresses within seconds.

Wetland Violations:

Through the use of parcel maps and several years of aerial photography, wetland

violations have been discovered and appropriate action has been taken.

Plat Book:

Digital parcel maps along with several other base layers created during the parcel mapping process have been used as to create current plat books.

Property Boundary Issues:

While collecting a new 911 address, the GIS technician (who utilizes a laptop computer with GPS and parcel maps in the truck) noticed that the footings for a new house stretched over two lots in a new subdivision. Information on the application and tax system data clearly showed this individual only owning one of the lots. The technician called the applicant who arrived on the site within a few minutes. The applicant stated that the realtor told him the wooden lathes that someone had put in were the corners, when in reality the lot irons in the ground were the actual corners of the lot. The owner was extremely appreciative for the information, removed the footings installed thus far, and moved them over onto his correct lot. Catching this mistake early in the development cycle saved the applicant potentially thousands of dollars and avoided what could have been an expensive forced purchase of the adjacent lot.

While recently collecting an address point location for cemeteries within the county, it was discovered that one township cemetery was actually located on state land and another located on County tax forfeited land.

Timber Management:

Natural Resource Management utilizes parcel boundaries to run restraining lines when no other corner evidence is available in the field. This helps define the limits of allowable timber harvest and prevents cutting timber on the wrong parcels.

Zoning Maps:

The parcel data was used to develop township zoning maps by linking parcel maps to tax system information and working with the individual township to classify zones. The tax system attribute for parcel could also be updated once the township verified the zoning classifications on the parcels.

Building Permits:

The parcel data has been used to determine if a proposed building site is within the lake shore set back thereby requiring a building permit.

Determination of school district boundaries:

By linking parcel maps to tax system data containing a school district identifier, accurate maps could be created for each school district resulting in more accurate and more current school district boundary maps.

Ditch Assessments:

Creating ditch assessment maps by linking parcel maps to the tax system for the purpose of showing 1) which parcels are paying ditch assessments; 2) which have been missed and should be paying; and 3) which should not be paying that have been paying. This resulted in more accurate application of the ditch assessment taxes. Determining the impacts and costs for ditch repair and spreading repair costs across all the affected parcels can be accomplished in minutes rather than in days or weeks.

Water Quality:

The parcel data was used to determine the number of lakeshore parcels containing residential structures within the County through the use of parcel maps, other GIS datasets, and tax system data. Information will be used to validate a case statement regarding runoff nutrient loading of lakes and streams.

Emergency Operations Management:

Due to a heavy rainfall up stream, a major river started to flood and several seasonal homes were in jeopardy of sustaining water damage and well contamination. Through the use of parcel maps, tax system data, and phone records, property owners were contacted within a short period of time. Owners, along with their families, friends, and local volunteers immediately implemented sandbagging efforts and many of the homes sustained only minor damage.

Hunters:

Individuals utilize the parcel maps through the use of an interactive web mapping program or the plat book to determine public land ownership for hunting opportunities. Through the web mapping, aerial photographs and other GIS datasets are also utilized to see what type of vegetative cover, water sources, elevation, and other features are associated with a known parcel.

Quality Improvement:

The GIS can also be used to visually check data in the tax system, One example is to plot(or display) a map of school districts based on the real estate system school district attribute field code and coloring them separately by district. The near instant discovery of all those mis-coded data fields or some parcels that were entirely missing a value was incredible.

The Assessor's Office is able to more accurately and easily establish and check the valuations on properties based on soil type, proximity to a body of water, and values of nearby properties. The County has an extension to the GIS software that allows the parcel data to be combined with soil to calculate a Crop Equivalency Rating (CER). This number represents the benefit of soil type for growing crops by calculating a weighted average number, which partly determines the amount assessed to the parcel.

We also can easily assign a lake number to the parcels that are within a certain distance of each lake by using a buffer or distance command. This makes it

easier to create lists based on lake number and also partly determines an assessment.

Other types of quality improvement include easily seeing where the color coded parcels showing the CER, assessed value, or sales price have sharp contrasts instead of a gradual trend. The taxing office can color code parcels based on the taxing authority number assigned to it. A wrong code can remain in the flat file for a long time, but when it is visualized on a map where the codes are colored, the variants appear like a red flag to be easily corrected.

Mailing Lists:

The County GIS group was tasked with generating a mailing list for the county residences. This list was to be used to mail out information on the hazards of lead pipe used for delivering drinking water in the home. The original list would have been to every home since we didn't know who had what pipes in their home. A mailing of this size costs approximately \$17,000. The GIS department used the tax data, which contained the construction date of the home. This was combined with the implementation of a new statute, which prevented the use of lead-based pipes for drinking water, to create a list of homes which *may* contain lead pipes. Intersecting this list with census block data which contained demographic data targeting children of a certain age allowed us in minutes to re-target the mailing list to be more economically effective. This process required only minutes to accomplish, saving literally thousands of dollars a minute.

The number of applications for parcel data grows every day but these are a few of examples that a typical rural county might experience.

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