# *Integrating Tidemark and ESRI Products To Maintain Pasadena's Land Base*

***John W. Reimers***
Project Manager
City of Pasadena,
Planning & Development Department
Email: Jreimers@cityofpasadena.net

***Brian Sims***
GIS Coordinator
City of Pasadena,
Information Technology Services Division
Email: Bsims@cityofpasadena.net

**ABSTRACT**

The City of Pasadena, California, uses a land management application from Accela ("Tidemark") to maintain its tabular parcel data and address inventory, as well as to track development-related permits and other activities. The City also uses ESRI's suite of GIS products to maintain the City's spatial information. The City of Pasadena does not want to maintain multiple sets of parcel attribute data – one for the planning and permitting system, and one for GIS. Therefore the City's Land base combines GIS parcel data with information stored in the Tidemark database. Maintaining, updating and synchronizing these databases present several challenges. This paper and session will describe those challenges, and how the City of Pasadena is working to resolve them. Topics will include: Dealing with parcel splits and merges; Dealing with "multi-parcel" or "tax-parcel" data; Tracking Assessor Parcel Numbers and Address changes.

## I. Introduction

The City of Pasadena, California, is probably best known for its New Year's Day festivities, the Tournament of Roses Parade and Rose Bowl Game. The City is located in the County of Los Angeles, at the foot of the San Gabriel Mountains, and at the western edge of the San Gabriel Valley. Within its borders, Pasadena has a population of over 136,000 approximately 23 square miles, and nearly 33,000 parcels. Pasadena is as proud of its rich cultural heritage and many historic properties as it is of its many modern residential amenities, vibrant commercial areas, and world-renowned institutions of higher education.

In the year 2000 the City began its investment in GIS, developed primarily by a departmental partnership between Planning and Development, Public Works, Water and Power, and Information Technology. The City has an enterprise GIS web site, which is available to all City employees with intranet access, served up using ArcIMS. There are approximately 25 ArcGIS in various departments throughout the City. At this time, though, it is fair to say that the current GIS system and land base is primarily driven by parcel-related data.

# *Integrating Tidemark and ESRI Products To Maintain Pasadena's Land Base*

## II. Maintaining Land Base Data

When the City of Pasadena began developing its GIS system, much of its tabular land base data was already stored in an Oracle database, which was being updated continuously through Accela's "Tidemark" permitting and parcel maintenance system. The City did not want to run the risk of having two separate databases to be updated independently. The preferred scenario was for the GIS system to read the data in Tidemark, which was already replete with a wealth of attribute data about parcels.

The City contracted with Psomas to develop its GIS program, including iMAP, the enterprise GIS web portal; ArcSDE database; and a set of policies and procedures for updating. Psomas developed a protocol shown in figures 1-3, below, to refresh a geodatabase table residing in ArcSDE. This table contains the GIS parcel attribute data from the Tidemark database, through the use of an Oracle materialized view.

The City of Pasadena wants to maintain its own land base data and records, both tabular and spatial. Nearly all parcel changes must begin with and be approved by the City, before being recorded with the County of Los Angeles. These changes include, new tracts, parcel splits, parcel merges, and address changes. Once recorded, the change goes to the County Assessor's office, which updates the tax rolls, updates the plat maps, and sends the City a new hard-copy map page showing the parcel changes. For various reasons, the process takes several months from the time the City approves parcel changes to the time that the City receives from the Assessor's office the updated parcel maps. These maps include the new parcel number, which is actually assigned by the County Recorder. Once received City staff must then update the parcel or parcels with the new attribute data, and make the cadastral changes in the GIS topology. Any permits or activity on that parcel(s) between the time that the City approved the parcel change and the time the City received the new parcel number, would have be issued to the old, incorrect parcel number, and would require further updating. The delays in the updating of parcel information add confusion and lead to errors in many different areas of City services for these parcels.

Recently, the City began working with the Los Angeles County Assessor's office and a consortium of Los Angeles County cities to see if we could identify ways to expedite the processes so that the Cities' land base would be more up to date. All of the cities and this Consortium use ESRI products for maintaining their land base. Most of the cities, including the County, use one or another of Accela's products (Tidemark, Kiva, Permits Plus) to store their planning and permitting data. Through these discussions, the Assessor's office created, and has been updating, a parcel maintenance data model to guide Cities' internal updating processes.

## III. Original System Design

The following figures 1-3 describe the City's original Tidemark/ArcSDE parcel data integration as designed and built by Psomas.

# *Integrating Tidemark and ESRI Products To Maintain Pasadena's Land Base*

In Los Angeles County, the 10-digit Assessor parcel number (APN) is comprised of a 4-digit "mapbook" number, a 3-digit "page" number, and a 3-digit lot, or "parcel" number, e.g. 5723-001-001. In Pasadena's current system, parcel attribute data are stored and updated in the Tidemark (Oracle) database, where the primary key is the APN field. On the GIS side, spatial parcel data is stored in an Oracle/ArcSDE database, where the primary key is the PIN field. A link table is used to negotiate many-to-one relationships by joining spatial PIN values to tabular APN values. The joined spatial/tabular data is presented to users through ArcSDE spatial views.

Each night a script sends update logs from the Tidemark database to the GIS database, which updates the parcel materialized view tables, including address and APNs. Other, more dynamic Tidemark data, such as permit status or inspections, are accessed real-time from the GIS using the PIN-APN link.

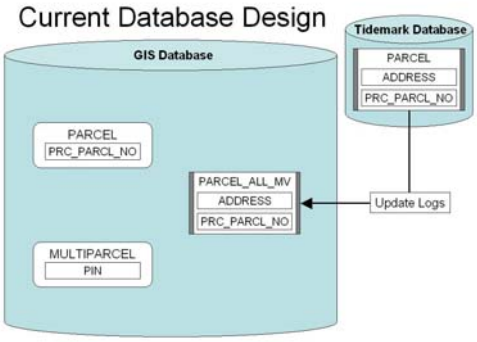

Figure 1

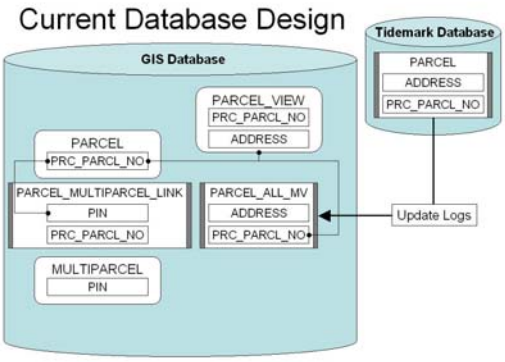

Figure 2

Areas of land with multiple separately taxed ownership units (such as condominiums), often have no Assessor-generated parcel number, but are still associated with more than one Assessor tax parcels (APNs). Pasadena refers to these land areas as "multiparcels" and represents them in the GIS as a separate polygon layer. The GIS then contains a table linking each multiparcel polygon identification number (PIN) to its related APNs. Attribute data about Assessor tax parcels associated with multiparcel polygons is maintained in Tidemark. There is also a Tidemark parcel record created for each "multiparcel" land area, with an internally named APN consisting of its real "mapbook" and "page" numbers (per its spatial location) followed by a 3-digit value of format 7xx, e.g. 5723-001-700. This enables Tidemark to accurately track permit applications, inspections, and other processes associated with common areas as well as Assessor tax parcels (units) at the parcel level. The nightly logs also update these tables.

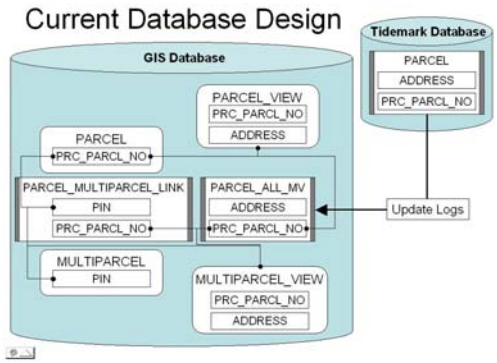

Figure 3

For both parcels and multiparcels, once the parcel and multi-parcel polygons are identified and

rendered in GIS, parcel attribute data is also accessed from the Tidemark database – e.g. owner information, permit information, zoning information, etc.

While this design and process met the City's goal of providing real-time, or near real-time information on a parcel, two problems still exist:

- The lag time between the time the City approves a change in the parcel and the time that the City is notified of the new parcel number(s).
- Updating the geometry of the parcel(s).

For various reasons, it often takes months before the County of Los Angeles assigns a new APN, and notifies the City of the new number. And, until recently the City did not update any of the GIS polygons until it received a confirmation of the new APN and a hard copy of the tract maps from the County. However, developers and new owners are eager to pull permits and to begin work on their new properties as reviewed and approved by the City, regardless of Assessor notification status.

Since the City has already approved the tract maps, it seemed logical that the City should also issue the permits, and tie those permits, to the new parcel rather than the old one, to avoid significant data cleanup once the new APN is identified. It also seemed that the City could update its parcel polygons sooner rather than awaiting the parcel maps from the Assessor.

## IV. New Conceptual Design

In order to expedite the process, the City of Pasadena has begun requiring those who apply for parcel splits, merges, and tract map changes, to submit their drawing in CAD format. The City's Public Works Department reviews the drawing for infrastructure impacts and later imports the CAD drawings to the GIS format.

Figure 4 picks up the conceptual design and process flow once all City approvals have been secured, and at the point where the owner or developer submits the documents to the County for recording.

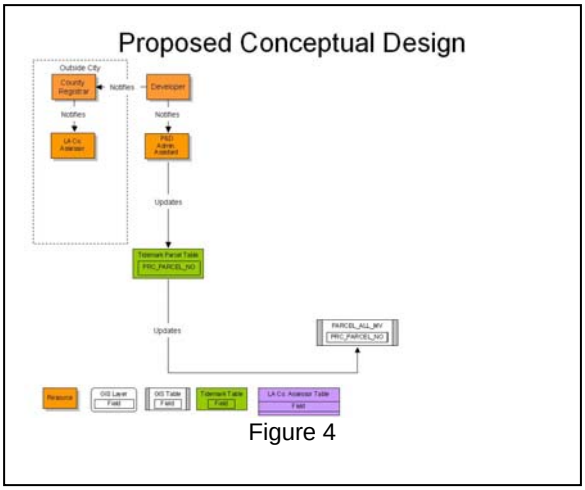

Figure 4

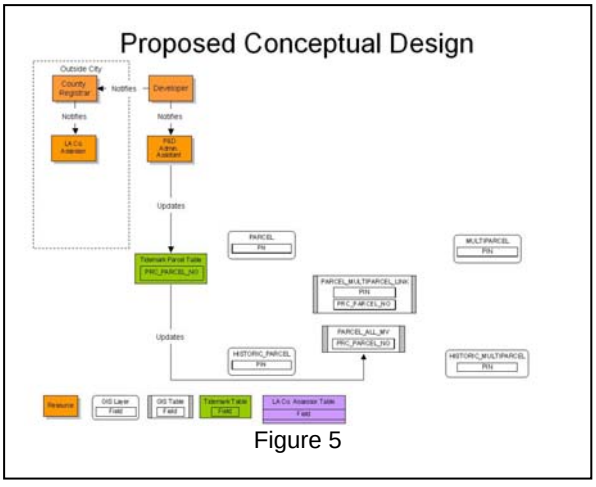

Figure 5

# *Integrating Tidemark and ESRI Products To Maintain Pasadena's Land Base*

1) The City of Pasadena's Planning and Development Department (P&D) is apprised of the City's approval of the new parcel(s) and updates the Tidemark Database. In Tidemark, P&D staff "clone" the old parcel, creating a new parcel record with the same format, and retire the old one. The new parcel is assigned a "Temporary Tracking Number" (TTN), rather than a valid APN, to distinguish it from the retired parcel. Any future permits assigned to this new parcel will be assigned to the parcel record with the TTN rather than to the retired parcel.

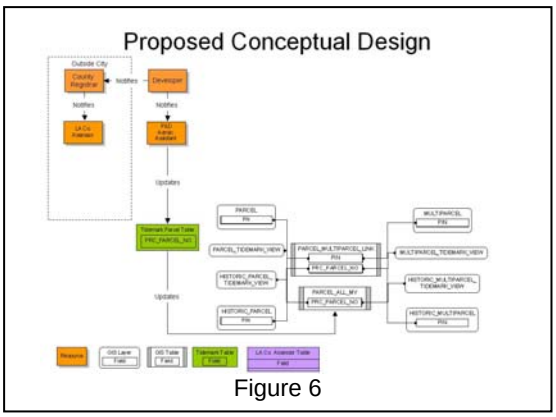

Figure 6

The owner/developer files the appropriate documents with the County Recorder, and these documents identify the new parcel by its TTN.

2) P&D notifies the City's GIS Office in Information Technology Services Division (ITSD) that the new parcel has been entered into Tidemark, and that the GIS land base is ready to be updated.

3) The GIS Office exports the retired parcel polygon(s) from the GIS database, and submits it for retirement to the "historic parcel" layer. The GIS Office also updates the line work on the new parcel polygon or polygons, and submits them for Quality Control to Public Works.

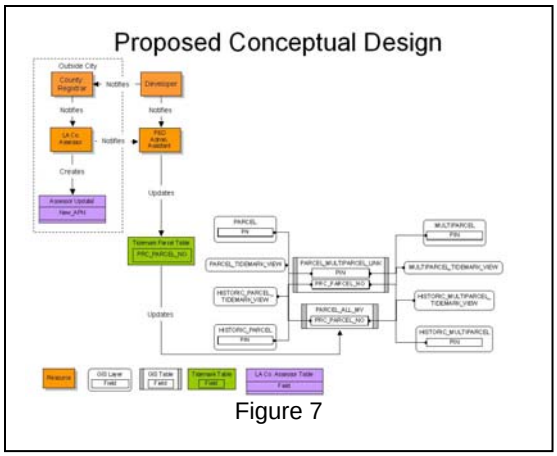

Figure 7

4) Once the new parcel polygons and historic parcel polygons have been added to the GIS database, the parcel's attribute and spatial data is synched using the nightly database log scripts

5) The process, for updating the multiparcel layer is the same.

While this work is going on in the City of Pasadena, the County of Los Angeles is processing the recording of the new parcel data. The County Recorder checks to see that all necessary legal work, signatures, and bonds are affixed. The Recorder then records the new parcel into a Map Book, assigns a Page Number and Parcel Number, and then forwards the information to the County Assessor. The Assessor updates their GIS data and tax rolls, and produces new tract maps, which are sent out to the 88 cities in the County.

Recently the County Assessor has agreed to post new parcel information as a text file on an FTP server for cities to download. This information will contain the TTN and the new legal APN. This allows the City of Pasadena to update the Tidemark database and GIS database as shown in figures 8 and 9. That process will be as follows:

# *Integrating Tidemark and ESRI Products To Maintain Pasadena's Land Base*

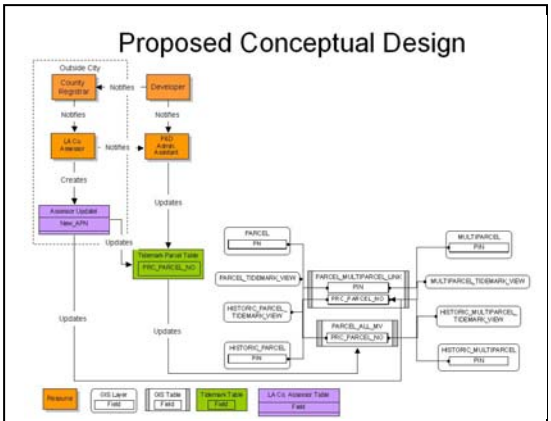

Figure 8

1) P&D will access the FTP file; run a script to identify those parcels with a Pasadena TTN; select the new APN that corresponds to the TTN; and, update the parcel number in the Tidemark database. This promises to save several weeks of time in waiting for paper and/or CD ROMs from the Assessor's office in order to update the APNs. It will save the significant time and effort of having to go back and reassign permits and related activity to the correct parcel number.

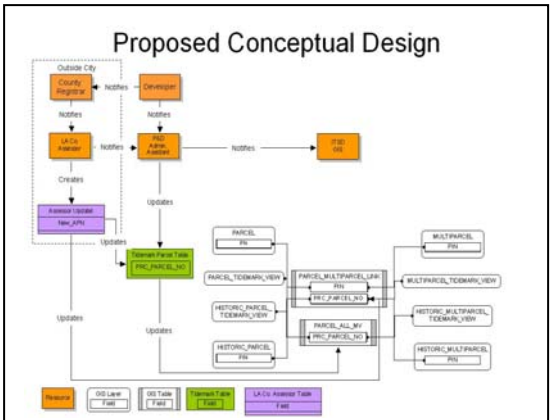

Figure 9

2) The same text file will also be made available to the GIS Office, who will run a similar script in order to update the APNs in the link table.

It should be noted that at the time of writing this paper, the Assessor's FTP server was not yet operational. However, for testing purposes, the Assessor has made the parcel data available to pilot cities, including Pasadena, via e-mail, and we have successfully tested the procedure using that access method.

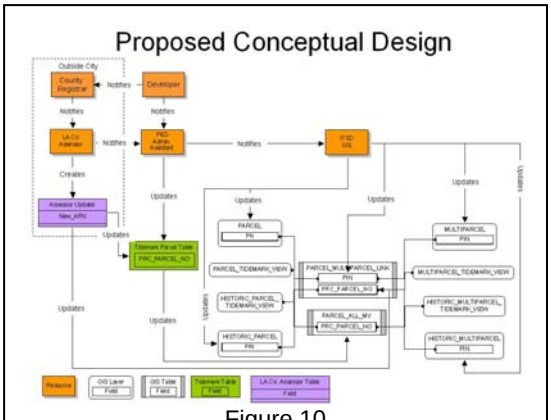

Figure 10

Finally, figure 10 shows the conceptual process from start to finish.

# *Integrating Tidemark and ESRI Products To Maintain Pasadena's Land Base*

## V. Acknowledgements

The authors would like to thank and acknowledge the following individuals from agencies for their support and cooperation in helping to develop and refine this process:

- Lisa Stinstrom, City of Pasadena, Information and Technology Services Supervisor, Planning and Development Department
- Michael Neely, City of Pasadena Tidemark Database Administrator, Planning and Development Department
- Emilio Solano, Los Angeles County Assessor's office
- Scott Fabbro, City of Glendale
- Anthony De La Sota, City of Glendale

## V. Author Information

***John W. Reimers***
Project Manager
City of Pasadena,
Planning & Development Department
175 N. Garfield Ave
Pasadena, CA 91101
Email: Jreimers@cityofpasadena.net
Phone: 626-744-4088

***Brian Sims***
GIS Coordinator
City of Pasadena,
Information Technology Services Division
117 E.. Colorado Blvd, Suite 300
Pasadena, CA 91105
Email: Bsims@cityofpasadena.net
Phone: 626-744-6816