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COMBINATION TRUCK

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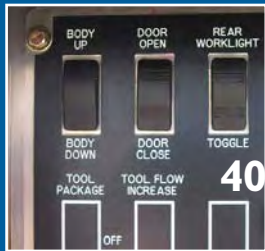
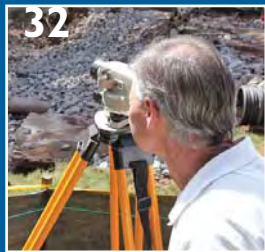


GIS and mapping technologies
help the City of Long Beach
chart a true course

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FIELD AND OFFICE TECHNOLOGY



COVER:

The Long Beach Water Department has an ongoing sewer inspection program that covers the entire sewer system on a 5-year cycle. The city uses GIS and mapping systems to organize its water and wastewater system maintenance programs. From left are Dan Galaz, water utility mechanic II; Walter Trujillo, water utility supervisor I; Albert Lin, GIS officer; and Ray Pamintuan, GIS analyst. (Photography by Paul Kiler)



COMING IN JANUARY 2010

Water System Maintenance and Rehabilitation

- ◆ Water: El Paso (Texas) Water Utilities
- ◆ Storm: Sound approaches to BMP maintenance
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Engineers apply GIS in planning for capital improvements of potable water, reclaimed water and sewer systems. From left, Isaac Pai, director of engineering/ chief engineer; Wendy Chen, civil engineering assistant. (Photography by Paul Kiler)

FOCUS: WATER / SEWER

MAPPING SUCCESS

GIS and mapping technology help the City of Long Beach chart a course for effective water system maintenance, capital improvement, and community outreach

By Suzan Marie Chin

It's an understatement to say the City of Long Beach Water Department is passionate about Geographic Information Systems (GIS).

The department, responsible for the potable water and reclaimed water distribution and wastewater collection for a California city of 493,000, has incorporated GIS and methods that go well beyond the technology's original purpose. The department has created a dynamic, organization-wide system that helps the staff manage day-to-day maintenance, scheduling, long-range capital improvement planning, and the tracking of all assets' health and performance.

Blazing a trail

The department was quick to jump on board with GIS in its infancy: It began integrating the technology in 1994. Although GIS

was new then, the Engineering Bureau quickly saw its long-range potential and championed its use throughout the organization.

When selecting the GIS platform, the Engineering Bureau found it critical to have as many people as possible from all bureaus involved in developing the needs assessment documentation. Selection criteria included:

- Ease of use.
- Ability to customize.
- Compatibility with other software and operating systems.
- Product reputation and industry acceptance.
- After-sales technical support.
- Overall cost of ownership.

The department chose ESRI Inc. and adopted the ArcMap, ArcView, ArcInfo, ArcIMS, ArcGIS Publisher, SDE, EDN and Spatial Analyst software components and made a major investment in hardware, including servers with 100

networked PCs and 20 field-use computers.

"During the early transition from our paper-based system, many employees were not enthusiastic about using GIS because it was new and complicated," says Albert Lin, GIS officer for the department. "They had been doing their work with a manual, paper-based system for so many years, and it was comfortable. Most had to learn basic computer skills first before even beginning to use the GIS.

"We overcame their objections by getting users involved at every level — motivating them, providing management support, promoting communication, and working together to create a user-friendly application. Because we did this, GIS is now a common tool essential to all employees' daily work."

The department had numerous goals for its GIS and took the



PROFILE:
Water Department,
City of Long Beach,
Calif.

FOUNDED:
1911

POPULATION SERVED:
493,000

EMPLOYEES:
220

INFRASTRUCTURE:
910 miles of water mains,
712 miles of sanitary sewer
mains, 33 miles of reclaimed
water mains

OPERATIONS BUDGET:
\$112 million

WEB SITE:
www.lbwater.org

time necessary to implement them methodically and to convert its paper data accurately to the computerized system. The entire process took about two years to complete, with the assistance of an outside consulting firm, Geonex, which digitized the hard-copy water and sewer system maps with comprehensive attribute databases. About 30 staff members were involved in the GIS database design, as-built record drawings research, and data quality assurance/quality control (QA/QC) during the GIS data conversion.

Evolution of purpose

At present, the department has 80 GIS users — managers, engineers, field crews and administrative analysts. All use the system to query and analyze information such as water and sewer system data,

locations, conditions, trends and patterns. The information helps them to explore alternatives and create strategies for facility management and specific bureau needs.

To help keep the GIS data current, the department draws from an aggressive, ongoing CCTV inspection and cleaning program, which covers the entire wastewater collection system — a five-year cycle for inspection and a two-year cycle for cleaning. Five Pearpoint CCTV inspection vehicles carry onboard computers using flexidata pipe survey software by PipeLogix Inc. The crews perform mainline, lateral and manhole inspection using the NASSCO PACP (Pipeline Assessment and Certification Program), LACP (Lateral Assessment and Certification Program) and MACP (Manhole Assessment and Certification Program) standards.

Each installation of the survey software also includes a GIS module that gives the CCTV operators a visual aid in selecting the pipe to survey and imports the asset details directly from the GIS databases. As the crews progress with inspections, surveyed pipes are auto-selected and highlighted to let team members know which pipes have been completed.

Field crews use GIS to access the latest water and wastewater systems data for routine facility maintenance and emergency response. Shown flushing a hydrant are Vicente Robles (left), water utility mechanic III, and Hans Herchert, water utility supervisor II.

“We overcame their objections by getting users involved at every level — motivating them, providing management support, promoting communication, and working with them to create a user-friendly application. Because we did this, GIS is now a common tool essential to all employees’ daily work.”

Albert Lin



The Long Beach Water Department provides online GIS access to its latest water and sewer mains and lateral services information at its Development Service Counter, which enhances LBWD’s excellent customer services. Shown with a customer is Dennis Santos (right), civil engineering assistant.

THE BIG PICTURE

In keeping with its commitment to provide the highest quality of water and wastewater services, the Long Beach Water Department decided to share the benefits of its GIS in an innovative way.

The department has installed a free public access computer in its lobby, equipped with a 48-inch LCD screen connected to the GIS database and a color printer. Customers can use the system to get detailed information about their water services, meters, or sewer laterals and generate paper map printouts in color or black-and-white.

The system can also provide overlay information that shows adjacent utilities, easements and other data customers may need when considering a repair or improvement to their property.

The information helps customers interact with staff easily and understand how their water and sewer services integrate with the city systems.

It helps for homeowners and contractors to see the big picture so that if they need permits for a property improvement or repair, they can get all the required paperwork at the same time. That makes the permitting process more streamlined and efficient.



GIS to identify all food businesses with or without grease interceptors. After a SSO, the detailed information in the FOG database is available to the CCTV crews so they can use an incident follow-up inspection to pinpoint the source of the FOG that contributed to the overflow. Armed with this detailed information, the department can take the proper enforcement measures and minimize future maintenance costs caused by FOG.

taken the technology beyond its original purpose, eliminating the need for an additional costly program.

The system is constantly being improved and expanded to offer all bureaus ways to increase productivity, improve decision-making, and expand capabilities to perform large tasks previously thought impractical. Like an asset management program, it has also improved records management and accessi-



Field personnel use GIS to plan their work in the Water Operations Service Center. From left, Bobby Jones, water utility supervisor II; Pete Ybarra, water utility supervisor I; Hans Herchert, water utility supervisor II; Vicente Robles, water utility mechanic III; Robert Katzenberger, water operations superintendent; and Travis Colton, water utility mechanic II.

The technology also helps on a more personal level. “GIS is an extremely useful tool for us in new employee training,” says Isaac Pai, director of engineering/chief engineer. “When an engineer or field crew member comes on board, we use GIS to help them learn and understand our systems. The simple access and unified visual format provides them an easy way to see the entire water and wastewater systems — how they are laid out and how all the components work together.”

Coming full circle

In many cities similar in size to Long Beach, GIS is just one component of a larger asset management system. In Long Beach, GIS is the asset management program. By involving staff from all bureaus and levels of expertise, the Engineering Bureau and GIS staff has

bility, reduced redundant data, and saved time and money.

By being unafraid to push the boundaries of GIS technology, the Long Beach Water Department has created a showcase for GIS professionals around the world and shows how technology can point the way to successful data management and high-performing water and wastewater systems. ♦

MORE INFO:

220 **ESRI Inc.**
800/447-9778
www.esri.com

8 **Pearpoint Inc.**
800/688-8094
www.radiodetection.com

37 **PipeLogix Inc.**
866/299-3150
www.flexi-data.com