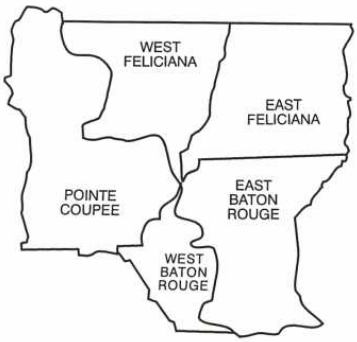


Capital Area Ground Water Conservation Commission

Watching out for A Treasured Earth Resource

Dedicated to the conservation, orderly development and protection of quality of ground water in the Capital Area

Volume 35, Number 2 **NEWSLETTER** *October 2009*

Commission & District News

Scheduled Meetings. – The Technical Committee will meet at 1:30 p.m. Tuesday, December 1, 2009 in the conference room of the U.S. Geological Survey at 3535 South Sherwood Forest Boulevard, Baton Rouge, Louisiana. The regular meeting of the Board of Commissioners will be held at 9:30 a.m., Tuesday, December 8, 2009 in the conference room of the U.S. Geological Survey. The Administrative Committee will meet at 8:30 a.m. in the Commission office, Suite 129, 3535 South Sherwood Forest Boulevard, one hour before the regular meeting.

September Meetings – The Technical Committee met Tuesday, September 8, 2009, in the conference room of the U.S. Geological Survey at 3535 South Sherwood Forest Boulevard, Baton Rouge, Louisiana.

Dan Tomaszewski, USGS, gave a video presentation of the Southern Hills aquifer system. The talk was also given at the State Ground Water Commission seminar on August 26, 2009.

The Southern Hills aquifer system includes sands of Pleistocene, Pliocene and Miocene age. The base of the fresh water in Baton Rouge extends to the "2,800-foot" sand. The table below shows the hydrogeologic equivalent units in southwestern Louisiana.

Southwest Louisiana	Baton Rouge Area
Chicot	"400-foot" sand
	"600-foot" sand
Evangeline	"800-foot" sand
	"1,000-foot" sand
	"1,200-foot" sand
	"1,500-foot" sand
	"1,700-foot" sand
Jasper	"2,000-foot" sand
	"2,400-foot" sand
	"2,800-foot" sand

The recharge area of the Southern Hills aquifer includes the upland terrace deposits in southwest Mississippi and Louisiana extending as far south as the East Baton Rouge-East Feliciana border. Infiltration from rainfall enters the near-surface terrace deposits and supplies the base flow of southward flowing streams that originate in the area. A small percentage of water reaches the deeper confined aquifers and moves downdip where it is used for public supply and for industrial applications.

Leak Detection

In my growing-up years of the early 1950s, the conservation of water was not a subject of great concern. Water was cheap and there seemed to be an unlimited amount of it. In the 21st century that is no longer the case. The conservation of water is now almost universal in our thinking. Droughts over the past decade brought us to the realization that water supply was not something that we could take for granted. In many places around the country, such as Atlanta, for example, water restrictions were imposed. As our population grows, so will the need for a more conservation-minded population.

An article on leak detection was published in the August 2009 AWWA Opflow, and their findings are summarized in the discussion on page 2. The technology makes use of the fact that water escaping from a pressured pipe makes sound.

Studies were conducted on large and small mains as seen in the tables.

Large Mains. – The leak location detector is a tethered inline sensor that is passed through a distribution pipeline. Water mains can be accessed through fire hydrants, valves and meters. Major leaks in water mains are serious problems that disrupt service, create sinkholes and may cause the collapse of roadways. For example, in Philadelphia the inline sensor was used successfully on two 48-inch mains crossing underneath an interstate highway. Two large leaks were identified and repaired before they caused a catastrophic failure. Large main leakage assessments for Philadelphia, Allentown and Dallas are described in table 1.

Small Mains. – A survey in Gwinnett County, Georgia covering 3,360 miles of distribution lines located more than 500 leaks. Water savings amounted to 1.8 million gallons per day and a monetary savings of $400,000 per year. A total of 42 water main leaks accounted for 49% of the water loss recovered.

A survey by Southwest Florida Water Management District tells a similar story. They surveyed more than 60,000 access points over a 15-year period and found 735 leaks. The repairs resulted in a lost water savings of more than 2 million gallons per day. The results of the small main leaks in the two water systems are summarized in table 2.

	DALLAS	ALLENTOWN, PA	PHILADELPHIA
Distance Surveyed (mi)	40	2.8	22.2
Leaks Detected	59	10	47
Average Leak Size (gpd)	82,000	50,000	50,000

Table 1

	Gwinnet County, GA		
Type	**Number**	**Vol. Avg. (gpm)**	**Total (gpm)**
Hydrants	290	1	295
Valves	24	1.9	46
Service Lines	90	2.1	187
Mains	42	14.3	600
Meters	88	1.1	94
Joints	n/a	n/a	n/a
Other	n/a	n/a	n/a

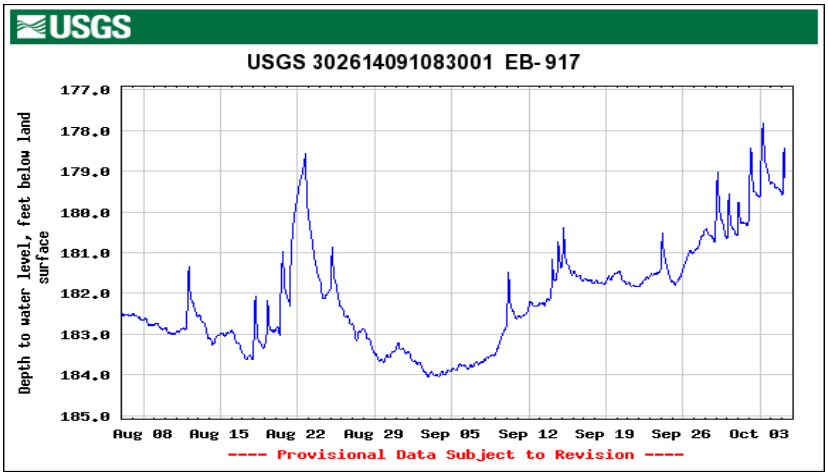
	SW Florida Water District		
Type	**Number**	**Vol. Avg. (gpm)**	**Total (gpm)**
Hydrants	293	0.1	37
Valves	233	0.1	29
Service Lines	76	0.3	19
Mains	69	18	1,242
Meters	n/a	n/a	n/a
Joints	18	5	90
Other	46	0.1	6

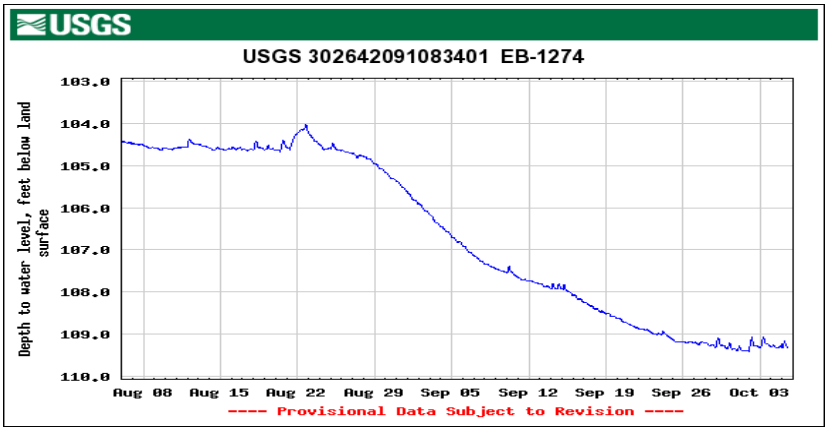
Table 2

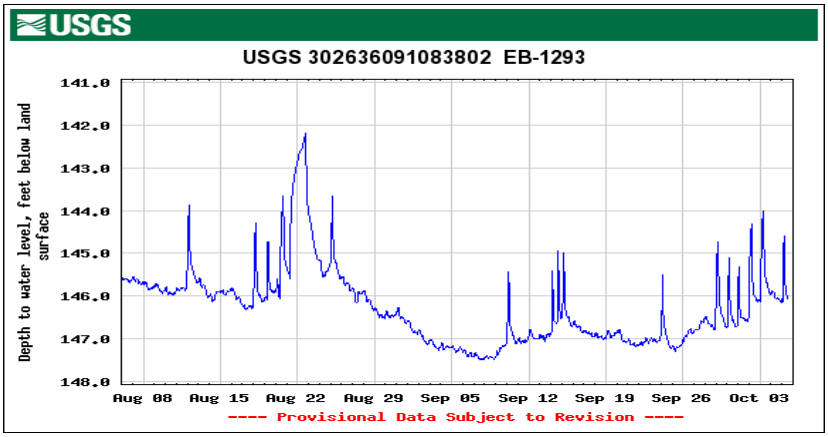
Connector Well

This year marks the tenth anniversary of the Commission's connector well (EB-1293) which was completed in 1999. The project was partially funded by a research grant obtained under section 319 of the Safe Drinking Water Act. The project involved the use of the "800-foot" sand to connect with and recharge the "1,500-foot" sand. The object of the recharging well was to raise the water level in the "1,500-foot" sand and inhibit the movement of saltwater northward toward the two public-supply wells at the Government Street pumping station. Judging from the hydrographs seen in the figures, the head difference between the two sands is around 70 feet. (See EB-917 and EB-1274). The difference varies somewhat seasonally and also with the pumping cycles of wells at Government Street. The water level in the connector well is a composite of the water levels in "800-foot" sand and "1,500-foot" sand.

Well EB-1274 ("800-foot" sand) shows a decline over the past month and correlates well with the falling stage of the Mississippi River. On the other hand, well EB-917 ("1,500-foot" sand) shows a relatively flat water level with some recovery in the first three weeks of September. The connector well hydrograph, EB-1293, mirrors the hydrograph of EB-917 except that its water level is about 40 feet higher than well EB-917. A 60-day water level record of each well is shown on page 3.







Vignettes

Congress has authorized a 30% tax credit, up to $4,000 for the installation of small wind turbines (100 kilowatts or less). According to the American Wind Energy Association the market for homes, farms and small businesses grew by 78 % in 2008 with the installation of 10,500 small turbines.

It occurred to me that wind turbines could possibly serve a dual purpose by generating power and pumping water at the same time. Traditionally, windmills in the past were used to produce water for household and livestock use mainly in the western states. The mechanical energy generated by a wind turbine could supply electric power and water thus "killing two birds with one stone".

A waste disposal facility near San Antonio reports a first-of-its-kind technology to harvest solar energy over the closed portion of a landfill. The procedure combines a geomembrane cover with flexible photovoltaic sheets over about 5 acres. In addition to a landfill gas recycling system, the combined gas and solar systems are expected to produce about 9 megawatts of electricity, or enough to power 5,500 homes. (Reported in Waste & Recycling News, 4/13/09).