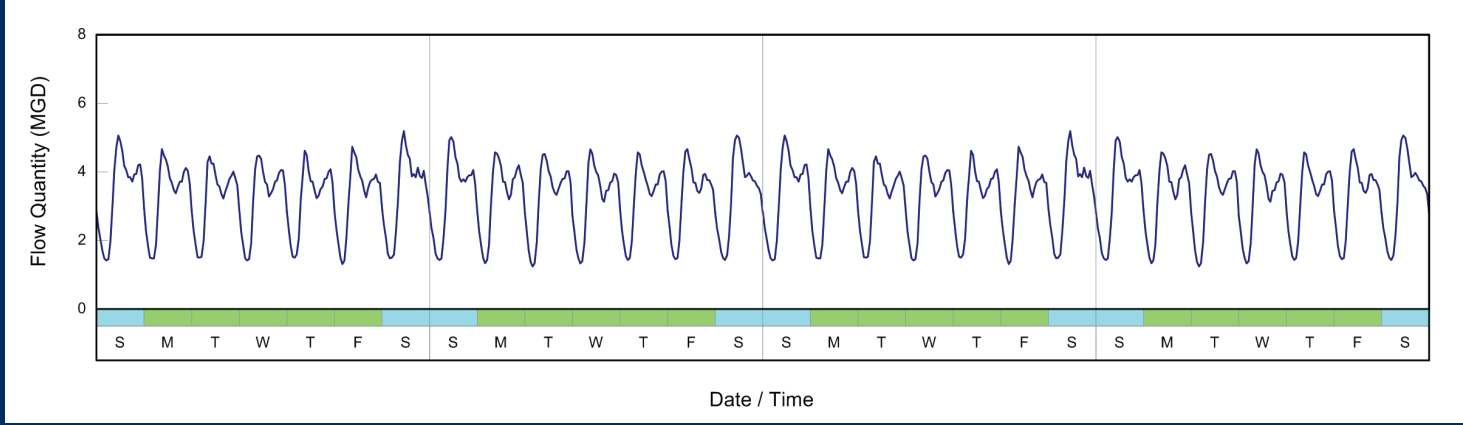


# Sewer Sociology

sew´•ər sō-ci-ol´ō-gy, the science of society, social institutions, and social relationships viewed through the eyes of a sewer; specifically: the systematic study of the development, structure, and interaction of organized groups of human beings through sewer use data.

Adapted from Merriam-Webster's Collegiate Dictionary, 11th Edition, 2004

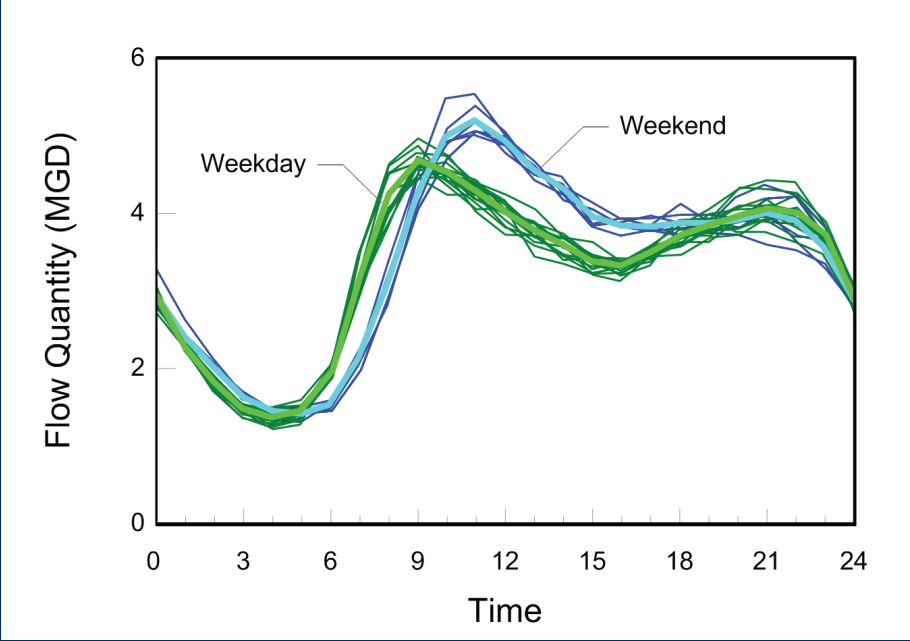
## THE DAYS OF OUR (SEWER) LIVES



The hydrograph above displays flow monitor data from a residential area recorded over a four week period during normal dry weather conditions. Note that a repeatable daily or *diurnal* pattern is observed. A more detailed view is obtained by plotting each day on top of the other in a composite 24-hour hydrograph as shown to the right. The distinctive diurnal patterns of weekday and weekend residential flow are apparent.

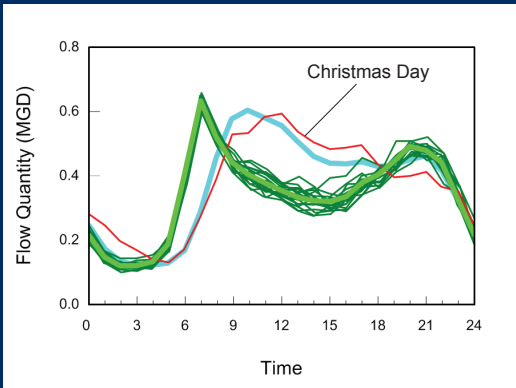
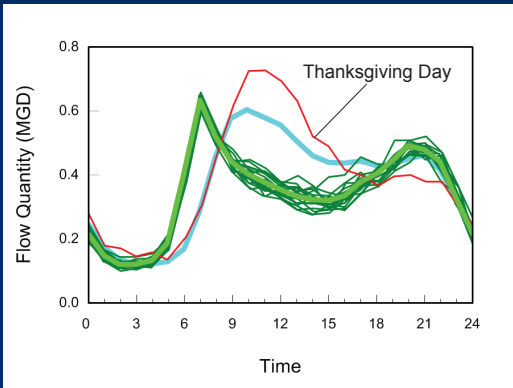
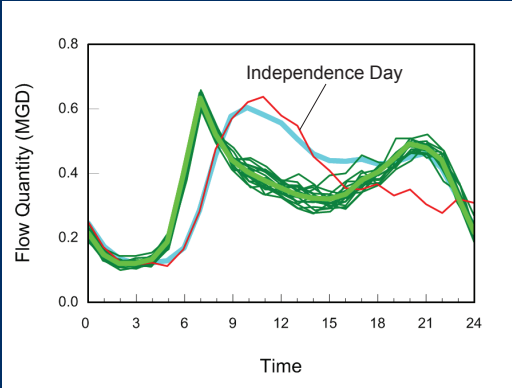
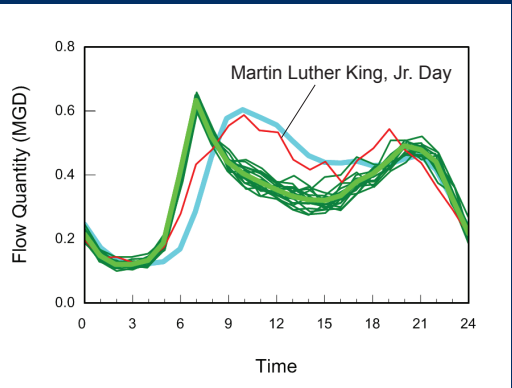
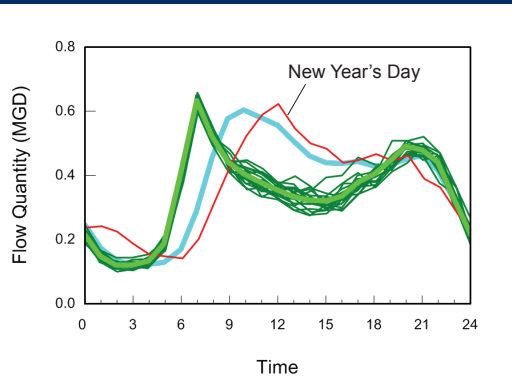
The light green curve and the light blue curve on the composite hydrograph are the average daily flow patterns observed on weekdays and weekends, respectively. The dark green curves and the dark blue curves are the individual weekday and weekend traces used to determine each average. These curves provide an indication of the normal variation in flow that can be expected during normal dry weather conditions. Composite hydrographs are used throughout this poster and serve as an important reference in the study of sewer sociology.

## WEEKDAYS & WEEKENDS



## HOLIDAYS

Holidays are welcome diversions from everyday life and provide time to celebrate, relax, or share with family and friends. These diversions are reflected in sewer use patterns, as shown below. Flow monitor data from several familiar holidays are displayed in comparison with normal weekday and weekend sewer use patterns. To a sewer sociologist, a holiday looks much like a weekend. However, characteristic differences are observed that make each holiday unique. See what differences you can find and how they compare with your holiday traditions.

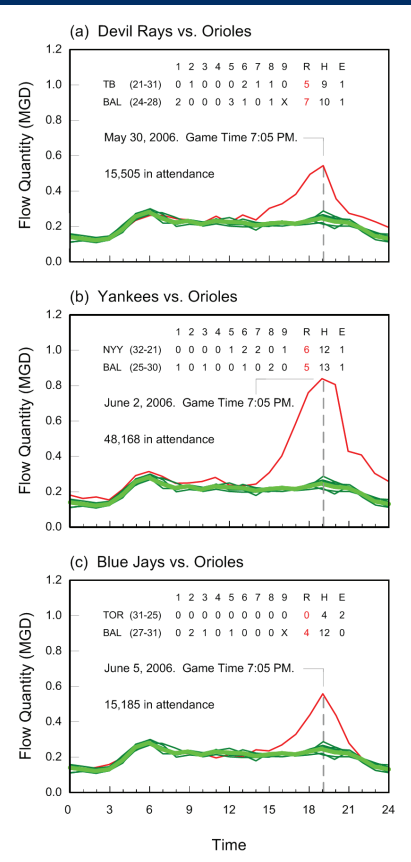


## NORTHEAST BLACKOUT

August 2003

## MAJOR LEAGUE BASEBALL

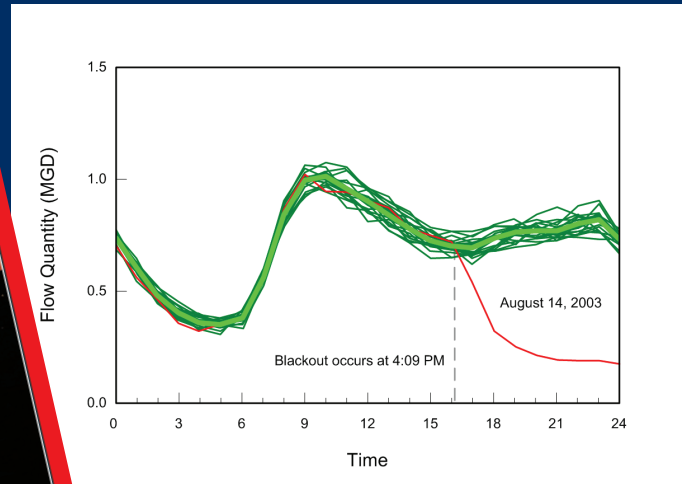
Summer 2006



Baseball is America's pastime, and Major League Baseball represents the pinnacle of the sport. Flow monitor data obtained downstream from Camden Yards – home of the Baltimore Orioles – are shown here and depict sewer use differences resulting from three games against the Devil Rays, the Yankees, and the Blue Jays observed during a 10-game home stand. The flow rates



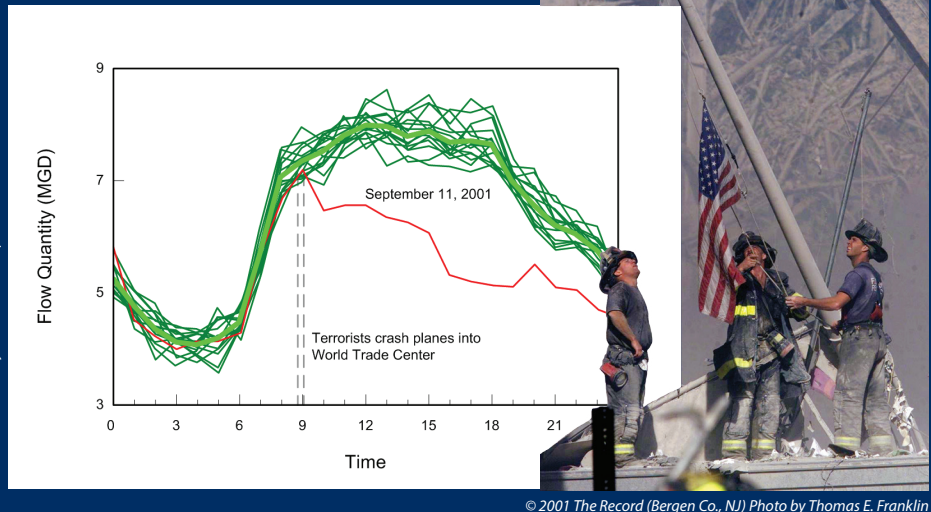
observed during the first game of each series are compared to average dry day flows on the composite hydrographs. All three games began at 7:05 PM, and as expected, sewer flows began to increase a few hours prior to the first pitch. The Yankees game generated the most flow – an additional 162,000 gallons of wastewater. Based on the attendance figures for these games, the average sewer use rate is 3.5 gallons/day/seat, comparable to sewer use rates observed in other collegiate and professional sports.



Millions of people were left without power on August 14, 2003 at 4:09 PM when the largest blackout in the history of North America occurred. The blackout affected several major metropolitan areas – including Detroit, Cleveland, Columbus, New York, Toronto, and Ottawa. Note the dramatic drop in flow at this monitoring location after the power failure. This example illustrates how the disruption of one basic service can affect the use of another.

## WORLD TRADE CENTER ATTACK

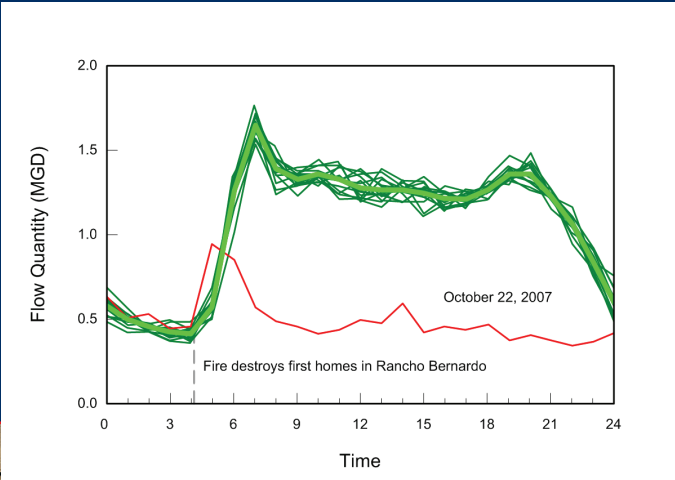
September 2001



## CALIFORNIA WILDFIRES

October 2007

Several devastating wildfires raged through the San Diego County area in October 2007, prompting the evacuation of over 500,000 residents as fire fighters fought to save lives and protect property. The Witch Creek Fire alone burned nearly 200,000 acres and threatened residents in Ramona, Rancho Bernardo, Poway, Escondido, and other communities. The data shown here were obtained from a flow monitor installed by the City of San Diego's Metropolitan Wastewater Department and located in Rancho Bernardo,



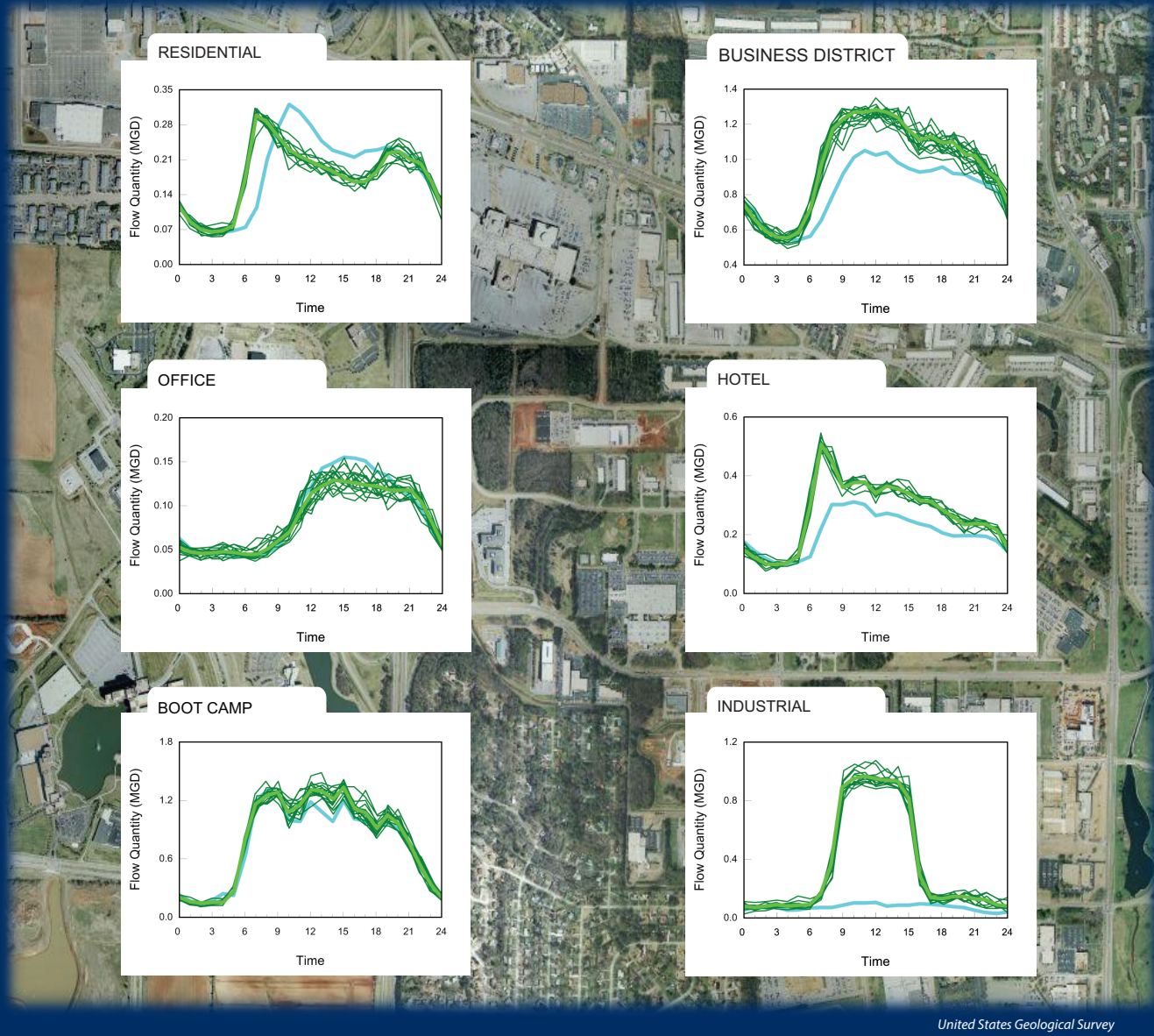
where flames reached the first homes at about 4:07 AM on October 22, 2007. Note the drastic reduction in flow as residents awoke and fled the approaching wildfire – a complete evacuation of this area. A total of 365 homes were destroyed within the City of San Diego and an additional 79 were damaged as a result of the wildfires. However, it is estimated that fire fighters saved approximately 6,000 homes within the path of the fire.

For centuries, mankind has recorded routine and historic events through hieroglyphics, stories, and books. In a similar fashion, hydrographs from sewer flow monitors record the daily rhythm of people's lives through water and sewer use. Differences in land use are apparent, as well as differences between weekdays, weekends, and holidays. Activities and events that disrupt everyday life can also be seen as departures from these patterns. This poster features a collection of interesting observations of human behavior documented by ADS flow monitors located throughout the country.

Kevin L. Enfinger, P.E. and Patrick L. Stevens, P.E.

## LAND USE

Land use within a particular area can impact the shape of the diurnal pattern. The examples below represent diurnal patterns from six different land use areas. The residential pattern is the most common. Combinations and variations of these patterns are often observed in mixed land use areas. Industrial patterns are industry-specific and come in many varieties. The industrial example provided here is from an automobile assembly plant that runs production during the first shift (7 AM - 3 PM).



United States Geological Survey

Source: City of Baltimore. Used with permission.

Source: New York City DEP. Used with permission.

National Aeronautics and Space Administration

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