VantagePoint

By Wendy Lathrop, LS, CFM

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Water Over the Dam and Down the River

What's old is new, and it's all wet. It may seem to be a "modern" approach to look beyond our own municipal boundaries to see what is happening on the other side of an invisible jurisdictional line that will affect flooding and stormwater on our side of that line. But awareness of the full watershed and the cumulative effects of all that happens within it was the focus of a major display during World's Fair of 1939-1940. Twenty-seven sculpted topographic map panels of the New York City watershed (totaling 18 feet by 30 feet to depict 2,000 square miles) extended the three-dimensional detailing down through central New Jersey and out through the Catskill Mountains of New York. Sixty years ago the panels were packed away, too large for permanent public display. Just recently they have been restored by a conservation group for exhibition at the Queens Museum, which coincidentally happens to be near the World's Fair site where the map made its debut. The present proprietors of the map, New York City's Department of Environmental Protection, inherited it from its organizational predecessor, the Department of Water Supply, Gas, and Electricity, and admire the map not only for its artistic beauty but also as "an extraordinarily important teaching tool." Topography on such a grand scale and the effects of gravity have not changed over the years, and the watershed is substantially the same as when the map was created in 1938.

Pennsylvania and New Jersey newspapers are currently filled with the outcry of downstream neighbors in that same huge watershed who are concerned about New York State's preference to keep its reservoirs filled to capacity. While some states in the Southeast may be experiencing drought, the Northeast is not, and when precipitation raises the water levels in New York's reservoirs beyond safe levels, the keepers of the gates release the excess. Large volumes of water translate into flood hazards unrelated to mapped risks, thereby creating damages possibly ineligible for compensation. Does New York have a responsibility to downstream landowners? While we usually think of "No Adverse Impact" as defined by the Association of State Flood Plain Managers to mean that we should do no harm to adjoining properties when developing in

Here's an example of mis-matching between abutting NFIP communities, with Sparta, NJ to the north (current map, dated October 16, 1984) and Byram, NJ to the south (current maps, dated January 5, 1984). While the roads match fairly consistently, Lake Mohawk and its Special Flood Hazard Area abruptly stop at the corporate limits according to these maps, but in real life the lake continues on into Byram.

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the floodplain, perhaps a larger-scale version of that concept can be applied. At any rate, the situation does raise consciousness about living in the lower reaches of the watershed below a large barrier to the usual flow of water. Meanwhile, New York argues that precipitation is unpredictable and that its responsibility is to its own citizens, to provide them with potable water. Perhaps this is a matter of balancing the equities. Just a few weeks prior to my writing this, New York grudgingly agreed to release a small amount of water, and immediately afterwards a series of very wet storms battered the region.

Those of us involved with identifying more "normal" flooding know that the Federal Emergency Management Agency has expanded its efforts to look beyond jurisdictional boundaries to assess flood risks. In 1995 FEMA's first countywide mapping combined multiple incorporated municipalities in a single set of map panels, intending to correct edge-matching errors between separate mapping studies. Previously, two separate communities sharing a corporate limit line could have completely different depictions along what should have been a match line. One side might show a Special Flood Hazard Area while the other might not, or both could show floodplains but their boundaries would not match, or the boundaries might match but the elevations on each side of the line could indicate some kind of magical waterfall along the so-called match line. While the first such effort resulted in a significant amount of what could politely be called "collocation" (and less politely "rubber sheeting"), later countywide mapping has been of significantly higher quality and utility. With such mapping, it is harder to ignore the repercussions and cumulative effects of development in one area on another, because the map continues beyond the particular block on which the developer wishes to place thousands of cubic yards of fill.

We have to ask ourselves what happens on the other side of the street, and we should be asking ourselves what happens on the other side of the municipal boundary when we start paving over the watershed. One small project alone might not seem like much, but taken together, the cumulative effects of projects ranging from small to huge throughout the watershed can mean devastating flood hazards downhill. One of the proactive approaches that state and local governments involved in flood hazard mapping can take is to depict the ultimate Special Flood Hazard Area after build-out of the watershed. Such maps delineate the future floodplain as public notice of impending danger to all who build or buy in certain areas currently considered "safe" on the uphill side of currently mapped floodplain limits. The Denver Urban Water District in Colorado and Charlotte-Mecklenburg in North Carolina were the first in the nation to include "future conditions" depictions on their standard FEMA-issued flood hazard mapping. As we near the end of the most desirable building sites, we must pay more attention to these future floodplains and the larger implications of hazards elsewhere in the watershed that could be heading our way.

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But we should also be concerned about more than water quantity; cumulative effects of development and disposal activities also affect water quality. More than ten years ago, the Environmental Protection Agency (EPA) began an extensive public education and outreach program to build awareness of the effects of every individual's actions on water quality within a watershed. Interactive maps now allow EPA website users to find their watershed and a wealth of geographic and scientific information associated with it. Starting with as simple a step as entering a Zip code, city, EPA Region, or county, a user can first find and then research a watershed's geographic extent, stream flow (provided through the United States Geological Survey), impaired waters and assessments of watershed health, including toxic releases, hazardous waste and Superfund sites. The website also identifies upstream and downstream watersheds for additional information beyond the immediate area of interest. While water quality is not usually a foremost concern for surveyors, these are watershed health issues that definitely affect every development site.