

splash!

quick facts on...

# Vertical Datum Upgrade

## Changing the Way the District Measures Elevations

SEPTEMBER 2007

**The South Florida Water Management District** is a regional, governmental agency that oversees the water resources in the southern half of the state. It is the oldest and largest of the state's five water management districts.

**Our Mission** is to manage and protect water resources of the region by balancing and improving water quality, flood control, natural systems, and water supply.

### Do You Know Where You Stand?

If someone were to measure the height of the ground you are standing on, they would need a point of reference, or a 0.0 point, to measure from. But where is that zero point? For many years, the zero point was "mean sea level," based upon the seemingly constant height of the surfaces of bodies of water. Measurements based on "mean sea level," later became the National Geodetic Vertical Datum of 1929 (NGVD 29).

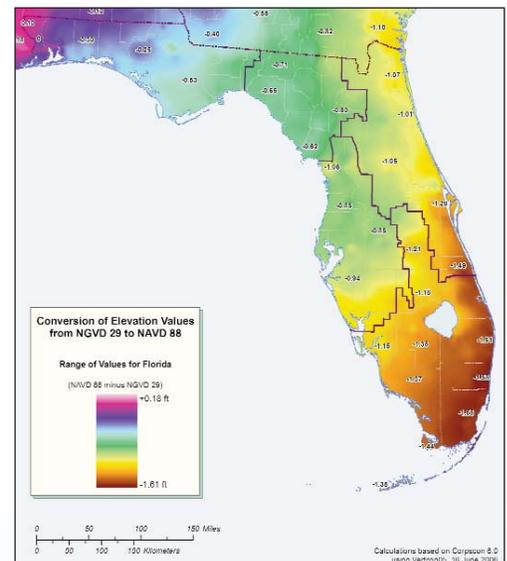
A vertical datum defines a system for elevation comparisons – an established method of measuring one area against another.

But we have since learned that measuring against the mean surface of water bodies isn't exactly accurate. Water surfaces fluctuate and the surrounding areas move. So zero no longer means zero, if the reference point keeps changing, right?

Managing water levels in South Florida is a crucial activity and the core mission of the South Florida Water Management District (District). The Comprehensive Everglades Restoration Plan (CERP) and Acceler8 (accelerated funding, design and construction of eight key restoration projects) are all about managing the flow of water to help restore the Everglades. In times of flood or drought, knowing how much water to move from one elevation to another — in some areas surprisingly small amounts — could literally mean protecting a neighborhood, preserving drinking water or saving lives.

### Changing the Measuring Standard

The District has decided to upgrade from the National Geodetic Vertical Datum of 1929 (NGVD 29) and move to a more accurate elevation standard called the North American Vertical Datum of 1988 (NAVD 88). Within District boundaries



*Difference in elevation values across Florida between NGVD 29 and NAVD 88*

the vertical difference between NGVD 29 and NAVD 88 ranges from -0.6 to -1.8 feet. The new vertical datum (NAVD 88) is an adjustment of Canadian–Mexican–U.S. leveling observations that held fixed a single bench mark located at the mouth of the St. Lawrence River in Quebec, Canada, as the reference point.

### What Does this Mean for South Florida Residents?

The change from NGVD 29 to NAVD 88 is happening right now.

But during the changeover, which is a complicated and extensive process, we do not want to compare apples to oranges. So if you use elevation data supplied by the District, it is important to note which data set you are using and label it as being referenced to either NGVD 29 or NAVD 88. For example, District publications such as the State of the System and News & Notes

now provide the corresponding NAVD 88 value alongside the NGVD 29 value when reporting Lake Okeechobee elevations.

The planned changeover to full operation in NAVD 88 is scheduled for 2011. You will see more information in the coming months as we progress toward operational use of the new datum.

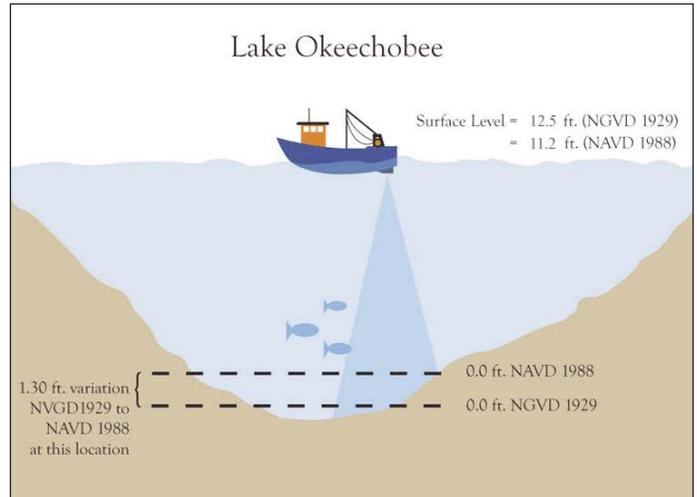
**“It’s Just a New Ruler”**

Look for more information soon on the switch to the new measurement standard and how it will affect the way you do your job at the District. For more information, visit the Vertical Datum Upgrade Project (VDUP) website at:

[www.sfwmd.gov/vdup](http://www.sfwmd.gov/vdup).

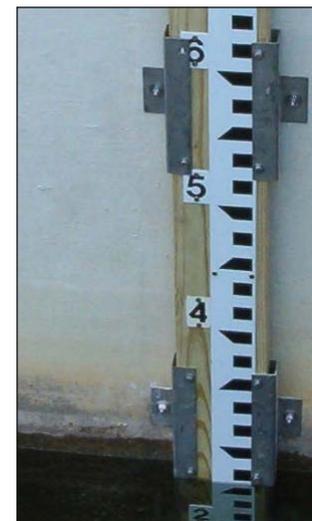
**Points to Know:**

- Changing from a measuring method developed in 1929 to one developed in 1988 will mean greater accuracy in determining land and water elevations.
- Instead of relying on “mean sea level” to determine the elevation of a point, the District will utilize the sophisticated elevation reference system for the North American continent. Eventually, all countries in North America will use this same network of vertical reference points to support many diversified uses.
- District databases will retain information in both the NGVD 29 and the NAVD 88 vertical datums in order to maintain historical data.
- After the switch, our databases will have a conversion application available so that users can readily convert elevation data from NAVD 88 to NGVD 29, and vice versa. You will be able to compare “apples to apples.”
- It is always more precise to convert elevations from the more accurate NAVD 88 vertical datum to the NGVD 29 vertical datum. Because of inherent flaws in the NGVD 29 datum, values converted from NGVD 29 to NAVD 88 will not exceed the accuracy of the source data. If exacting elevations are required, a new survey utilizing NAVD 88 values should be considered.
- Anyone who uses elevation information at the District will need to know about, understand and apply the new measuring standards.



*Lake Okeechobee Surface Elevations, NGVD 29 and NAVD 88.*

*\* Note that the water depth remains the same regardless of the datum used. A boat floating on the surface with a depth sounder will report the same depth, whether using NAVD 88 or NGVD 29 values.*



*In preparation for the Vertical Datum Upgrade, new staff gauges are being installed that can be repositioned once we are operating in the new datum.*

**\* Did you know that the District is the largest repository for vertical data on the Everglades, going back to the 1920s?**



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