

Salinity Network Workgroup Meeting
1:00 – 3:00 PM
February 6, 2013
[Rick Copeland (FDEP)]

“Success is our ability to cooperate.”

**Welcome
and
Introduction**



Today's Scheduled Speakers

(In order of Scheduled Presentation)

- (RC) Rick Copeland, FDEP
- (DD) Dave DeWitt, SWFWMD
- (SP) Scott Prinos, USGS
- (FH) Fran Henderson, Broward Co

Abridged Agenda

- I. **Introduction (RC)**
- II. **Miscellaneous Issues (RC)**
 - Status of Contacting Counties
 - Review of SNW Objectives and Current Status of SNW Efforts
 - Updated GWL Maps
 - Develop “GW Watch Like” Database
- III. **Status of Glossary (DD)**
- IV. **Considering Alternate SOPS for Saltwater Intrusion Monitoring (SP)**
- IV. **Monitoring Saltwater Encroachment Objectives & Strategies (FH)**
- V. **Percentile Ranking Pilot Study Issues (RC)**
and Summary of Discussion held in December
- VI. **Discussion, Action Items and Adjournment (RC)**
- VI. **Next Meeting: Wednesday, May 1, 1:00 – 3:00 pm**

Status of Contacting Counties

- Have list of Counties/Cities
- Invitation Letters – Being reviewed by FDEP Bureau and Division Offices



Review Objectives and Current Status of SNW

- Can be Modified as needed

Objectives (Abridged)

- Monitor...Florida's freshwater ...as related to saltwater encroachment
- Encourage ...monitoring programs ...to participate in the FWRMC (Council) activities; work toward common goals
- Assist Council in developing methods for the easy transfer of relevant data as necessary
- **Encourage the timely reporting of the status and trends (related to saltwater encroachment)**

Objectives (continued)

- **Develop and use indices...**to evaluate the status and trends of saltwater encroachment that... are uniform among monitoring entities...and are relatively easy to understand by the general public, policy makers and the scientific community.
- Use commonly defined indices...to assist in evaluating the threat of encroachment to water supplies, and determining the cause of saltwater encroachment.

Potential Additional Objectives

(To be considered at a Later Date)

- Improve the quality of sampling by:
 1. Evaluating the best sampling methodologies for saline water given its physical properties,
 2. Developing SOPs to these methodologies,
 3. Periodically evaluating the quality of the sampling, by reviewing salinity sampling methods used throughout the state.
- Evaluate improvements in the technology used for salinity monitoring and... develop SOPs to be used to implement these advances.

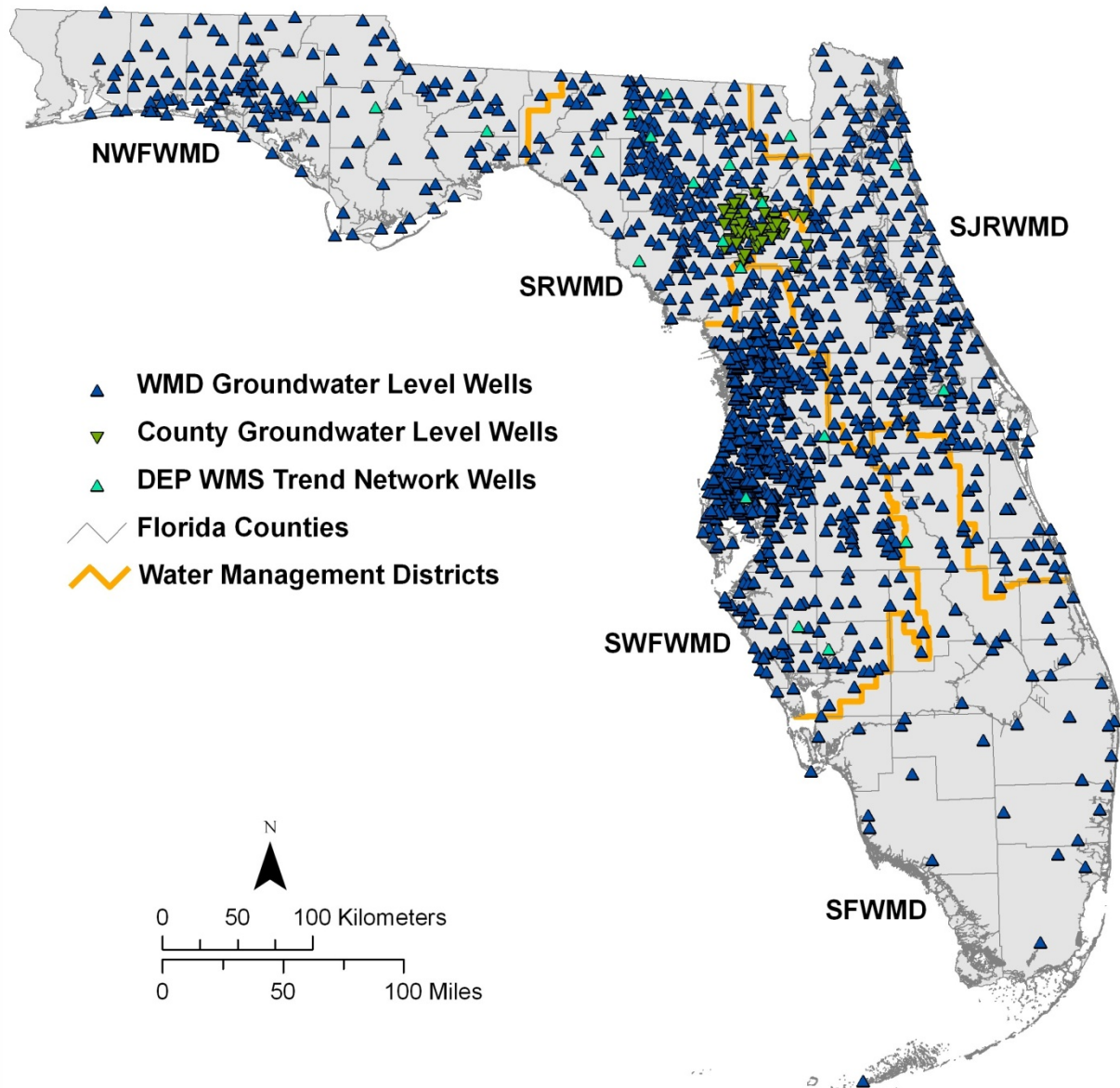
Current Objectives Being Emphasized

- GWL Index (Percentile Ranking)
 - 1. Because lowering GWL increases potential for encroachment
 - (horizontally and vertically)
 - 2. Easy to produce & to understand
 - 3. Currently conducting a Pilot Study
- GWQ Index
 - In beginning stages



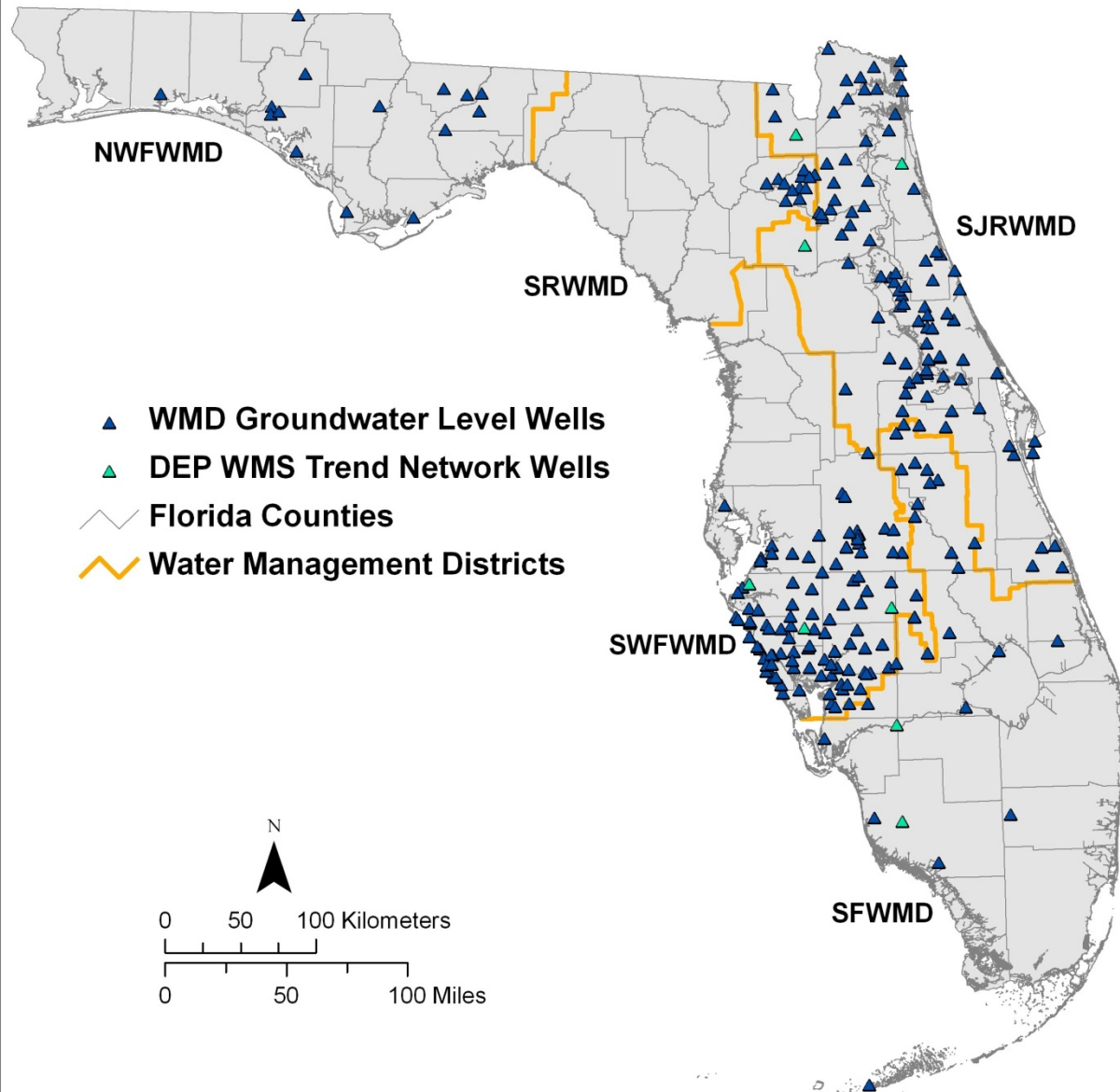
Updated SNW GWL Well Maps

GROUNDWATER LEVEL FLORIDAN AQUIFER SYSTEM



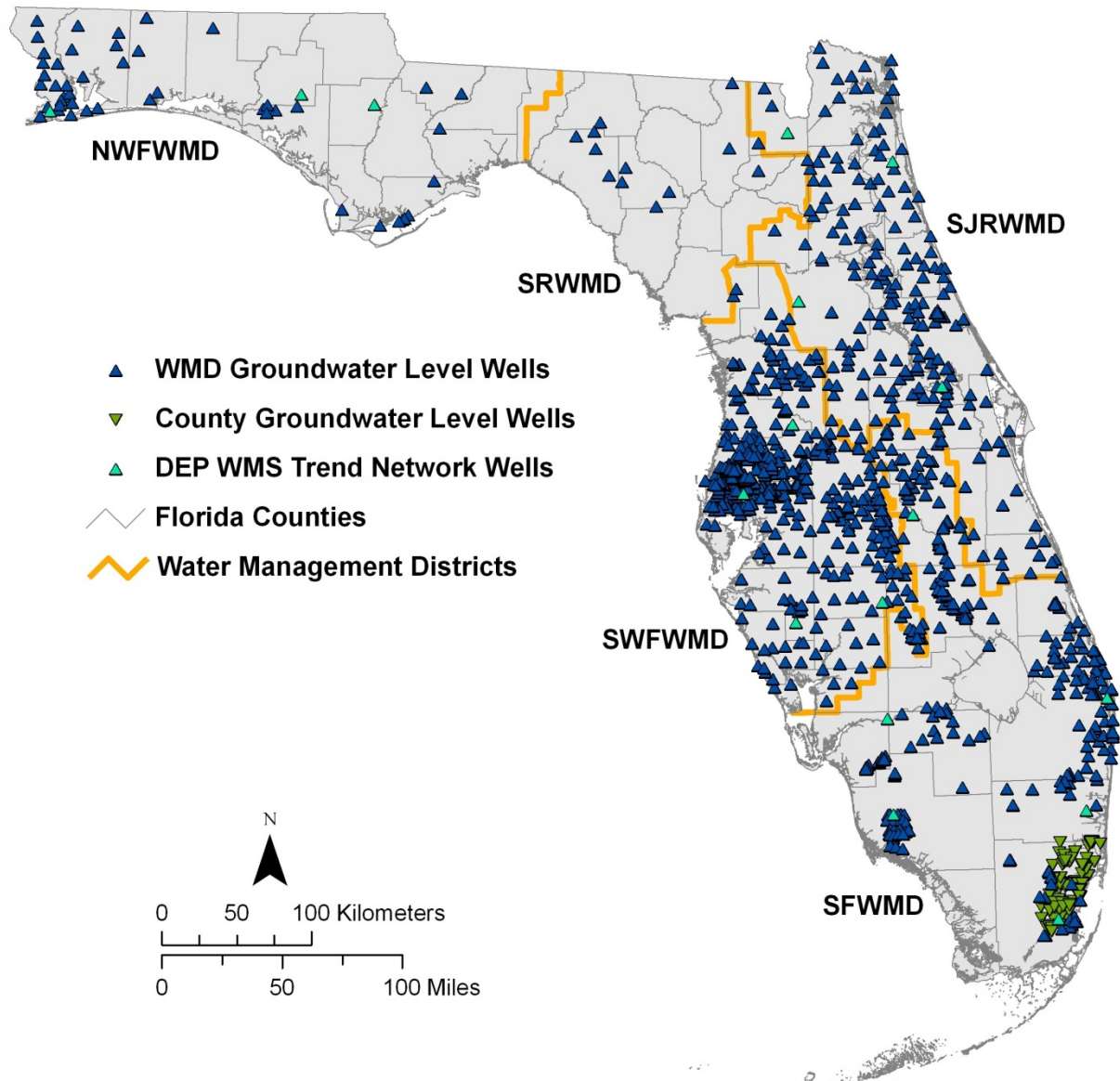
Created January 7, 2013 by Florida Department of Environmental Protection staff in the Division of Environmental Assessment and Restoration, Watershed Monitoring Section. This map is a representation of ground conditions and is not intended for further analysis.

GROUNDWATER LEVEL INTERMEDIATE AQUIFER SYSTEM



Created January 7, 2013 by Florida Department of Environmental Protection staff in the Division of Environmental Assessment and Restoration, Watershed Monitoring Section. This map is a representation of ground conditions and is not intended for further analysis.

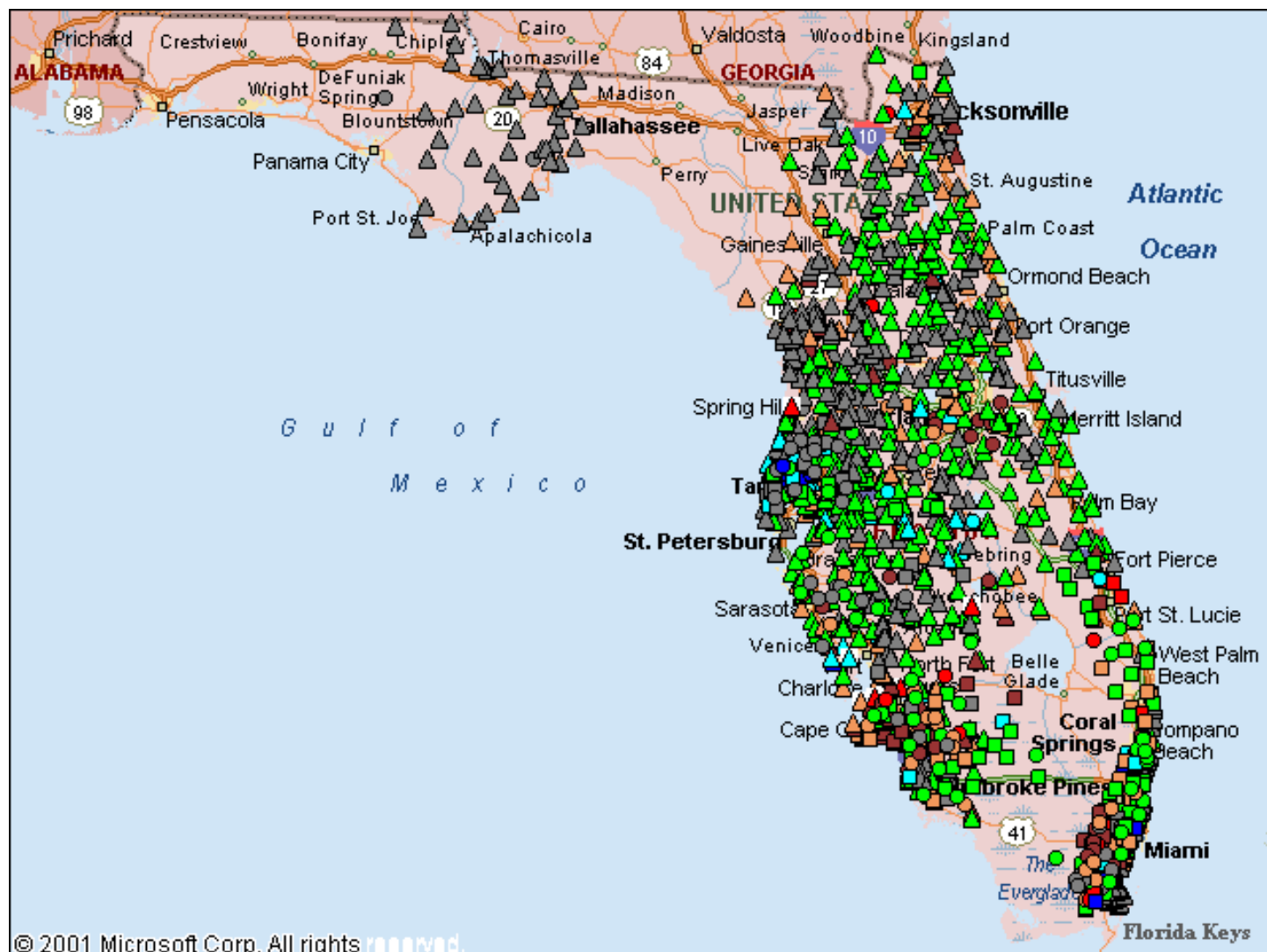
GROUNDWATER LEVEL SURFICIAL AQUIFER SYSTEM



Created January 7, 2013 by Florida Department of Environmental Protection staff in the Division of Environmental Assessment and Restoration, Watershed Monitoring Section. This map is a representation of ground conditions and is not intended for further analysis.

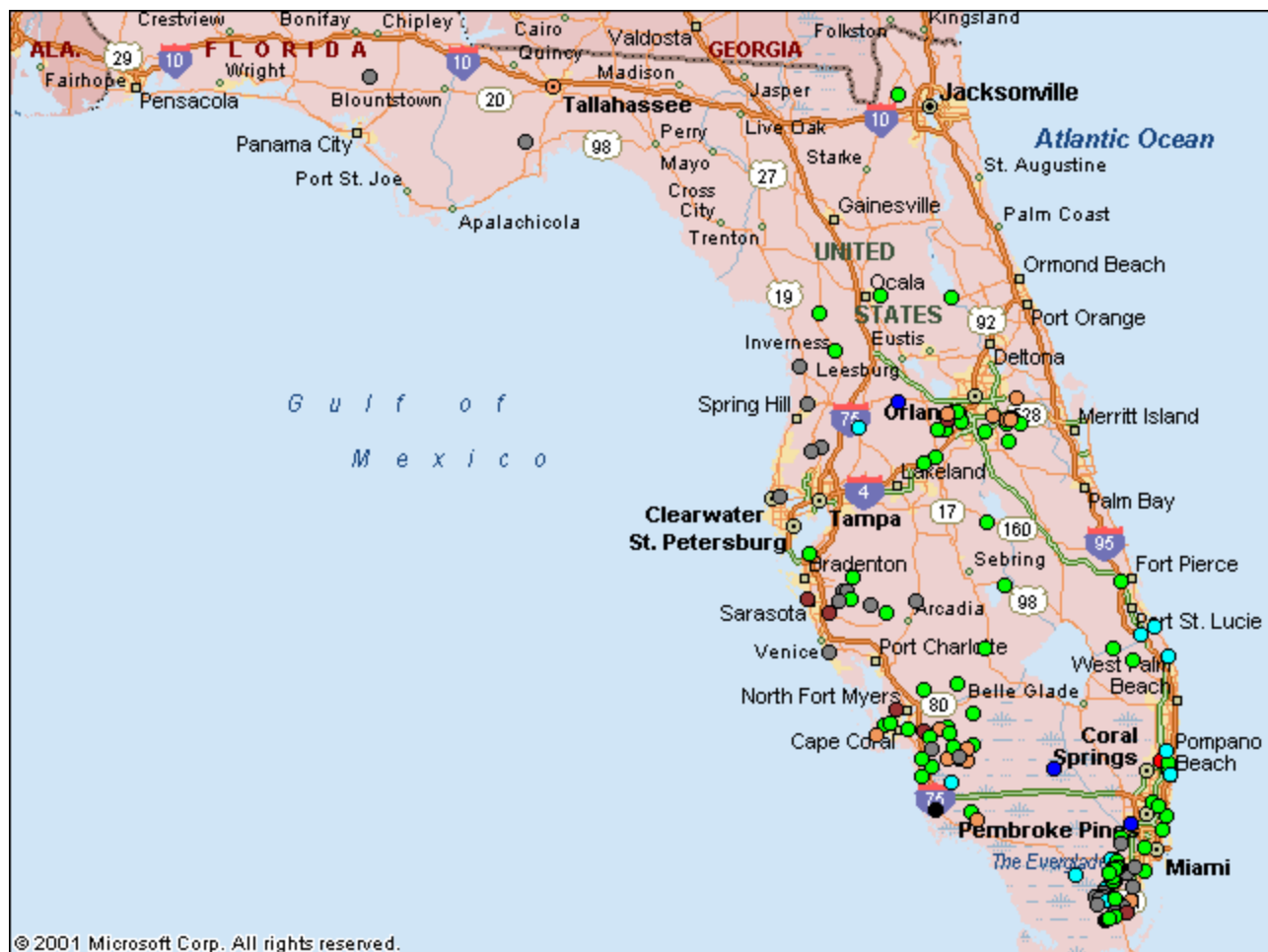


“GW Watch” Like Database



Explanation - Percentile classes (symbol color based on most recent measurement)

								Real Time Continuous Periodic Measurements
Low	<10 Much Below Normal	10-24 Below Normal	25-75 Normal	76-90 Above Normal	>90 Much Above Normal	High	Not Ranked	



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Explanation - Percentile classes (symbol color based on most recent measurement)							Wells	Springs
Low	<10	10-24	25-75	76-90	>90	High	Real-Time	
	Much Below Normal	Below Normal	Normal	Above Normal	Much Above Normal	Not Ranked	Continuous	
							Periodic Measurements	

“GW Watch” Like Database

- Should we investigate development of this database for SNW?
- Developed by George Karavitis USGS
- Permission to contact him from USGS
 - But are we to transfer data?
 - Last meeting - **NO**



SalNet Glossary – Status

(Dave DeWitt)



Considering Alternate SOPs for Saltwater Intrusion Monitoring (Scott Prinos)

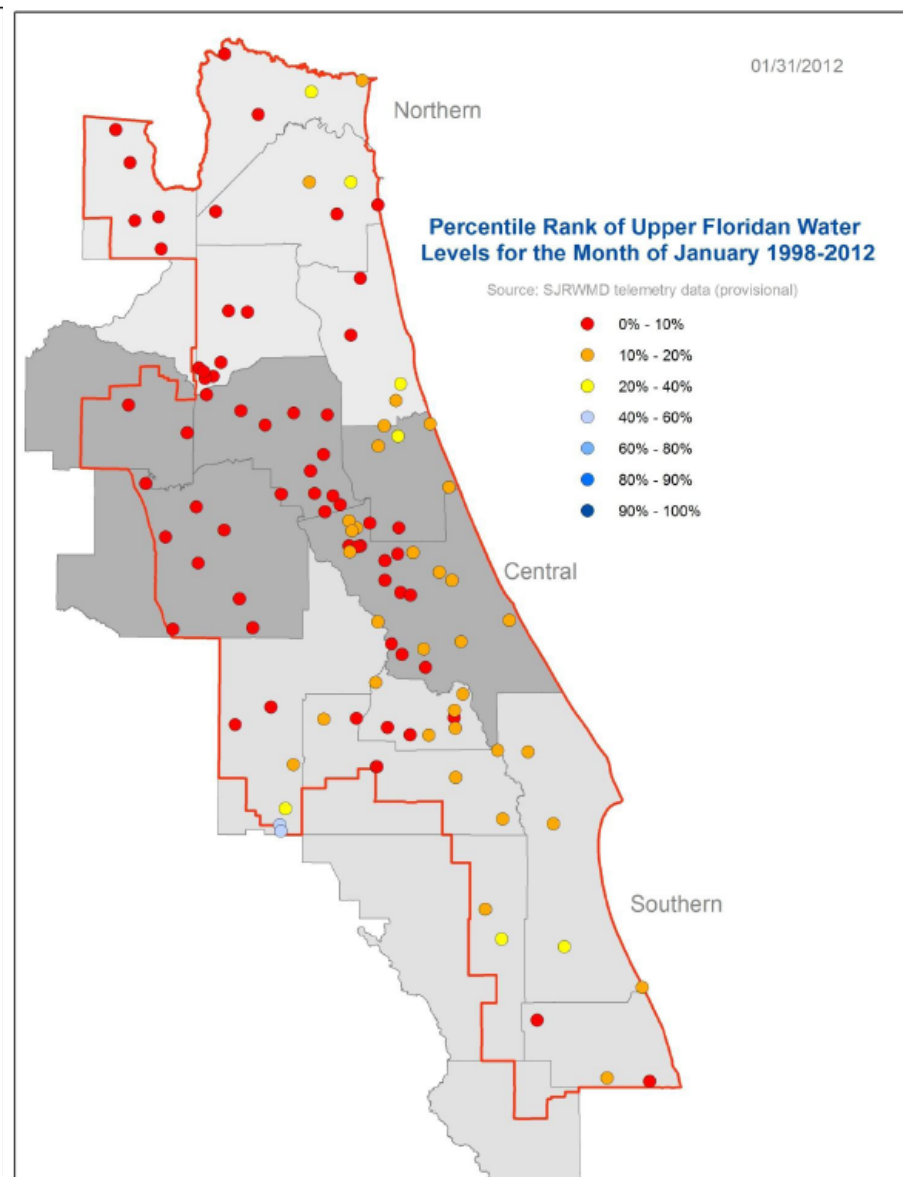
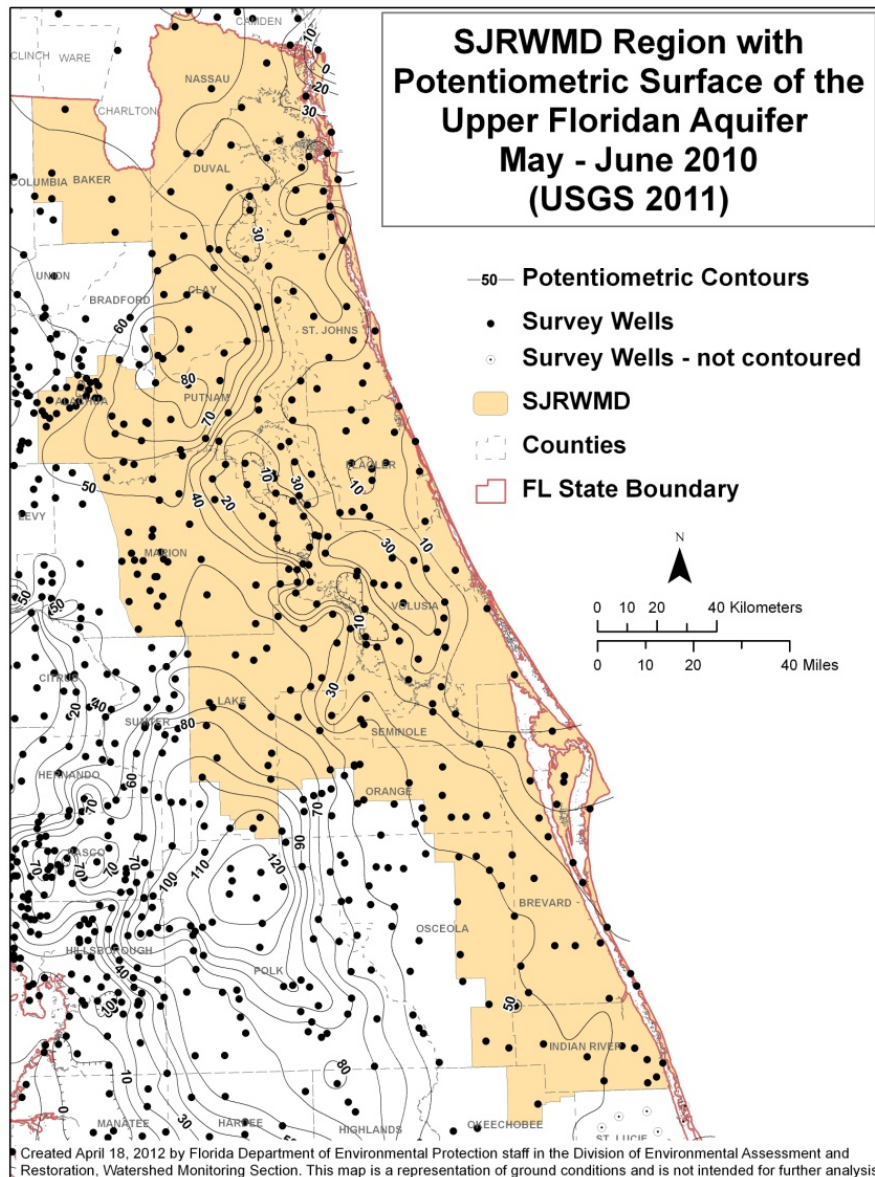


Monitoring Saltwater Encroachment Objectives and Strategies (Fran Henderson)

PR Ranking Pilot Study

Abridged Overview (RC)

- Produce a Percentile Ranking (PR) index map for Spring 2010 for the Upper Floridan aquifer (UFA)
 - **Purpose** – Can SNW overcome obstacles
 - If so, periodically produce PR maps for aquifers or other mappable units
 - **Possibly** – Produce side-by-side potentiometric maps with PR maps



U.S. Drought Monitor

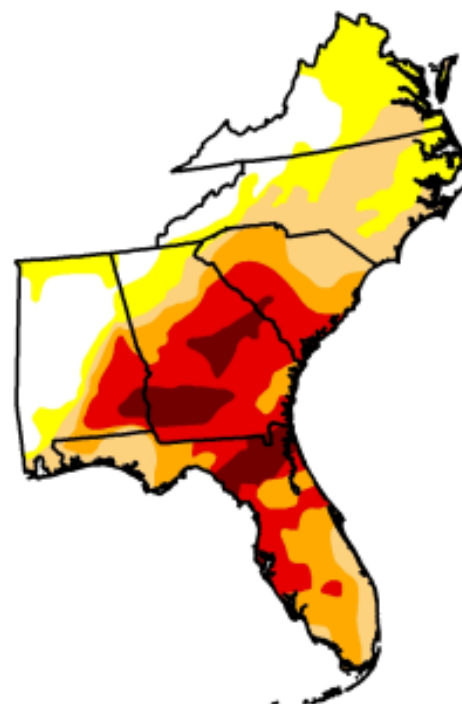
Southeast

April 17, 2012
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	17.04	82.96	63.56	43.54	27.65	7.14
Last Week (04/10/2012 map)	17.84	82.16	63.41	39.97	25.35	5.29
3 Months Ago (01/17/2012 map)	28.63	71.37	52.85	33.73	23.65	1.50
Start of Calendar Year (12/27/2011 map)	40.38	59.62	43.05	28.62	18.71	0.00
Start of Water Year (09/27/2011 map)	42.24	57.76	41.82	31.77	23.48	0.00
One Year Ago (04/12/2011 map)	30.65	69.35	48.75	15.15	4.60	0.00

Intensity:



The Drought Monitor focuses on broad-scale conditions.
Local conditions may vary. See accompanying text summary
for forecast statements.

<http://droughtmonitor.unl.edu>



Released Thursday, April 19, 2012
Anthony Artusa, Climate Prediction Center/NCEP/NWS/NOAA

Summary of a Discussion Regarding the Pilot Study

- Date: 12/12/2012
- Purpose – Discuss specific methods
- For entities directly participating in Study
- Attendees:
 - **FDEP** - R Copeland, J Gay, S Sunderman
 - **NW** - T Countryman
 - **SR** - M Wetherington
 - **SJ** - T Mirti, N Johnson
 - **SW** - D DeWitt, G Kinsman, K Romie, S DeSmith
 - **SF** - L Baldwin
 - **Ala** - J Myles

Issues

- Adopted PR method used in Excel
$$PR(x) = [\# \text{ obs} < x / (n-1)] \cdot 100$$
- Sub-workgroup agreed to:
Compare PR results (Excel, Hydstra)
- FDEP to supply all with example data
Data providers will each calculate PRs
for example data
Then we compare results

Issues

(Preliminary RC Suggestions) (This and next several slides)

- Color schemes and # of classifications
- Most entities prefer:
 - Use USGS schemes
 - Five categories
 - < 10 10 - 24 25-75 76-90 > 90 (1)
 - or
 - < 10 10-24 25-75 76-90 > 90 (2)
 - Plus max and min
- RC- Develop max and min symbols during Pilot



Issues

Period of Record (POR)

- What about “stitching together” wells
 - Most favor letting providers decide ; If becomes a problem, we can modify

Issues

- **Prefer 1980-2010: Accept up to 1985**
Referred to as “1985”-2010
- 1980-2010 (313 wells)
- 1985-2010 (449 wells) (Ala, SF, FDEP - no wells)
 - 1991-2010 (605 wells) (Ala, SF, FDEP - included)
- RC – Suggest Two Pilots
 - A. “1985” – 2010
 - B. 1991-Present (Ala, SF, FDEP included)
 - Compare results and then make final decision
- Other ideas for presenting wells with long historical PORs ?

Issues

- How to treat missing values
 - RC – Simply as that: missing values
- Continuous Recorders vs Discrete Samples
 - RC – A better question; How do we treat Continuous recorder data?
 - For example: Mo. Mean vs noon reading 25th of Mo.

Issues

- Should we de-trend GWL data prior to computing PRs?
 - Suggest **not de-trending data unless there are compelling reasons**
 - Simpler is better
 - We know trends are present. We simply want to capture PRs that cover past few decades
 - Would probably need to transfer data

Issues

- Min # obs for the selected POR?
- Note lowest freq is often $1/M$ or $1/Q$
- Both M and Q data need adequate coverage over POR
- We may need to **test**
 - Compare of PRs using wells with both M and Q data, where data are available
- RC- Need to obtain data set(s) and test

Issues needing further discussion

- Seasonality
 - Ignore (usually not much diff)
 - Compare data to historic Quarterly seasonal data
 - RC - Ignore (usually not much diff)
- Weather / climate-related effects should be discussed in a separate meeting discussion

Issues needing further discussion

- Clarify purpose of the PR analysis
 - Overall status of aquifer, or to emphasize areas with very low PRs
 - RC – Overall status of GW levels within aquifer
 - Can discuss areas of low PRs in text
- Avoid conflicting with assessments routinely being reported by WMDs for hydrologic conditions

Additional Concerns

- Should we adjust GWLs for salinity
 - For now we will use water levels unadjusted for salinity
 - WMDs are looking into this issue and will let SNW know if future refinements are needed

Additional Comments

- Vertical datum should not matter for PRs, as long as data providers are internally consistent
- Vertical datum will need to be addressed if SNW decides on making or using potentiometric maps

Closing Issues (RC)

- Discussion if needed
- Action Items
- Next Meeting
 - **Wednesday, May 1 from 1:00 – 3:00 PM**
- Adjourn