**6.0 EDITORIAL COMMENTS FOR MODFLOW**

**6.1 Editorial Comments for MODFLOW (Hal Davis)**

**Chapter 2: HYDROLOGY OF THE AREA**:

Surficial Aquifer System page 9:

Table 2-1: The superscript \* needs to be replaced with a 1 in the legend.

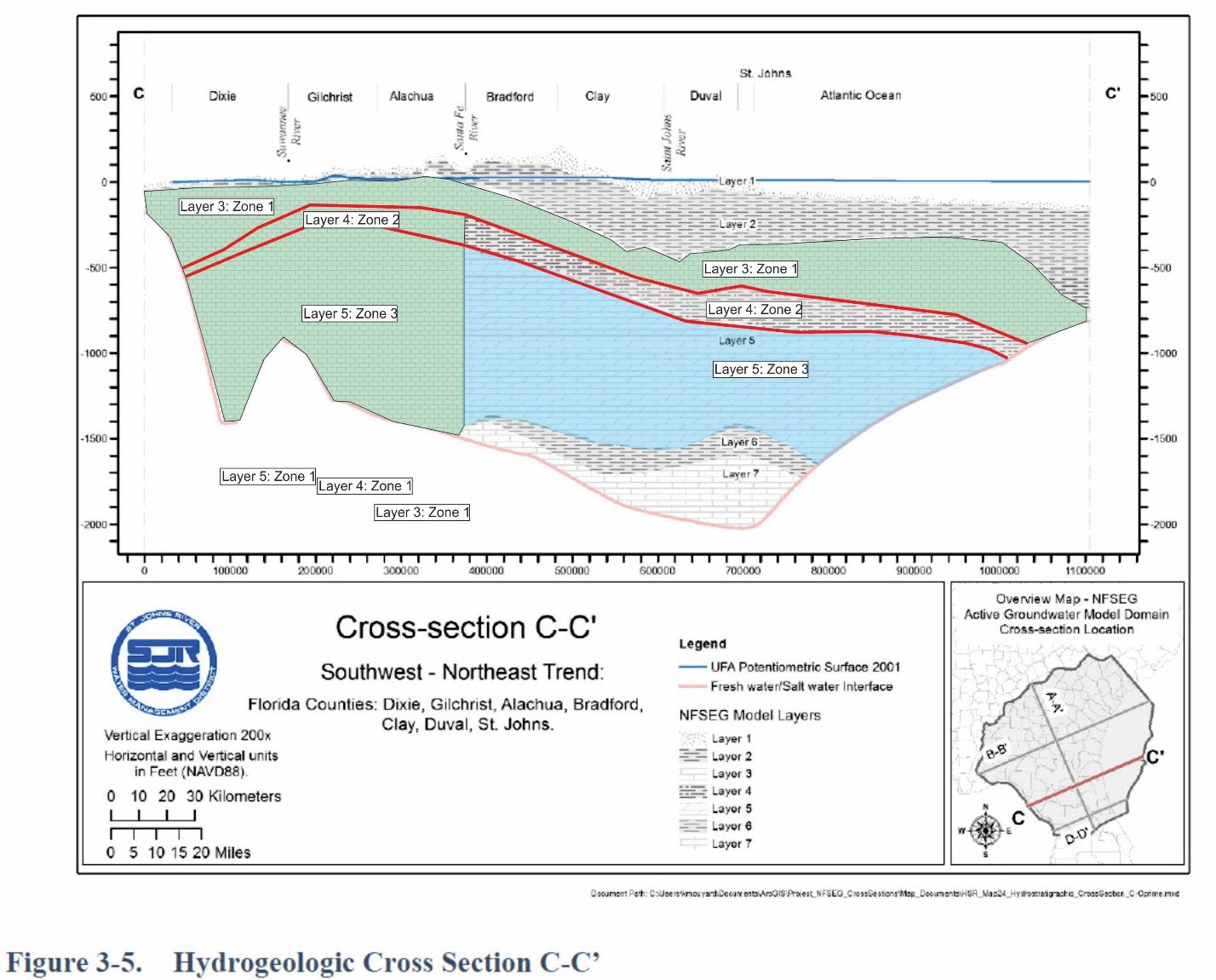
Intermediate Confining Unit page 11:

Figure 2-9: Need to indicate if -/+ are upward or downward gradients.

Floridan Aquifer System page 13:

Page 15, 4th paragraph: A figure should be added showing the locations of the confining units described in the statement: “Another complication is related to the discontinuous nature of the middle confining unit. Miller (1986) mapped four different middle confining units in the model domain (numbers 1, 2, 3, and 7).”

Page 15, 5th paragraph: A figure, similar to the one attached, should be added to help illustrate the configuration of the zones described in the statement: “It also allowed for continuity of model layering with areas where Miller (1986) had not mapped the presence of a middle confining unit, thus resulting in the definition of three continuous layers representing the Floridan aquifer system throughout the model domain, referred to hereafter as zones 1, 2, and 3 in the present report (Table 2-2).”



Page 16: Report states: “The thickness of the Upper Floridan aquifer ranges from near 0 ft along the Gulf Trough in Georgia to nearly 1,000 ft in the northwest region of the model domain (Figure 2-14).” In Miller’s report (1986) the thickness of the Upper Floridan is shown as about 300 ft in the Gulf Trough area.

Figure 2-16: Outline of Miller’s confining layers 1,2,3, and 7 would show where this zone 2 was permeable/impermeable.

Figure 2-24: Contours in legend appear to be reversed.

Page 19, last paragraph: Appendix B should be Appendix C.

Figure 2-33: Should Wakulla? Spring Creek? be on figure?

**Chapter 6: WATER BUDGET ANALYSIS:**

For figures 6-3 to 6-33, many of the figures have arrows showing flow in only one direction for each model layer, indicating flow only goes in one direction. It would probably be more appropriate in many cases to have arrows pointed in both directions indicating flow both into and out of a layer.

**MISCELLANEOUS ITEMS:**

Geographic places mentioned in the text that did not appear to be located on a map (and page that it was mentioned) are listed below:

St. Johns, Suwannee, Altamaha, Satilla, and Savannah Rivers 3

Flint, Ochlocknee, Aucilla, Steinhatchee, Wacissa, St. Marks, St. Marys, and Ocklawaha Rivers 3

Clay County, Florida, the Keystone Heights 3

Fernandina Beach 3

Suwannee River and Santa Fe River 5

Alapaha and Withlacoochee 6

Dead River 6

Alapaha Rise 6

St. Johns River 6

Lake George 6

Volusia, Marion, and Putnam counties 6

Silver Glen and Salt springs 6

Green Cove Springs 6

Ocmulgee River Oconee rivers 7

Keystone Heights 7

Lakes Brooklyn and Geneva 7

Upper Etonia Creek 7

Lowndes and Lake Park counties, Georgia 7

Lake Grandin 8

Okefenokee Swamp 8

Mallory Swamp 8

Lafayette and Dixie counties, Florida

Crescent Beach, Florida 8

Volusia County, Florida 9

St. Johns County, Florida 9

Halfmoon Lake in Putnam County, Florida 9

Brunswick 11

Suwannee River 11

Flint River 11

Duval and Nassau counties, Florida, and Camden and Glynn counties, Georgia 11

Colonel’s Island 13

Glynn County, Georgia 16

Alachua County, Florida, 18

Silver Springs 18

Rainbow springs 19

Duval County, Florida 19

Ochlockonee river 18

Aucilla 18

Steinhatchee 20

Alapaha River Rise, St. Marks River Rise, Santa Fe River Rise, Steinhatchee River Rise, and Holton Creek Rise 20

Suwannee, Alapaha, Withlacoochee, Santa Fe, St. Marys, Ochlocknee, and Satilla 21

Orange Creek 22

Orange Springs 22

Branford 22

Upper Etonia Creek 48

Lochloosa 48

Cody Escarpment 59

Leon, Wakulla, and Citrus Counties, Florida 61

Lafayette County 61

Waccasassa Flats 61

Gilchrist County, Florida 61

Ichetucknee and Lower Santa Fe rivers 61

Columbia and Alachua Counties, Florida 61

Crystal River, Silver River, Wacissa River, Ichetucknee River 63

High Springs Gap 65

Woodville Karst Plain 65

Silver and Rainbow springs basins 65

Camden County, Georgia 65

Nassau County, Florida, into St. Johns County, Florida 65

Baker County, Florida, and Charlton County, Georgia 65

Leon and Jefferson counties, Florida 65

Marion and Levy counties 68

Gainesville 75

**6.2 Editorial Comments for MODFLOW (Louis Motz)**

**Chapter 1 Introduction:**

**p. 1: The primary purpose of the NFSEG model is to enable improved evaluations of inter-district…and interstate…*water-level changes* in the surficial and Floridan aquifer systems resulting from groundwater use over the model domain.**

Consider adding determination of ***changes in* *spring flows and base flows*** to the description of the primary purpose of the NFSEG model.

**p. 3 and Figure 1-1:** In the paragraph **Municipalities and Other Major Pumping Centers**, reference should be made to Figure 1-1. Should **Valdosta** and **Ocala** be included in the list of pumping centers?

**Chapter 2 Hydrology of the Area:**

**p. 14:** **…Gulf Trough in Georgia….**Suggest adding **…Gulf Trough in *south* Georgia….**

**p. 19 and References, p. 109:** There are two references for Kuniansky and Bellino (2012) in the References section on p. 109 Thus, 2012a and 2012b should be indicated on p. 109 in **References**, and the reference on p.19 should be identified as Kuniansky and Bellino (2012a) or (2012b).

**p. 21:** “**Springs with discharge rates that are greater than or equal to 100 cfs on average are classified as first magnitude springs.”**  Please provide a reference for this.

**Chapter 3 Model Configuration:**

**p. 31 and Figure 3-1:** Please indicate on Figure 3-1 that the northern NFSEG Active Model Boundary is the **“approximate up-dip limit of (the) productive part of the Upper Floridan aquifer…”** and refer to Figure 3-1 again on p. 31.

**p. 41: …equivalent freshwater head…”** Please provide a reference for the equation given for calculating equivalent freshwater head.

**Chapter 5 Model Simulation:**

**p. 68, Figure 5-1:** The bar graphs for annual precipitation should be in the order of 2001, 2009, and 2010.

**pp. 68-69, Figures 5-3 and 5-5:** The bar graphs for annual ET and recharge should be in the order of 2001, 2009, and 2010.

**p. 79, Table 5-6:** The reference to **Stringfield (1936)** needs to be included in the References section.

**Chapter 9 Summary and Conclusions:**

**p. 100: Land surface elevations range from sea level to more than 450 feet, NAVD88 in *northern* Georgia.** Change *northern* to *south* Georgia.

**References:**

p. 109: The two references to **Kuniansky and Bellino (2012)** should be delineated as **2012a** and **2012b**.

**6.3 Editorial Comments for MODFLOW (Jim Rumbaugh)**

Page 45 – the text mentions that wetting penalty was only used early in the calibration process, however, run 007h did use this observation type.

Page 48 – Keystone Heights is mentioned here. It would be good to have this on a map for reference.

Page 49 – The text states that flooding issues were due to lack of representation of surface water. That may be, but there are still a lot of flooded cells with some very much above top of layer 1.

Page 50/51 – For the sake of completeness it would be good to document the variogram parameters used in the kriging of pilot points.

Page 55 – the text discusses the problems with water levels in layer 1 being above the top of the model cell. One thing to consider for the future is to calibrate on depth to water in layer 1, rather than elevation.

It would be useful to show a map of the areas covered by the wetting penalty observations.

On Table 4-4, it would be good practice to provide scaled calibration statistics (divide by range in head).

Figure 4-76 – X and Y axes should be the same length.

Figure 4-13/14 – what is the green shaded area on these types of plots? Should discuss in the text.

Figures 4-15/16 – rather than contours, perhaps use color shading as the contours are impossible to read.

**6.4 Editorial Comments for MODFLOW (Errata Sheet) (Dann Yobbi)**

1. Title page--Change publication year to 2018.
2. Add list of acronyms and abbreviations.
3. Table of Contents is incomplete. 3rd and higher-level order headings are omitted.
4. Label all counties names mentioned in report on one or more figures.
5. Label within the map area the “active model boundary” on each figure where it is shown.
6. Adopt consistent nomenclature for “legends” throughout report. Legend in fig. 3-6 is proper standard.
7. Delete measurement units from report figures.
8. Add fall line to fig 1-2. Text mentions it on p. 2 ¶5
9. Need figure showing major surface water basins. Text mentions them on p. 3 ¶1.
10. Label all hydrographic features named in text to one or more maps—Atlantic Ocean, Gulf of Mexico, rivers, lakes, cities, etc.
11. Potentiometric highs not shown on fig 1.4 but mentioned in text on p.3 ¶2
12. Figure 2-44 is incorrectly labeled.
13. Adopt consistent x axis label on figs 3-4 through 3-7.
14. Check legend scale for figure 3-8 through 3-24. Cannot identify lower intervals on maps?
15. Add histograms to figures 4-13 and 4-14. Define lines and shaded area shown on graphs and revise axis labels. X axis should read *Observed Water Level* and y axis should read *Simulated Water Level.*
16. Add histograms to figures 4-19, 4-20, 4-23, 4-24, 4-27, 4-28. Define lines and shaded area shown on graph. Revise x and y axis titles.
17. Statistics on figure 4-24 do not correspond to values in table 4.4.
18. Figures 4-29 and 4-30--Contour interval of 5 ft is too detailed for the range in values. Suggest a minimum 10 ft interval. Where are the observed 2001 and 2009 maps? On page 61, “*these surfaces represent a good to excellent match to the respective* ***observed potentiometric surfaces of 2001 and 2009***”.
19. Add proper x and y axis titles to figure 4-34.
20. Add histograms to figures 4-37, 4-38. Define lines and shaded area shown on graph. Add proper x and y axis titles.
21. Figures 4-39 and 4-34. Change to a 10 ft contour interval.
22. Why are flow rates on figure 4-41, 4-43 through 4-46 negative? Flow is a positive number (see fig.4-42). Also, report flow rates to a maximum of 3 significant figures.
23. What springs are plotted on figures 4-43 and 4-44? Many more springs are listed in appendix E.
24. Add histogram to figure 4-53 and 5-54. Define lines and shaded area shown on graph. Add proper x and y axis titles.
25. Figures 4-55 and 4-56. Report flow rates to a maximum of 3 significant figures.
26. Define lines and shaded area shown on figure 4-57 and 4-58.
27. Check legend scale on figure 4-61. 3,500 is very high.
28. Check legend scale on figure 4-65 and 4-66. 500 is very high.
29. Check legend scale on figure 4-67 and 4-68. 2,047.7 is very low value.
30. Check legend scale on figure 4-69. 53,902 is very high.
31. Check legend scale on figure 4-71. 77,851,888 is very high.
32. Add histograms to figures 5-11 through 5-13. Define lines and shaded area shown on graphs and correct axis labels. X axis should read *Observed Water Level* and y axis should read *Simulated Water Level.*
33. Add histograms to figures 5-15 and 5-17. Define lines and shaded area shown on graphs and correct axis labels. X axis should read *Observed Water Level* and y axis should read *Simulated Water Level.* Observed discharge is a positive value not a negative value.
34. What springs are plotted on figure 5-15? Number plotted here do not match number in appendix J.
35. Why are observed baseflow pickups negative on figure 5-17 and on table 5-3? Baseflow is a positive number.
36. Why is a different scale used in figure 5-21 and 5-22 than in scale used in 2001/2009 maps?
37. Table 6-4—Why is there 0.10 in/yr model-wide pumpage for no-pumping simulation?
38. Table 6-16-- Why is there 0.24 in/yr pumpage in GWB3 for no-pumping simulation?
39. Table 6-32-- Why is there 0.01 in/yr pumpage in GWB7 for no-pumping simulation?
40. Define symbols used on figures 7-7 through 7-11.
41. Floridian is incorrect spelling on page 2 ¶5.
42. Need to reference Groundwater Vistas on page 51 ¶1.
43. Page 57 ¶2, what “*critical lakes*” were assigned a different weight on page 57 ¶2?
44. Page 58 ¶3, what is the “*large range in groundwater levels*”?
45. Page 58 ¶2, provide proof for the statement “*the scatter plot that is present is to be expected for such a varied and complex range of conditions*”.
46. Page 72 ¶1, change appendix x to appendix I.
47. Page 72 ¶2, Why different sets of springs assessed in 2010 for “*important first magnitude springs and spring groups*”.
48. Page 72 ¶3, Why no table for 2001 and 2009 for “*important first magnitude springs and spring groups*”.
49. Page 74 ¶1, Change Appendix Z to Appendix K.
50. Page 74 table 5-6, once again, why a different set of springs evaluated? Need consistent data sets to evaluate results.
51. Page 97 ¶1, no proof is provided to substantiate your statement “*the model can be used for* ***sub regional and local-scale evaluations*** *with the same accuracy as existing models*”. How do you know this?