

**Indian Lake, Volusia County
Proposed Peer Review Resolution Document: Shaw, Wilson, and Upchurch
May 18, 2010**

Reviewer	Peer Review Comments	Resolution
Peer Reviewer Comments - April 2009		
Shaw	1. Page vii, Executive Summary and Page 62, Conclusion and Recommendation – Item 3 refers to periodic reassessments of the MFLs. It would be helpful to include a statement about any plans for additional or continuing data collection and/or the process that would be used to trigger re-evaluation of MFLs for Indian Lake and other water bodies in the future.	Added: “Monitoring data would include periodic vegetation and soil re-sampling, as well as hydrologic model updates with future stage and aquifer data.”
Shaw	2. Pages 1-2, Factors to be Considered When Determining MFLs and Pages 10-12, Consideration of Environmental Values Identified in Rule 62-40.473, F.A.C.– it would be helpful to indicate here which factors were considered in the development of the Indian Lake MFLs. Also, for riverine MFLs, the District typically contracts or conducts a water resource values (WRV) assessment in addition to preparing an MFL determination study. Because it is not mentioned in the Indian Lake MFL Report, I am assuming a separate WRV assessment will not be conducted for this MFL. However, it would be helpful if this were clarified in the MFL Report.	Added: “For several large system MFLs, such as the St. Johns River at State Road 50, Lake Monroe, and Wekiwa Springs, a separate, detailed analyses of each environmental value occurred (HSW Engineering 2007, Environmental Consulting and Technology 2007, and Wetland Solutions, Inc 2008). Additional WRV description added, along with WRV screening tool description for WRVs at Indian Lake.
Shaw	3. Page 16, Figure 3 – It would be helpful if modeled drawdown contours for the Daytona Beach and Ormond Beach well fields were shown overlain on the aerial map of the Indian Lake vicinity in this figure.	Comment noted. This information goes beyond typical MFL report and is most appropriate in the ground water and surface water model report.
Shaw	4. Pages 23-51, Field Data Transects 1 and 2 – these sections are particularly well written and documented.	Comment noted. No response needed.
Shaw	5. Pages 52-54, Minimum Levels Determination Criteria – Likewise, this section is very well written and provides excellent context for the recommended minimum levels for Indian Lake that follow.	Comment noted. No response needed.
Shaw	6. Pages 54-60, Minimum Levels Reevaluation for Indian Lake – Better explanation is needed to document how the “event duration” for each of these levels, 30 days for FH, 180 days for MA and 120 days for FL, is chosen. Is this professional judgment or standard practice for defining hydrologic events or is there a more substantive basis? I think this may be addressed to some extent in the MFL methods paper, but here in the MFL Report it comes across as arbitrary.	Please see the Minimum Levels Criteria section for discussion on the levels objectives. The elevations of the wetland communities in the Indian Lake floodplain can be associated with the long-term lake stage record, where typical durations and frequencies of flooding and drying are known. These wetland community elevations can be applied toward the development of recommended minimum levels. The standardized procedures for setting each level, using the best available information, as described in detail in the (draft) Minimum Flows and Levels Methods Manual (SJRWMD 2006), was followed as the basis of developing the recommended

Reviewer	Peer Review Comments	Resolution
		<p>minimum levels for Indian Lake. Regarding the FH level ,which should occur for at least 30 continuous days in the growing season at least every 2 to 3 years, on average. Aquatic biota rely upon inundation of the floodplain for habitat and for the exchange of nutrients and organic matter (McArthur 1989). Flooding of wetlands and upland fringes redistributes and concentrates organic particulates across the floodplain (Junk et al. 1989).</p>
Shaw	<p>7. Recommendation: Improve Indian Lake MFL Report by addressing the editorial comments 1-6 above.</p>	<p>Comment noted.</p>
Shaw	<p>8. Finding: Based on my review of the Indian Lake MFL Report and field inspection of transects, I feel that the environmental data from the site and the data collection procedures used to support this MFL determination are appropriate, repeatable and scientifically sound. The District has done a commendable job through research and modeling to gain an understanding of how sandhill lakes such as Indian Lake function hydrologically, and that knowledge is appropriately incorporated into this MFL determination. Similarly, the methods and procedures for data analysis are valid and appropriate, and the assumptions used in data analysis and MFL determination are reasonable and justified by the District’s previous experience and literature citations.</p>	<p>Comment noted. No response needed.</p>
Shaw	<p>9. Finding and Recommendation: The data interpretation and analyses, which build on the District’s extensive previous experience setting MFLs for rivers, lakes and wetlands, is scientifically sound and supports the recommended minimum levels. The Indian Lake re-evaluation approach relies on the natural drawdown and inundation characteristics of stable vegetation communities and soils on site to set minimum frequent low, frequent high and average levels. SWIDS do not appear to be used for setting levels here, even as support for other indicators. The rationale for re-evaluating the previously adopted minimum levels for the lake appears sound, and the recommended levels are consistent with what is now the District’s standard approach for determining MFLs. However, because this is a re-evaluation of a previously adopted MFL, I recommend that the District include a section (or perhaps a table) in the report that more directly compares the currently adopted and recommended minimum levels, documents the reasons why re-evaluation was warranted and identifies any benefits to the resource of the new (recommended) levels. This is particularly important to avoid the erroneous impression that the District is merely changing the baseline for the minimum levels.</p>	<p>I inserted a table at the end of each level determination in the Results and Discussion which summarizes the primary criteria of the adopted and also the recommended levels. The explanation for the Indian Lake MFL reevaluation is in the Executive Summary, with a more detailed discussion of the recommended levels determination in the Results and Discussion.</p> <p>Reevaluation occurred because model results indicated Indian Lake levels not being met. Original field work at Indian Lake occurred during extreme high lake stage due to El Nino rainfall of 1998. Additionally, very little stage data existed in 1998 to indicate typical range of lake stage. Last, subsequent field work at Indian Lake later in 1998 occurred soon after the 1998 Firestorm which burned much of the forests around Indian Lake and further complicated the vegetation community analyses.</p>

Reviewer	Peer Review Comments	Resolution
Wilson	1. As I have stated before, it is my opinion that the SJRWMD MFL program is scientifically sound and at the forefront of the application of ecological principles to protection of instream flows. The six lake reports are professionally done and in conformance to the District’s MFL guidance.	No response required. Comment supports District approach
Wilson	2. The fact that my comments are critical of certain aspects of the reports is a reflection of my assignment, which is to identify issues and find possible problems, and should be read in that spirit. Many of the comments are at the nit-picking level and others are aimed more at suggesting improvements to future reports rather than changes that need to be made in these drafts. Many comments reflect the fact that different authors addressed a given issue in different ways, which may not matter. Put another way, I don’t expect all comments to be responded to.	No response required. Comment supports District approach
Wilson	3. There are two areas of substantive comments that I do need think to be addressed. One is that these reports all deal with sandhill lakes where hydrology is not as straightforward as SJR floodplains and lakes, but extremely important to how the MFLs were approached. Each report would benefit from an extended discussion of hydrology and its relation to soils and vegetation (see detailed comments below). Moreover, based on our field visits I expected similarities in MFL approach and results. However, the reports differ in this regard as much or more as they are similar. Each author needs to stand back and feel comfortable that his/her results are consistent with the sandhill lake literature.	<p>The District recently developed a lake classification procedure (Epting et al. 2008) based upon statistical measures of exceedence and level change analyzed with principal component analysis. Stage range and stage rise/fall symmetry accounted for 88% of the variance of six original hydrologic variables. These indicators of hydrologic regime classified 135 lakes into eight lake classes. The generally close correspondence of the lake classes to geomorphic and landscape classification lends strong support to the utility of this classification approach.</p> <p>Each report now includes a discussion of the assigned lake class and more details regarding the geomorphic, landscape, and the relationship between hydrology and the observed patterns of soils and vegetation. While a number of the lakes are assigned to the same lake class, some difference in approach and results is clearly expected. For example, Indian Lake is very unusual for its lake class in that it has extensive areas of deep organics. As a result, a minimum average level was set focusing on protection of these soils. Also, different management practices at each lake may result in differences in the type of plant communities found at the lake “rim,” where the Frequent High levels were set. Mowing, tree planting, and cattle grazing would be expected to result in different plant communities than fire or the absence of any management scheme.</p>
Wilson	4. The second substantive area is that the MFLs, and especially the FH, recommend a fairly large increase in “permanent drought” hydrology. I didn’t find the justifications for this to be sufficiently rigorous or entirely satisfactory. Again, there is more detail below.	More explanation was included in the reports Results and Discussion sections to clarify the justifications. See details below.

Reviewer	Peer Review Comments	Resolution
Wilson	5. From this and other reports reviewed in the same timeframe, it appears that SJRWMD has gone a long way toward settling on a consistent outline for its MFL reports, but is not yet quite to the point of complete consistency. I encourage the District's continued efforts toward settling on a "best" organization.	The report format and outline will be re-evaluated to achieve consistency across reports to the extent possible and within reason.
Wilson	6. One specific example where organization is not consistent is that in the section called "General Information" or "Background Information" (neither one a great title), wetlands are sometimes presented before soils, sometimes after. As the soils are the foundation, but dependent on hydrology, I suggest soils go before wetlands.	Comment noted and addressed in each report re-write.
Wilson	7. Some reports provide a lot of detail on published soils maps and descriptions; others ignore this almost entirely. Since MFLs are based on field soils data, cutting out the details in this background section would help shorten some reports. A citation to the published soils survey, a map and perhaps a table would provide good routine content; or just the citation.	Comment noted. An effort was made to provide consistency between reports..
Wilson	8. Land use maps are in some reports and probably should be in all.	Comment noted and was addressed in the current reports.
Wilson	9. Sylvan has a section on morphometry which was helpful, and I suggest something similar be in all future reports.	More lake morphometry information will be added to future reports, depending on data availability
Wilson	10. There is quite a variation in Executive Summary content, detail and organization. It might be useful to develop a standard template that ensures that the essential information, and nothing more, appears at the beginning of the report. If there is already guidance to this effect, then please consider how best to ensure the guidance is followed in future reports.	Format and content will be standardized for future reports. Some effort has been applied to rectify this issue in the current reports.
Wilson	11. The Executive Summaries differ most dramatically in that some have extended discussions of each MFL, others simply contain the summary table. I think one paragraph on each MFL, plus the table, is about right.	Comment noted. Some effort has been applied to rectify this issue in the current reports.
Wilson	12. Another difference in the Executive Summaries is that some discuss methodologies (including SWIDs) and/or the hydrologic model; others don't really do much with that; and those that do have such discussions say different things. I think at least one somewhat consistent paragraph on the method and on the hydrologic compliance analysis is worth having, though it isn't essential in the current drafts.	Comment noted and will be applied in all future reports.
Wilson	13. Two statements appear in some reports and probably should be in all. One is the "intended to support" (e.g. Avalon) paragraph and the other is the "not effective until" and "reassessment" text (e.g. Johns).	Comment noted. Reports updated to include similar language to address these issues.
Wilson	14. Of all the Executive Summaries, I thought Sylvan came closest to having the necessary material without too much else. I suggest it be reworked per specific comments and shared as an example for others to at least consider in future reports.	No response necessary.
Wilson	15. There are report sections that are effectively boilerplate, such as the	Comment noted and will be applied in all future reports.

Reviewer	Peer Review Comments	Resolution
	description of the MFL program, but the language still varies a bit from report to report. Making this true boilerplate, where each author copies from a master, is probably advisable for future reports.	
Wilson	16. All the reports have a location map early on (except Indian Lake). But they are too large in scale to allow most folks to know exactly where the lake is. I recommend a more regional location map. This is something for consideration in future reports, though it wouldn't hurt if it could be addressed now.	More regional location maps were added to the existing reports and will be added to future reports.
Wilson	17. Note that many of the color graphics are hard to read when printed or copied in black and white. Something to keep in mind as future graphics are prepared.	Comment noted.
Wilson	18. The next comments all relate to the fact that the reports use a large amount of verbiage to describe various aspects of MFLs in general and the MFLs of each particular lake. For future reports, the more this information could be captured in text tables, and the text shortened, the better. By text table I mean something that is used where the same kinds of things are said repeatedly about different subjects -- in this case, for example, the text on each different MFL has the same pattern and is well suited for a table.	Comment noted and will be applied in all future reports.
Wilson	19. Three examples of text tables could be: what each MFL level is intended to protect and what they typically represent as to frequency and duration; the field transect results (all transects on one table); how the MFLs relate to observed vegetation, observed soils and modeled hydrology.	Comment noted and will be applied in all future reports.
Wilson	20. It is not clear how the District intends to address the 10 factors. In these reports they are typically noted as part of the introduction and there is an expanded listing a bit later. But there is no standalone section that then discusses the role of the factors in setting MFLs, or the effect of the MFLs on the factors. At most there are mentions of individual factors somewhere in the body of the report. In other words, the factors are highlighted, but their application is buried. I suggest there be a section on the factors "as applied" near the end of each MFL report. This would state whatever is to be stated on this subject, even if it was judged that none of the factors required any in-depth study. This would be useful in the existing reports as well as future ones.	Comment noted. Reports updated to include language to address the issues regarding the assessment of the WRVs and clarify the reviewer's comments.
Wilson	21. The essence of MFLs is the relationship between hydrology and soils/vegetation. Indeed MFLs are as much about hydrology as anything else. The reports present some information on hydrology (mostly stage data) without any analysis. I suggest there is a need to do more, and in particular to demonstrate an understanding of essential hydrologic relationships for each lake as a predicate for defending each MFL determination.	Each report was updated to include an expanded section on hydrology and to demonstrate an understanding of essential hydrologic relationships for each lake summarized in Wilson comment No. 22. However, staff believe the details regarding hydrologic modeling and compliance are more appropriately detailed in the hydrologic modeling reports for each lake and the hydrologic compliance appendix in each report. These will be more extensively referenced in the MFLs determination reports.
Wilson	22. Specifically, each report should explain what it is that controls the hydrology	See response to Wilson comment No. 21.

Reviewer	Peer Review Comments	Resolution
	(that then controls the ecology), and how the controls may have changed (or not changed) over time. For these lakes that discussion will consider runoff, surface precipitation/evaporation, outlets, and seepage. Since there are model reports for each lake, it might be possible to cut and paste at least some of this in-depth hydrology into the existing reports.	
Wilson	23. I understand most if not all the lakes are sandhill lakes. The characteristics of sandhill lakes receive extensive attention in some reports (e.g. Avalon, see pp. 19-21) and are barely mentioned in others (Indian Lake). The fact of sandhill lakes is justified as a reason for no MA in some lakes, making it unclear why MA is defined in others.	See response to Wilson Comment No. 3. A justification was added in each report to clarify why or why not a MA was determined.
Wilson	24. An issue that reflects sandhill lake hydrology is that one might expect the exceedence graphs to be similar and to not show the mean as representing a particularly common condition, i.e. (per CH2M-Hill 2005) “because they appear to lack a mean around which the system is organized”, and this is used to justify no MA. In fact, several of the hydrographs suggest that conditions near the mean are common enough that they would impact vegetation but there is no MA (example Johns Lake) while others show the mean to be just another number in a highly variable system, but there is an MA (example Indian Lake).	See responses to Wilson comments No. 3 and 23.
Wilson	25. Suggest putting the MFLs on the curves showing stage history (as done for Hiawassee).	Figures were updated to include MFLs labels.
Wilson	26. One particularly important aspect of hydrology is the compliance analysis. The use of MFLs to impose pumping limits creates impacts on the regulated community and offers opportunity for controversy and legal challenge. Therefore I think it is particularly important that the compliance analysis be as transparent as it can be. Rather than rewrite the compliance appendices, I suggest an expanded discussion in the text.	The compliance section of each report was expanded to clarify how MFLs constrain the regulated public. The interaction of the Floridan aquifer and lake levels was described and drawdown limits were referenced in each report.
Wilson	27. One specific element in this discussion would to summarize the causality relationships determined in the hydrologic model and in particular to present something that shows that aquifer levels predict lake levels.	See response to Wilson Comment No. 26.
Wilson	28. Only Indian Lake contains a statement as to the result of the compliance analysis. I recommend the aquifer drawdown limit be stated explicitly, with whatever caveats are needed. It should be clear that the value is a limit on the long-term average, i.e. it doesn't mean that the hydrograph can't decline more than the indicated level during droughts.	See response to Wilson Comment No. 26.
Wilson	29. The compliance analysis appears to assume constancy in other controls of lake levels, when the available information does not make that a certainty. Is this covered by the “reassessment” language?	See response to Wilson Comment No. 26.
Wilson	30. The bottom line results of the compliance analysis should be given a higher profile in the report, show up in the Table of Contents, and be stated in the	See response to Wilson Comment No. 26.

Reviewer	Peer Review Comments	Resolution
	Executive Summary. It might properly be the last item in the main body of the report.	
Wilson	31. I'm not sure I understand how the District uses SWIDs. In some reports (Johns) it looks like a SWIDs graph was used to determine an appropriate duration-frequency and the MFL selected accordingly. In others the MFL was determined by vegetation and "supported" by the SWIDs.	More explanation of SWIDS was included in the methods section of each report. The SWIDS data are used as supporting evidence and not as the primary criterion. The reports were edited to reflect this more clearly. SWIDS was not used for Indian Lake.
Wilson	32. Whichever way, there seems to be a pattern in which it is considered appropriate for the MFL to allow future conditions to be in the "dry" part of a SWIDs. This is necessary for there to be allowable drawdowns, and I recall it reflects some prior peer review suggestions. Somewhere the approach needs to have rigorous justification and in particular the existing "dry" SWIDs need to be for healthy communities where the hydrology is comparable to the lake being assessed.	See response to Wilson Comment No. 31. The current SWIDS dataset was re-evaluated to "cull-out" any systems that were not considered "healthy," to the extent possible. SJRWMD intends to refine the SWIDS analysis by expanding data collection by lake class in an effort to reduce data variability and uncertainty regarding SWIDS application.
Wilson	33. The shrub swamp SWIDs in Johns Lake and Prevatt are different.	The shrub swamp SWIDS graphs should be different for these lakes. The Prevatt report references the <u>maximum</u> elevation of the shrub swamp, while the Johns lake report references the <u>mean</u> elevation.
Wilson	34. The Sylvan Lake report shows the effects of the proposed MFL compared to existing conditions on each SWIDs graph. I thought this was excellent and recommend it be used universally.	Reports containing SWIDS analysis graphs were updated to compare existing and MFL conditions as done in the Sylvan Lake report.
Wilson	35. For some lakes, sandhill lake stage indicators were evaluated, but this was not done at all lakes. Will the District be able to defend the absence of this approach in some reports?	Examination of the findings from the sandhill lake soils indicator method produced inconsistent results for these particular lakes. A decision was made to remove any reference to the approach from all reports.
Wilson	36. The discussions of sandhill lake indicators make it sound like these were used as the basis of the MFLs, but when the MFLs are actually presented, they are based on vegetation, with soils observations "supporting" the MFL determination. Perhaps there could be a clarifying sentence or two when the soil indicators are introduced that makes their role in the process more clear.	See response to Wilson comment No. 35.
Wilson	37. The soils sampling sections should probably all either have a "we looked for these indicators" description (Avalon is an example where this is done).	The sandhill lake soil indicators were not examined during routine field data collection efforts at each lake. See response to Wilson comment No. 35.
Wilson	38. Some reports discuss calculations of TWSV, others don't. For those that do, it may help to indicate why this was done and how the results were used. For the others, perhaps the file needs to have a note as to why.	The TWSA analysis was only completed for the Sylvan Lake report. Results from the TWSA analysis can sometimes be spurious due to the occurrence of opportunistic plant species in communities where they do not typically occur, due to hydrologic excursions (high or low water levels) of various durations / frequencies. In attempt to make the report analyses /

Reviewer	Peer Review Comments	Resolution
		format consistent, the TWSA analysis was removed from reports were it occurred.
Wilson	39. For the vegetation sampling in particular, it seems as though there should be a standard methods reference that could be cited, so that the report could focus on the transect results.	The MFLs Methods Manual is referenced in each report and contains more information on vegetation sampling. The discussion of vegetation and other sampling in the methods section of each report is designed to orient the reader. An attempt has been made to stream-line the methods section in each report, where possible.
Wilson	40. I will repeat here my general concern that the MFLs seem to reflect a basic assumption that each and every ecosystem can sustained even if it receives substantially less inundation. Is this supportable?	Yes, we do believe that this assumption is supportable. A key assumption of the SJRWMD method (Neubauer et al. 2008) is that steady state or dynamic equilibrium conditions do not exist between the hydrology and the ecology of a system. That is, not all measurable changes to system hydrology result in subsequent changes to the ecology or the water resources of a system. Thus, defining hydrologic thresholds of events (i.e., MFL return interval components) is more important than developing response curves that describe relationships between flow alteration and ecological responses, habitat-flow curves that define habitat availability at a given flow, or species-discharge relationships that predict numbers of fish species from mean annual discharge. Steady state/equilibrium conditions and the importance of relatively short time scales are assumptions made when developing and using such curves. For the SJRWMD method, a threshold is the return interval of an event beyond which an effect begins to be produced.
Wilson	41. Each report contains (usually as Figure 1) a “Hypothetical percentage exceedence curve”. I strongly recommend that a “real” curve be developed which compares the existing versus MFL defined condition for each lake. This should be done for the current drafts.	An actual exceedence curve is available in each report. See the corresponding hydrologic modeling report for a more accurate exceedence curve based upon long-term modeled hydrology and the MFLs.
Wilson	42. The FH indicators vary considerably between the lakes - two shrub swamps, two wet prairies, one hardwood swamp, one transitional swamp. For future reports it might be of value to cite local edaphic or other factors that explain why a particular community is found at the dry end of transects on a particular lake.	Comment noted and will be addressed in future report.
Wilson	43. The return interval for the 30-day duration MFH ranges from 2 to 5 years. This seems like a large variation and the 5 year return (Sylvan) seems especially long.	Comment noted. See response to Wilson Comment No. 44.
Wilson	44. The changes in terms of percentage of years when the 30-day level will be reached also seem large - for Sylvan the frequency is cut in half, and for most	Sylvan has a unique hydrologic condition caused by a rather large increase in DCIA and concomitant rise in lake stage to

Reviewer	Peer Review Comments	Resolution
	others the change is one-third.	produce a new hydrologic regime. Therefore, Sylvan Lake is an outlier when compared with the other lakes. The Sylvan Lake report was updated to clarify what changes occurred in the hydrologic regime due to increased basin runoff (~200% increase in DCIA) and why the MFLs statistics seem abnormal.
Wilson	45. I would judge the wet prairie analysis (Avalon, Hiawassee) is about as far as the District should go in using SWIDs to justify increased withdrawals.	Comment noted. We understand and agree with the reviewers' concerns regarding uncertainty with the SWIDS analysis.
Wilson	46. See comment on astatic nature of sandhill lakes with respect to the MA MFL.	No response necessary.
Wilson	47. The return interval for the 120-day duration MFL ranges from 3 to 5 years. This seems like a large variation.	See response to Wilson Comment No. 44.
Wilson		
Wilson	Wilson Comments specific to Indian Lake report	
Wilson		
Wilson	48. This is the only title page where the report is assigned a complete number. The dates may need to be changed.	Communications will take care of this. Corrected on the draft also.
Wilson	49. The Indian Lake Executive Summary is longer than most and contains much material not found in other MFL reports. Specifically, other reports typically don't have the 2nd and 3rd paragraphs; don't provide such an extended discussion of the individual MFLs; and don't have a conclusions and recommendations section. I do think the MFL discussions belong, but the others could be omitted.	The Indian Lake executive summary is longer due to multiple previous in-house reviews and also a description of the adopted levels vs. the recommended levels with an explanation for the Indian Lake MFL reevaluation.
Wilson	50. This Executive Summary doesn't have the standard final paragraph on "not effective until" and "reassessment". It also would benefit from the "intended to support" paragraph.	At the time this draft of the Indian Lake report was written, the mantra was to assume the reports would be finalized AFTER the levels were adopted. Thereby eliminating confusing as to what the current MFLs are for Indian Lake. We can certainly insert this "standard final paragraph"
Wilson	51. Appendices should have names and these should be included in the Table of Contents.	Appendices are now named.
Wilson	52. Page 1. To be consistent other reports, standard language on the intent of MFLs should be included either in the first paragraph (where other reports have it) or in the program overview (which may make more sense).	Done
Wilson	53. Recommend a location map be included.	Figure 3. Location map showing the lake in relation to several major highways. Added an additional location map showing the FL peninsula from DeLand to Daytona Beach, including the Atlantic Ocean..
Wilson	54. P. 4. Type glitch in figure title: "exceedence".	Corrected.
Wilson	55. P. 5. If other reports are a guide, the section on methodology is out of place and should come after the background information on the lake. Also, other reports use the headings "Methods" and the sub-heading "Field Transect Site	I think the Methodology fits better before the background information on Indian Lake since after the background info I immediately describe the field work results.

Reviewer	Peer Review Comments	Resolution
	Selection”.	
Wilson	56. P. 9. Possibly connect the dots on the stage graph.	Choose to not connect dots in order to illustrate stage data collection gaps in the lake gage data period of record.. Stage data is missing for relatively long periods of time for Indian Lake
Wilson	57. P. 10. This is the only report that didn’t have a section on SWIDs.	SWIDS did not add or assist in the levels determination. Indian Lake is definitely an anomaly with deep organic soils, residing in a deep sand ridge position on the landscape and yet with bayhead, hardwood swamp and relatively stable shallow marsh.
Wilson	58. P. 13. This graph doesn’t look “astatic”.	No response.
Wilson	59. P. 15. Other reports have more info. on the lake itself at the beginning of the General Info. section.	Added additional information on recharge, physiographic province, land use and sandhill lake commentary. Indian Lake is a small, remote, relatively pristine lake tucked away in the Tiger Bay State Forest. Thus Indian Lake lacks urbanization issues and control structures. I feel I described it well, with information about the Tiger Bay State Forest, recreation use, wildlife, CUP information, etc.
Wilson	60. P. 17. Bayhead vegetation is discussed at length in the report and is interpreted as depending more on ground water seepage than lake inundation for its wetland characteristics, hence it was not considered in setting the MFLs. The literature cited seemed somewhat generic and the discussion of hydrology somewhat speculative. It would be useful to state any hard evidence that the exclusion of bayhead vegetation from the MFL assessment is appropriate at this specific lake, especially since the transect shows this community to occur at something pretty close to the FH (see Figure 9) and the plant community is fairly similar to hardwood swamp.	One objective, discussed in the Indian Lake report, was to emphasize that bayhead communities are primarily maintained by groundwater seepage. So that, while surface inundation does occur in bayheads, it’s frequently from heavy rainfall and poor soil drainage, and less frequently from lake flooding. I think the citations included emphasize that point. And yes, the vegetation is fairly similar to the hardwood swamp downslope with the main difference being the absence of swamp gums (<i>Nyssa</i>) and cypress (<i>Taxodium</i>) in the bayhead.
Wilson	61. P. 18. Figure 18 shows a stage curve that is very different than the other lakes. In particular, the classic seepage decline relationship is not seen. From the hydro. report this appears to reflect aquifer conditions, and probably deserves a comment in the text.	Comment noted.
Wilson	62. P. 19. In the text (p. 17), Figure 5 is described as if it is based on data, but the Figure itself refers to simulations. This curve is quite different from most of the sand hill lakes, with almost no flattening in the middle. See general comments regarding MA.	The stage duration curve is based on simulated data. Corrected the text to clarify. Simulated data used due to the large data gaps with the period of record data.
Wilson	63. The wetlands graphic (Figure 6) needs to be supported by at least some brief descriptions of the mapped communities, rather than deferring all discussion to the results section. This would be consistent with other reports.	Since the two transects at Indian Lake traverse only one wetland community type based on the SJRWMD wetland map this is a brief general discussion. Other lakes have multiple wetland communities map along the perimeter, thus resulting in a lengthy general wetland discussion.

Reviewer	Peer Review Comments	Resolution
Wilson	64. This is the only one of the MFL reports in this cycle that did not discuss SWIDS.	SWIDS did not assist or strengthen the Indian Lake levels determination. Indian Lake's ecological characteristics more closely resemble a stable, dark water lake due to its deep organic soils, hardwood swamp, bayhead and relatively stable shallow marsh. Meanwhile, Indian Lake is located in a deep sand ridge and experiences moderately large stage range fluctuations. Thus, when Indian Lake vegetation, elevation and hydrologic data were analyzed with SWIDS, the Indian Lake vegetation communities and organic soils were outliers and the SWIDS did not strengthen the Indian Lake levels determination discussions.
Wilson	65. P. 31-32. These figures would benefit from some additional annotation or text discussion. shows shallow marsh extent.	These figures are discussed more in the MA and ML determination sections
Wilson	66. P. 52. The other reports are more generic in discussing ML determination -- in particular discussions of specific FH, MA and FL criteria and determinations are in the discussion of the recommended MFLs.	Comment noted. No response needed.
Wilson	67. The text that begins on p. 52 is an example where much of the narrative could be captured in one or two tables. One table would set out the essential generic hydrology and soils for each level. The second table (or the right side of a single table) would be the site-specific findings for each level.	We will consider this for future reports.
Wilson	68. P. 54-55. The FH goes from once per 2 to once per 3 years, which seems a sufficiently big change that some discussion is needed.	There is discussion regarding the 1:2 yr event becoming a 1:3 yr event. I embellished this with sandhill lake comment..
Wilson	69. P. 55. While rainfall expected once per 2 years is commonly considered "normal", I'm not sure once in 3 years is.	Comment noted.
Wilson	70. P. 59. Where soil surveys are simply being quoted, some type of special formatting is suggested.	Soil Survey is in italics. I originally had the soil survey quotes demarcated with bullets but "communications" removed them.
Wilson	71. P. 64. The CDM reference makes it sound like there is a competing MFL report.	Added comment that emphasized that the model had not been completed when the original levels were adopted for Indian Lake. However, fail to see the CDM reference on this page.....
Wilson	72. Appendix B does not add value. It belongs in a methods manual.	The vegetation field sheet is referred to in the methodology discussion. Consider removing it in future reports?
Wilson	73. Is it correct that Figure C11 indicates that the selection of the minimum average has no margin of safety? Is the analysis accurate enough for this to be a comfortable determination?	Yes. That is correct. We think the analyses results in a reasonable determination.
Upchurch	1. The report mentions that the stage data for the lake had a limited period of record (weekly data, March 1988 to present). As a result, stage data were apparently synthesized to extend the period of record (Figure 5 states that SSRR simulations were run for 1976 to present). Robison (2007, unpublished) is cited in	The modeling report (Robison 2009) will be published in parallel with the Indian Lake MFL report. We feel that the Robison 2009 report adequately provides this information and will be readily assessable from the SJRWMD web page.

Reviewer	Peer Review Comments	Resolution
	<p>several locations, apparently to refer the reader to the simulation modeling. This reference should be included in the report as an appendix. As an unpublished document, this reference will not be available to the average reader, so a very critical piece of the MFL-development process is not available.</p>	
Upchurch	<p>2. Similarly, Appendix C by Robison discusses how to use a stage duration curve and mentions how the groundwater flow model was used to determine the effects of groundwater withdrawals on lake levels. There is a need to present more about the results of the groundwater model, including current drawdowns and sample effects of projected withdrawals on Floridan and surficial (?) aquifer levels. What is level of discitization of the model and sensitivity of the model to lake levels and vice versa? What does model say the water budget is at/near the lake?</p>	<p>A report (Williams 2006) describing the groundwater model is cited in the Indian Lake MFL report. Additionally, the modeling report (Robison 2009) fully explains Indian Lake hydrology. Both these reports are or will be readily available on the SJRWMD web page. In an attempt to limit the increasing size and scope of the MFL reports, we refer the reader to these additional reports.</p>
Upchurch	<p>3. Also, the interactions of the lake with the Floridan are not discussed in the report. This brings up a lack of adequate background information, including the following.</p> <ul style="list-style-type: none"> a. Hydrological setting of the lake (flow through lake, connections with the Floridan aquifer, perched, sandhill lake, etc.) b. Water budget c. Reconstructed stage hydrograph (range of stages, population metrics, any historical shift related to rainfall or land-use changes, etc.) d. How quickly does stage change during major rainfall events (an indicator of aquifer interactions) e. Details of the CUPs for nearby wellfields and stress patterns f. Behavior of surficial and Floridan aquifer water levels near the lake, including monitoring facilities and data evaluation g. Aquifer potentials relative to lake levels h. Importance of seepage from shallow soils and the surficial aquifer to lake levels <p>While not critical, a brief description of the stratigraphy in the vicinity would be helpful to understand the relationship of the lake bottom to the top of the Floridan</p>	<p>Added additional information about the hydrological setting of the lake, and general sandhill lake description.</p> <p>Most of these comments are way beyond the typical MFL report and some of them were addressed in Appendix C.</p> <p>Again, please refer to Robison (2009) and Williams (2006).</p>

Reviewer	Peer Review Comments	Resolution
	aquifer would be enlightening	
Upchurch	4. Statement is made that there are no inflows or outflows; what about overland flow along the apparent strand from Coon Pond and Scoggin Lake?	Added comment that overland flow may occur to the north toward Coon Pond during extremely high rainfall events but it has not been quantified and likely occurs only for very brief time periods.
Upchurch	5. A description of a sandhill lake and how it functions would be useful.	Sandhill lake information added to Indian Lake MFL report.
Upchurch	6. How are lake levels monitored? What happens when the staff gage is out of the water? How are these data handled?	The lake levels are typically monitored weekly manually. An additional staff gage was located far from shore in deep water.
Upchurch	7. There is a need for more positive (definitive) statements about the consequences of revising the MFLs. The text implies that there is a reduction in return intervals for the proposed MFLs. I understand that this is to bring the MFLs in line with reality and improved data. However, readers may not understand this and be concerned that there is a relaxation in MFLs standards or significant harm criteria. I suggest that these issues be attacked head-on in the conclusions.	There is a solid explanation in the Executive Summary as to why the re-evaluation of Indian Lake and also how the levels have changed. Should I copy some of this to the Conclusion and Recommendations? Meanwhile, Barbara likes the very brief Conclusion and Recommendation....
Upchurch	8. The term “drawdown” is used in several locations related to the proposed MFLs (see, for example,, this use on page 53). This term needs to be defined; it may be misinterpreted.	Soil water table drawdowns were used to calculate the MA and ML levels. The levels determinations in the results and discussion does describe drawdown in reference to the soil water table. This information is also included in the Minimum Levels Determination Criteria section. For example, the MA level criterion for Indian Lake equaled a 0.3-ft soil water table drawdown from the average soil surface elevation of the deep organic soils observed in the shallow marsh and hardwood swamp surveyed at both the Indian Lake transects.
Upchurch	9. Page 12 indicates that the model is steady state. Any data suggesting that the plant communities are steady state, too. What is the rate of change of the communities relative to changes in hydrologic conditions, lake levels, etc.?	We do not have the data to answer this question.
Peer Reviewer Comments - August 2009		
Upchurch	1. The revised MFL document reads well and is a great improvement over the first draft. Jane Mace and other staff are to be complimented.	No response required.
Upchurch	2. The relationships of the proposed Indian Lake MFLs and the 10 environmental criteria are very well developed in this version of the MFL report. The use of fish and wildlife habitats & passage of fish criterion is well justified in this edition. The new tables dealing with the criteria are very helpful.	No response required.
Upchurch	3. I note that Robison’s hydrologic model report is being revised. Per the	Yes.

Reviewer	Peer Review Comments	Resolution
	<p>comments in the Peer Review Resolution table supplied with this report, I am assuming that much of the hydrologic information (e.g., water budget) I thought should be included in the MFL document will be included in Robison's revised document.</p>	
Upchurch	<p>4. I still feel that it is important to provide the reader with a sound background geologic and hydrologic summary, and the one included in this report is still very weak. I hope that the Robison report will fill this need.</p>	Comment noted.
Upchurch	<p>5. With the exception of the issues enumerated below, I am satisfied that the MFL document is sufficient and accurately defends the proposed MFLs. This conclusion is based, in part, on my assumption that Robison's revised report will properly set the stage for the physical setting of Indian Lake in terms of geologic and hydrologic conditions, including the need to show a water budget for the lake.</p>	No response required.
Upchurch	<p>p. 2, para. 1: This paragraph is clearly intended to explain why a separate document evaluating the 10 statutory MFL criteria does not exist for Indian Lake. I am concerned that the paragraph starts on a negative. Suggest that the paragraph be more assertive and proactive. For example, "Evaluation of these 10 MFL criteria for is straight forward for Indian Lake. Therefore, unlike larger and more complex systems (e.g., St. Johns River at SR 50,...) where a separate document was prepared to evaluate the applicability of each criterion to the MFL, the criteria are discussed in this report."</p>	Corrections made.
Upchurch	<p>This same statement can be used at the last paragraph on page 13.</p>	Corrections made.
Upchurch	<p>Table 1: I like this table. It lays out why fish and wildlife habitats & passage of fish is the most restrictive criterion.</p>	No response required.
Upchurch	<p>p. 18, para. 1: Again, please note that the geomorphic subdivisions of Brooks are not widely accepted. If you must use the Brooks geomorphic map, please reference Brooks with the physiographic terminology, not just at the bottom of the paragraph where you state that the soils are well drained. In fact, did Brooks really discuss drainage and stratigraphy in his map?</p>	Corrections made.
Upchurch	<p>p. 23, para. 3: This paragraph mentions simulated stage data. How were data simulated?</p>	Text clarified.

Reviewer	Peer Review Comments	Resolution
Upchurch	Figure 7: The labels on this graph are confusing. The legend again mentions simulations and indicates that the stage duration curve is for the period of record (measured plus simulated?) of 1976-2005. Then the line is labeled 2005. Is the stage duration curve for 2005 or the period of record?	Text clarified.
Shaw	I have read and reviewed the edited MFL reports for the above referenced lakes, as well as the peer review resolution documents for each. I believe the District has done a great job addressing both the spirit and the letter of my previous peer review comments on the original draft documents from April 2009. I particularly appreciate the additional explanation of how the SWIDS technique was used and additional assessment on the SWIDS data that was done in response to my and other peer reviewers comments. I also found the responses to other peer reviewers comments helpful and resulting changes added much to the readability of the latest drafts and the confidence in the results.	No response required.
Wilson	SJRWMD staff has done a good job in responding to my prior comments. For most instances where I might prefer a bit more be done, I don't see it necessary or appropriate that additional changes to the reports be made at this time. I have limited my comments to a few substantive issues, mostly for the record for the next round of reports, and to a few editorial matters specific to the Lake Hiawasse report. I do not anticipate any need for further review on my part and believe that once editorial changes are finished, the reports are ready to go public.	No response required.
Wilson	1. By far the most important aspect of the MFL reports is the need to give further thought to the issue of how much change should be allowed. There is a systematic outcome of these MFLs which will allow significantly less inundation, especially for the FH. The response to my concern about the "less inundation is okay" underpinning of the MFLs was interesting and one I hope we will have a chance to discuss at some future time. In particular, while I agree with the response that the system is not steady state, that doesn't mean that systemic changes can be dismissed. We need some field data on modified systems to really figure this out.	Comments noted.
Wilson	2. The rewrites generally responded well to my request that the reports demonstrate an understanding of essential cause-effect hydrologic relationships for each lake. Certainly the information added to the Indian Lake report was helpful.	Comment noted.
Wilson	3. Regarding my general comment on the need to explain how sand hill lake hydrology relates to soils and vegetation, the response documents indicate	Comments noted.

Reviewer	Peer Review Comments	Resolution
	that the reports have been substantially changed. The Indian Lake report did a good job in this respect, though I found the discussion of “classification” buried a bit deeply, and thought that overall the write-up was not as enlightening as some other lake rewrites (e.g. Sylvan).	
Wilson	4. The response document indicates that “Indian Lake is very unusual for its lake class in that it has extensive areas of deep organics. As a result, a minimum average level was set focusing on protection of these soils”. This is an important point; however the report itself does not make this linkage as clear as it is made in the response.	Comments noted. Clarification will be added to the report.
Wilson	5. Over and above the issue in No. 1, there is a need for the reports to explain the logic of what is being proposed, i.e. to justify the changes (even if I don’t agree with them!). Indian Lake is much improved, but could be better still. Sylvan Lake is perhaps the best model in this regard.	Comments noted.
Wilson	6. Regarding my comment on the inconsistent organization of reports, the new versions are better but still show a fair amount of variation. There were many responses that attribute this problem (and other editorial issues) to an outside force. I’m not sure what your peer reviewers can do to help staff in this regard, but feel free to offer me up as an advocate for common sense and good practice, if that would help.	Comments noted.
Wilson	7. The reports generally did well in improving the executive summaries, the discussions of soils and land use, and more. I also appreciate the commitment to further improvements on future reports. For Indian lake, I particularly appreciate the text tables which summarize the criteria and hope the concept will be incorporated into the master guidance for any future MFL report.	Comments noted.
Wilson	8. For future reference, it appears my comment regarding Figure 1 was not clear, as the response was not what I expected. My recommendation is that the hypothetical relationship in Figure 1 be made real in a separate figure, in which the actual exceedence curve is compared to one that has the frequency characteristics allowed by the proposed MFLs.	Comments noted.
Wilson	9. I was quite astonished (and very pleased) with the amount of information now presented on the 10 factors. For Indian Lake, I note the acronym WRV is used (twice) without definition.	Comments noted.
Wilson	10. Some general comments on the 10 factors are as follows. First, I suggest some sort of continuation title for multi-page tables. Second, the District may want to reconsider whether it wants to conclude that recreation water	Comments noted.

Reviewer	Peer Review Comments	Resolution
	depths are adequate for “safe operation” given the lack of substantive analysis. Third, I’m not sure “navigation” shouldn’t be NA given all the issues are covered under recreation.	
Wilson	11. I appreciate the new compliance discussion. I still am concerned that the current approach is not sufficiently clear in explaining the extent to which pumping controls lake water levels, and not sufficiently transparent in revealing the implications of the MFLs to the regulatory community.	Comments noted.
Wilson	12. I now understand the importance of organic soil protection at Indian Lake, but am a bit confused as to how an MFL of 35.0 relates to such soils given the steepness of the stage curve at that elevation.	Comments noted. Clarification will be added..
Wilson	13. With respect to SWIDs, the general response indicated that more explanations were included in the methods section of each report. I didn’t find that for Indian Lake. Which is okay if they were not used.	Comments noted.
Wilson	14. My comments that were specific to Indian lake all seem to have been addressed sufficiently for now.	No response required.
Wilson	15. Not sure you need the new paragraph on page 2 (it is also on p. 13).	Comment noted and corrected.
Wilson	16. There are two extra words, “An explanation”, at the bottom of p. 15.	Comment noted and corrected.
Wilson	17. Finally, as I complete this assignment I wonder if we did better under the old approach whereby the peer review was done as a team effort. I’m not endorsing the part of that approach whereby we had to fill out a pre-fab matrix, but rather that the process required more effective interactions that benefitted the final product. Working in isolation this time around was not as satisfying and perhaps it was less effective.	Comment noted.