

SJRWMD Responses to Peer Review and Stakeholder Comments Regarding Draft MFLs for Apshawa Lake South, Lake County, Florida

6/11/2024

Introduction

Independent scientific peer review was conducted for the draft Apshawa Lake South MFLs Report by Bob Burleson, a Senior Water Resources Engineer with Geosyntec and Dr. Tony Janicki, a Senior Principal Scientist with Environmental Science Associates. Peer review comments on environmental criteria, minimum levels and hydrological data analyses were based on review of the following documents:

Sutherland, A.B., F. Gordu and A. Karama. 2023. Minimum Levels Reevaluation for Apshawa Lake South, Lake County, Florida. Draft Report. Bureau of Water Supply Planning, SJRWMD.

Appendix B: Hydrological Analyses;

Appendix C: Environmental Data;

Appendix D: DEM Development; and

Appendix E: MFLs Assessment

This resolution document provides SJRWMD responses to comments submitted by the peer reviewers on May 10, 2024 (see attached for final peer review technical memorandum [Final TM]; Geosyntec 2024). In addition to comments submitted by the peer reviewers, several comments were also submitted by members of the general public. These are addressed in this document as well.

Peer Reviewer Comments / Recommendations:

Page 1. of peer reviewer's Final TM:

Overall, the report and associated appendices were found to be well written, with sufficient documentation to justify the report's conclusions, including relevant and primary water resource values (WRVs) used in the determination, supporting hydrologic and environmental data, and the minimum level proposed, including its basis. There were no fatal flaws identified. Some text should be added to clarify statements made in the report. Addressing the deficiencies in the documentation will greatly improve the defensibility of the MFL determination.

SJRWMD Response:

Based on comments made by the peer reviewers during a March 20, 2024, public meeting, it was determined that the “deficiencies in the documentation” referred to in the statement above were regarding the District’s “Hydroperiod Tool” methodology.

A few minor edits were made to the text to better explain the Hydroperiod Tool (HT) methodology. However, it was determined that, in general, sufficient detail was provided in the main report, Appendix E (Topobathymetric Digital Elevation Model (DEM) Development for MFLs Modeling) and Appendix F (MFLs Assessment) to fully explain the fish and DEM creation, HT tool use, wildlife habitats tested and assessment methods. In addition, an ESRI report was added as an appendix (Appendix D) that details the Hydroperiod Tool design and operation. As such, only minor additions were made to the main report.

Page 4. of peer reviewer's Final TM:

The District applied its Hydroperiod Tool to develop the minimum lake levels for the six fish and wildlife habitat metrics. While there is a comprehensive presentation of how the Hydroperiod Tool was developed and applied, consideration of providing more discussion of the tool and its application could be incorporated in the body of the text.

SJRWMD Response:

See response to peer reviewer comment #1 (pg. 1 of this document).

The following additional comments made by the peer reviewers were generally positive and did not require District response.

Pages 2 – 4 of peer reviewer's Final TM:

- The environmental data used to develop and assess the environmental criteria are considered adequate and appropriate. The SJRWMD provided a wide range of data to support its proposed MFL.
- The analyses used to assess the environmental criteria are considered appropriate. It allowed the District to apply its event-based analytical method as has been applied successfully in past studies and to apply its Hydroperiod Tool to develop the minimum lake levels for the six fish and wildlife habitat metrics.
- The District identified multiple environmental criteria to be evaluated to ensure that protective minimum levels are set at Apshawa Lake South. Criteria were chosen based on their potential to protect non-consumptive environmental values and beneficial uses (also called WRVs), whose consideration is mandated by Rule 62-40.473, F.A.C. These criteria include:
 - Minimum Average: One event-based metric, a Minimum Average, was developed based on the SJRWMD's conventional approach; and
 - Hydroperiod Tool Metrics: Multiple fish and wildlife habitat and recreational metrics were developed using the SJRWMD's geographic information system (GIS) based hydroperiod tool.
- Important choices were made to evaluate both fringing wetlands and in-lake habitats for six fish and wildlife taxa.
- The assumptions made by SJRWMD are reasonable and consistent given the "best information available."
- The hydrologic data used to develop and assess the environmental criteria are considered adequate and appropriate. Available lake level data for Apshawa Lake South extend from 1953 to the present. Precipitation data were available from 1916 to 2018. Long-term UFA groundwater data are available from two wells with at least 30 years of data available. Long-term potential evapotranspiration (PET) data are available from 1948 to 2018 from the Clermont NOAA station. The two models used to develop the long-term no-pumping and current-pumping time series [Hydrological Simulation Program–Fortran (HSPF) and East-Central Florida Transient Expanded (ECFTX) Groundwater Model] have undergone rigorous peer review. Estimates of groundwater use were developed using either annual water use survey data or were based on per capita water use, both considered best available information. The period of record for both surface water and

groundwater data were sufficient to develop strong relationships between Apshawa Lake South water levels and UFA water levels, as demonstrated in the report.

- The analyses used to assess the environmental criteria are considered appropriate. It allowed SJRWMD to apply its event-based analytical method as has been applied successfully in past studies and to apply its Hydroperiod Tool to develop the minimum lake levels for the six fish and wildlife habitat metrics.
- The biggest assumption is that the hydrological history will repeat itself. Given the uncertainties in future rainfall and temperature predictions, SJRWMD's approach of regularly testing this assumption by implementing an adaptive management strategy and periodic re-evaluations is considered reasonable.
- The data used to support conclusions and recommendations are considered adequate and appropriate.
- The assumptions used and conclusions made in the development of protective minimum levels, including identifying sources of uncertainty and their impact on development of protective minimum levels for Apshawa Lake South, were found to be valid and appropriate.

Stakeholder Comments / Recommendations:

Comments made by Mr. Angel Martin on 2/16/2024:

1. It was stated that the subject lake was in direct hydraulic connection with the Upper Floridan aquifer. Are there any well/drillers logs near the lake indicating that there may be some possible unconsolidated materials between the lake bottom and the Upper Floridan aquifer? Additional discussion of the connection between the lake and the Upper Floridan aquifer is needed.

SJRWMD Response:

Unless a well is drilled inside the lake, no geologic information would be useful to understand the connection between the lake and the aquifer. Analysis of lake levels and UFA levels in the vicinity provide better information about the connectivity of the lake to the underlying aquifer. The Apshawa Lake South HSPF model development report by Dynamic solutions (2009) discusses the water levels and flow exchange between the lake and the UFA in detail.

2. In his presentation Dr. Sutherland used the terms environmental values, environmental conditions, and environmental features. Not certain as to how these terms differ? Are environmental values similar to the values for the HSPF parameter values? Not certain the difference between an environmental value and an environmental feature? These terms should be defined.

SJRWMD Response:

The terms “environmental values”, “environmental conditions” and “environmental features” are interchangeable based on the way they are used in the MFLs report. These terms all refer to the attributes, characteristics or functions that are being protected by a given MFL (e.g., ecological values such as habitat maintenance, or human beneficial uses such as canoe depths). In future, an effort will be made to either define the differences between these terms or to use a single term.

3. Should specify that the Upper Floridan aquifer level used to define the MFL is an average of the groundwater-model generated water levels at the model nodes underlying Apshawa Lake South and not groundwater levels measured in the aquifer near the lake.

SJRWMD Response:

UFA levels are not used to define the MFLs. The MFLs are based on lake levels. However, the available water (freeboard or deficit) is expressed as change in the UFA levels beneath the lake.

4. Be certain that the term sustainable yield in determining MFLs is thoroughly described and defined. Sometimes this term is confused with "safe yield" Safe yield indicates the volume of groundwater that can be pumped over a designated time period without exceeding the long-term recharge of the groundwater basin without resulting in unacceptable consequences.

SJRWMD Response:

The term sustainable yield was used in a public workshop presentation and is not in the MFLs report.

Comment made by Mr. Angel Martin on 3/6/2024:

I decided to look at the material concerning the Apshawa Lake South MFL and I would like to expand a little on comment no. 3 in my February 16, 2024, email. I would like to add to this comment that I believe the Water Management District should consider installing an observation well near the lake so that water levels in the Upper Floridan aquifer can be monitored on a systematic basis. This action will provide valuable information in defining the MFL besides the results of the groundwater-flow model (ECFTX model). The groundwater-level information also can be used in further refining the model in this area and provide further confidence in groundwater-flow model simulations.

SJRWMD Response:

There is a UFA well approximately one mile west of the Apshawa Lake South.

Comment made by Mr. Angel Martin on 3/20/2024:

1. In general agreement with the peer reviewers, suggest further description and discussion concerning the Hydroperiod Tool used by the St. Johns River District in terms of application of the tool in MFL evaluation. This discussion could include any available references in the application of this tool and/or application to other MFLs.

SJRWMD Response:

See response to peer reviewer comment #1 (pg. 1 of this document). Also, note that the following study utilizing the hydroperiod tool is cited in the MFLs report:

Fox, S., P. Kinser, L. Keenan, C. Montague, and D. Hydorn. 2012. Hydroperiod tool analysis of T. Johns River segment 7. SJRWMD Technical Publication SJ2012-1. Available online at https://static.sjrwmd.com/sjrwmd/secure/technicalreports/TP/SJ2012-1_Appendix10-D.pdf

2. Martin also discussed the possible issues related to scale in the application of the HSPF and ECFTX models. The general conclusion was that preparing a focused telescoping mesh refinement model based on the ECFTX model was not appropriate at this time in evaluation of the subject lake evaluation. Martin stated that there may be some possible future application of a refined groundwater-flow model based on an Adaptive Management approach.

SJRWMD Response:

Noted.

3. Martin inquired if the peer reviewers would examine the possible differences between the previous MFL determined in the early 2000s with the proposed current MFL. The District discussed that this examination was not part of the scope of the peer review and that such a comparison would not be technically appropriate based on the available data and the difference in analytical methods used in each analysis.

SJRWMD Response:

Correct, this examination was not part of the scope of the peer review. A comparison is not appropriate because of the very different methods used, longer period of record used for new determination, and different surface and groundwater models used.