

Response to Stakeholder Comments on Lake Hampton MFL Technical Documents

Suwannee River Water Management District

386.362.1001



SUWANNEE RIVER WATER MANAGEMENT DISTRICT

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1.0 Response to Comments from Paul Still

Response to Comments provided by Paul Still, District 5 Board Member, Bradford Soil & Water Conservation District (Submitted by email on 1/24/2022)

- 1) Why did SRWMD use methodology developed by the Southwest Florida Water Management District (SWFWMD) for the Lake Hampton MFL instead of the methodology used by SJRWMD that was used for Lake Butler, Lake Santa Fe, and Lake Alto?

Lake Alto is less than 5 miles south of Lake Hampton using a different methodology for lakes in the same region could produce a set of rules for lake minimum levels that are confusing and vague.

I hope the SRWMD will consider using only the SJRWMD methodology for establishing the minimum levels for Lake Hampton.

Response:

The District (SRWMD) applied the SWFWMD methodology because the SJRWMD event-based methodology did not account for changes to lake water levels associated with the outfall canal that drains Lake Hampton to the Santa Fe River. An explanation of the methodology is described in Sections 5.3 and 5.6 of the 2021 Lake Hampton MFL report. The methodology used is the most appropriate and protective of Lake Hampton to account for structural alterations.

- 2) The proposed high level for Lake Hampton would not appear to provide for inundation of the cypress ecosystems.

Response:

District staff have determined that structural alterations to the lake have lowered lake levels from historical conditions, however the cypress community will be periodically inundated under current and projected pumping conditions. As shown in Figure 5-10 in the 2021 Lake Hampton Modeling Report, lake levels frequently exceeded the mean elevation of the cypress community (129.8 feet NAVD88).

- 3) It appears that ECT assumed the Lake Hampton drainage canal was unchanged in the model they used. This may not be a valid assumption. Sediment accumulation and migration can impact canal profiles. However, its not just the canal profile that controls flow. Submerged and emergent vegetation can have significant impacts on flow, The presence of fallen trees and trapped debris also impact flow.

Response:

The District acknowledges that a variety of factors may affect flow in the outfall canal and that the model may be improved through incorporation of additional information. However, the model as calibrated meets the needs of the District to establish minimum levels for Lake Hampton.

2.0 Response to Comments from Paul Still

Response to Comments provided by Paul Still, District 5 Board Member, Bradford Soil & Water Conservation District (Submitted by email on 1/28/2022)

1) Were the 2021 Lake Hampton Minimum Level documents peer reviewed?

Can you provide a link to the draft documents, I think from 2016, that were peer reviewed?

Response:

The 2021 Lake Hampton MFL Report did not require peer review as the methods have been satisfactorily peer reviewed for SWFWMD. More information can be found on the SWFWMD MFL documents and reports website: <https://www.swfwmd.state.fl.us/projects/mfl/documents-and-reports/lakes-wetlands>

The 2021 Lake Hampton Modeling Report utilized peer-reviewed modeling methods from the 2017 Lake Hampton Modeling Report which have not changed significantly.

MFL documentation for Lake Hampton can be found on the District's website at <https://srwmd.org/55/Minimum-Flows-and-Minimum-Water-Levels>. Documents not on the website can be obtained via a public records request.

2) What is the lowest lake level that can be recorded at the Lake Hampton gauge?

Response:

Based on District records the lowest lake level that can be recorded is 122.13 ft NAVD88.

3) What information do you have that the loss of organic soils is the result of oxidation or subsidence and not erosion?

Response:

The exposure of tree roots in forested wetlands is a common indicator of soil subsidence, which often occurs when organic soils are exposed to air for prolonged periods and become oxidized. Field observations providing evidence of soil subsidence are in Appendix B of the 2021 Lake Hampton MFL report.

4) There is a significant change in the pattern of high lake levels after 1998. I have a vague memory that the Lake Hampton Canal was cleaned out after the 1998 flood. Does the SRWMD have any record of that clean out or observation made during or after the 1998 flood?

Response:

No records have been identified.

- 5) My observations on Alligator Creek and the Sampson Canal and River indicate obstruction to flow can have a more significant impact on flow than canal profile. How is the SRWMD justifying the use of only canal profile in the model used by ECT to estimate surface discharge values?**

Response:

See response to [Comment 3](#) from Paul Still on 1/24/2022.

- 6) What information is the SRWMD using to support that claim that the proposed ML will not result in lower lake levels?**

Response:

A description of the District's methodology and data sources which were used to establish the MFL can be found in the 2021 Lake Hampton MFL and Modeling reports. The proposed MFL for Lake Hampton was established to prevent significant harm to natural systems from surface and groundwater withdrawals per Florida statute (section 373.042, F.S.)

- 7) Was the proposed Chemours Mine water use evaluated for its impact on Lake Hampton levels?**

Response:

Water use impacts from existing and projected future water demands for mining/dewatering, as well as other water use categories were considered when assessing water use impacts on Lakes Hampton as described in the 2021 Lake Hampton MFL status assessment memo. More information on the water supply planning process and water use estimation is available on the District's website:

[Water Supply Assessment & Plan | Suwannee River Water Management District \(mysuwanneeriver.com\)](https://mysuwanneeriver.com)

Groundwater use at the Chemours facility is permitted and estimates of groundwater use are included in the regional water use estimates. The mining extraction process proposed for the Trail Ridge South site does not involve consumptive withdrawals. If further consumptive use of groundwater is required, the effects of these withdrawals on these lake MFLs will be reviewed as a part of the consumptive use permitting process.

8) Does the SRWMD have a draft of the actual Minimum Lake Level rule language?

Response:

Draft rule language was presented to the District's Governing Board in January 2022 and is shown in the table below.

Water Body Name	County (Latitude/ Longitude)	Minimum Level	Level (Feet NAVD)	Event	Hydroperiod Category	Duration (Days)	Return Interval (Interval Measurement Period)
Lake Hampton	Bradford (29°51'42'' N/ 082°10'10'' W)	High Minimum Lake Level	128.86	NA	NA	NA	NA
		Minimum Lake Level	128.15	NA	NA	NA	NA

3.0 Response to Comments from Bradford Soil and Water Conservation District

Response to Comments provided by the Bradford Soil & Water Conservation District (Submitted by Paul Still, via email, on 2/6/2022)

Bradford Soil and Water Conservation District Comments about Lake Hampton Minimum Level Approved 2/1/2022

Bradford County residents will be directly impacted by the Minimum Levels set by the Suwannee River Water Management District (SRWMD) for Lake Hampton, Lake Santa Fe, Lake Crosby, Lake Rowell and Lake Sampson. They will also be impacted by the Minimum Levels set for Lake Alto because it is connected by a dug canal to Lake Santa Fe. The Bradford Soil and Water Conservation District (BSWCD) recognizes the importance of process of setting Minimum Lake Levels to the long-term protection of surface and ground water quantity and quality.

The BSWCD has submitted comments for the Lake Santa Fe and Lake Alto proposed Minimum Levels. This document has our comments related to the Lake Hampton proposed Minimum Levels. A final section of this document dealing with the Chemours Mine water use and disposal would also apply to the Lake Santa Fe and Lake Alto Minimum levels.

- 1) The BSWCD is very concerned about the SRWMD use of a methodology developed by the Southwest Florida Water Management District (SWFWMD) in the October, 2021, document, "Minimum Recommended Lake Levels: Lake Hampton, Florida".

The SRWMD has used the SJRWMD methodology for the adopted minimum lake levels for Lake Butler and the recommended minimum levels for Lake Santa Fe and Lake Alto. The SRWMD also used the SJRWMD methodology in the document "Minimum Recommended Lake Levels: Lake Hampton, Florida" dated 2017.

The BSWCD did not find a clear statement of why the methodology was changed between 2017 and 2021.

The 2017, "Minimum Recommended Lake Levels: Lake Hampton, Florida" has the following table.

Table 7-1 Minimum recommended lake levels for Lake Hampton.

Designated Level	Elevation Benchmarks	Elevation (NAVD88)	Defining event or hydrologic criteria
Minimum frequent High (FH)	Mean elevation of seasonally flooded wetlands	128.90	30-day inundation/ 2-yr return interval
Minimum Frequent Low (FL)	Mean elevation of the landward extent of the deep marsh	126.24	120-day exposure/ 5-yr return interval

The 2017, “Minimum Recommended Lake Levels: Lake Hampton, Florida” has the following table.

Table 7-1. Minimum and guidance levels for Lake Hampton.

Level	Recommended Elevation (ft NAVD88)	Level Description
High Guidance Level (HGL)	129.66	Advisory guideline for construction of lake shore development, water dependent structures, and operation of water management structures. The HGL is the elevation that lake stage is <u>expected</u> to equal or exceed 10% of the time on a long-term basis.
High Minimum Lake Level (HMLL)	128.86	Elevation that lake stage is <u>required</u> to equal or exceed 10% of the time on a long-term basis.
Minimum Lake Level (MLL)	128.15	Elevation that lake stage is <u>required</u> to equal or exceed 50% of the time on a long-term basis.
Low Guidance Level (LGL)	127.27	Advisory guideline for water dependent structures, information for lakeshore residents, and operation of water management structures. The LGL is the elevation that lake stage is <u>expected</u> to equal or exceed 90% of the time on a long-term basis.

40B-8.121 Minimum Surface Water Levels for Lakes.

(1) The following terms, as used in this rule, shall have the following meanings:

(a) “Minimum Frequent High” means a chronically high surface water level or flow with an associated frequency and duration that allows for inundation of the floodplain at a depth and duration sufficient to maintain wetland functions.

(b) “Minimum Frequent Low” means a chronically low surface water level or flow that generally occurs only during periods of reduced rainfall. This level is intended to prevent deleterious effects to the composition and structure of floodplain soils, the species composition and structure of floodplain and instream biotic communities, and the linkage of aquatic and floodplain food webs.

(c) “Seasonally Flooded” means a hydroperiod category where surface water is typically present for extended periods (30 days or more) during the growing season, resulting in a predominance of submerged or submerged and transitional wetland species. During extended periods of normal or above normal rainfall, lake levels causing inundation are expected to occur several weeks to several months every one to two years.

(d) “Semi-Permanently Flooded” means a hydroperiod category where surface water inundation persists in most years. When surface water is absent the water table is usually near the land surface. In many lakes with emergent marshes this water level is near the lower elevation that supports emergent marsh or floating vegetation and peat substrates, or other highly organic hydric substrates. This characterization may not be true for herbaceous wetlands around sandhill type lakes, which often have emergent vegetation that follows declining water levels to below the lower elevation of peat substrate. Water levels causing inundation are expected to occur approximately eighty percent of the time over a long-term period of record. Exposure of these ground elevations is expected to re-occur, on average, about every five to ten years for extended periods (several or more months) during moderate droughts.

(2) The following minimum surface water levels are established:

Water Body Name	County (Latitude/ Longitude)	Minimum Level	Level (Feet NAVD)	Event	Hydroperiod Category	Duration (Days)	Return Interval (Interval Measurement Period)
Lake Butler	Union (30°02'00" N/ 082°20'12" W)	Minimum Frequent High	129.55	Flooding	Seasonally flooded	30	2 years (June 1 to May 31)
		Minimum Frequent Low	127.30	Exposure	Semi-permanently flooded	120	5 years (October 1 to September 30)

Response:

To clarify, the second reference to Table 7-1 above is from the 2021 Lake Hampton MFL report.

Information regarding the District’s methodology can be found in the response to [Comment 1](#) from Paul Still on 1/24/2022 and in Sections 5.3 and 5.6 of the 2021 Lake Hampton MFL report.

- 2) Lake Alto is less than 5 miles south of Lake Hampton. Using different methodologies with different terms and definitions for lakes in the same region could produce a set of rules for lake minimum lake levels that could be confusing and unnecessary complex.

The current rule has no definitions for the terms used to describe the levels used in the SWFWMD method.

Response:

See response to [Comment 1](#) from Paul Still on 1/24/2022 regarding why the District switched to SWFWMD MFL methods.

Definitions for the High Minimum Lake Level and Minimum Lake Level will be added to the rule language in rule 40B-8.121, F.A.C.

- 3) The SWFWMD method requires a long-term level duration curve. Level data for Lake Hampton is only available from 1989 to date.**

ECT used a SWMM Simulation to generate level data from 1960 through 2015 for the level duration curves. There is no way to verify the accuracy of the SWMM simulated data for the period 1960 through 1988.

Response:

Using a calibrated water budget model to generate long-term simulated water levels is a common practice. This methodology has been peer reviewed and has been employed by other water management districts for setting MFLs. See Section 5.2.3 in the 2021 Lake Hampton Modeling Report for details on this approach.

- 4) Current Lake Hampton level data exists through the current date. The simulated data does not reflect current conditions because it ends in 2015.**

Response:

The hydrologic record used for development of the Lake Hampton MFLs ended in 2015 because that is the year of the most recent complete water use dataset available. Water use datasets require substantial effort to compile and spatially distribute for modeling purposes and are needed at the beginning of the MFL modeling and analysis phase.

As stated in Section 5.0 of the 2021 Lake Hampton Modeling Report, "Current," as used here, refers to the end of the hydrologic record utilized to develop the MFLs, in this case, 2015.

- 5) It appears that ECT assumed the Lake Hampton Drainage Canal was unchanged in the model they used. This may not be a valid assumption. Sediment accumulation and migration can impact canal profiles. Aerial imagery indicates that significant earth work occurred on the Lake Hampton Drainage Canal between 1968 and 1974. Changes in canal profile during the simulation period 1960 to 2015 call into question the validity of the simulation data developed by ECT.**

Submerged and emergent vegetation can also have significant impacts on flow, The presence of fallen trees and trapped debris also impact flow. If simulated data is used, it is important to determine if vegetation or tree removal work was done between 1960 and 2015. An accurate estimate of the flow out of Lake Hampton via the drainage canal is a critical piece of information. Has the SRWMD collected any flow data for the Lake Hampton Drainage Canal? If not flow measurements should be done.

Response:

See response above to [Comment 3](#) from Paul Still on 1/24/2022.

- 6) BSWCD suggests the SRWMD consider using only the SJRWMD methodology for establishing the minimum levels for Lake Hampton and only use observed data.

The BSWCD found no Peer Review of the October 2021, “Minimum Recommended Lake Levels: Lake Hampton, Florida” that used the SWFWMD method. The BSWCD believes a change of this magnitude in methodology should require a Peer Review of the October 2021 “Minimum Recommended Lake Levels: Lake Hampton Florida”.

Response:

See response to [Comment 1](#) from Paul Still on 1/24/2022.

See response to [Comment 1](#) from Paul Still on 1/28/2022.

- 7) There is a significant problem when a method uses a long-term data set and a level duration curve. The long-term data set can fail to identify changes in water levels. because of high levels recorded earlier in the long-term record. The SJRWMD method which includes a duration period of 30 days and a return period of every two years identifies failures to meet minimum lake levels in two years. Lake Hampton did not meet the 30 day Frequent High (FH) level of 128.90 ft for the period June 1, 2019, to May 31,2021.

Response:

As described in response to [Comment 3](#) from the BSWCD above, long-term datasets are critical for MFL development, regardless of the specific MFL methodology applied. The dataset used is sufficient for the development of Lake Hampton MFL.

- 8) All the lakes that require Minimum Levels in Bradford County have been altered by dug canals and have had their lake edge ecosystems impacted by those canals. The BSWCD suggests that the best approach is to set an initial FH level based on the lake edge cypress elevation and then adjust that level down to address conditions created by human alterations and infrastructure.

One key added infrastructure element is septic systems. The elevations of septic systems should be evaluated when the FH Level is set to try to avoid the water quality impacts of flooded septic systems. Floor elevations should also be considered in establishing the FH Level.

Response:

Your feedback is noted. To address structural alterations to Lake Hampton, the District has applied the SWFWMD MFL methodology as described in the response to [Comment 1](#) submitted by Paul Still on 1/24/2022.

9) Chemours Mine Water Use and Discharge

Chemours is in the process of constructing a new heavy minerals mine with a processing facility in Clay County on Camp Blanding property. A significant part of the mine will be in Bradford County on land owned by the SRWMD. The impacts of the water use and discharge do not appear to have been considered by ECT in their assessment of future water use on the status of the Minimum Lake Levels for Lake Santa Fe, Lake Alto, and Lake Hampton.

Response:

See response to [Comment 7](#) from Paul Still on 1/28/2022.

10) The area to be mined is in the watershed for Lake Santa Fe and Lake Alto. The mining could also impact the surficial aquifer and this could impact the levels of Lakes Santa Fe, Alto, and Hampton.

The mining will be at a depth of up to 40 feet and will likely require dewatering of mine cells. As part of the mine permitting process Chemours has addressed the issue of stormwater and process water management and have calculated impacts on the MFL set for the Graham gauge on the Upper Santa Fe River.

The BSWCD has not seen the NPDES permit for the mine or the Consumptive Use Permit for the mine.

The following is from the DEP issued mining permit

Permittee: The Chemours Company FC, LLC
Trail Ridge South Mine
MMR_137482-018
Pages 10 -11

Permit Expiration: May 26, 2035
Permit No:

6. WASTEWATER SYSTEM CONSTRUCTION AND MANAGEMENT: There shall be no discharges unless specifically authorized by this permit or the permittee's Industrial Wastewater Facility Permit.

a. Contact stormwater and process wastewater shall be managed through the industrial wastewater ponds (IWW Ponds) as located within the “Water Treatment Area” and shown on Figure 1 - Facility Overview Map (located in the Best Management Practices Plan, attached).

b. Non-contact stormwater only shall be managed through the Plant Stormwater Ponds as shown in the Legend on Figure 1- Facility Overview Map (attached).

c. Figure 2 - Plant Site Layout (attached) shows the proposed Primary and conceptual Alternative Outfalls from the industrial wastewater ponds. Three options were provided by the permittee and reviewed during this permit application process for the purpose of discharge of treated contact stormwater and process wastewater: One option utilizing the Primary Outfall only, and two options (Options A and B, as described below) utilizing the Primary Outfall and Alternative Outfall with the purpose of dividing the discharge between the Primary and Alternative Outfalls. These Alternative Outfall options were Permittee: The Chemours Company FC, LLC provided to the Department on November 6, 2020, within the “Mining Phase Water Balance” document. Options A and B are as follows:

- 1) Option A Divert 70% of the discharge to the secondary east outfall (TRS D-002)
Primary TRS D-001 (west) Outfall Average Annual Daily Flow (AADF) discharge= 0.04 mgd (Santa Fe Watershed)
Alternative TRS D-002 (east) Outfall AADF = 0.09 mgd (Keystone Heights)
- 2) Option B – Divert 85% of the water when Graham Gage is above 2.3 cfs
Primary TRS D-001 (west) Outfall AADF = 0.02 mgd (Santa Fe Watershed)
Alternative TRS D-002 (east) Outfall AADF = 0.11 mgd (Keystone Heights)

The BSWCD has 4 major concerns about the potential impacts the Chemours mine could have on the Minimum Levels of Lake Santa Fe, Lake Alto, and Lake Hampton.

1. The option to divert water to the Keystone lakes which would take water out of the watershed and reduce surficial aquifer levels that are important in maintaining the levels of all 3 lakes.
2. The discharge is into a wetland and the flow out of that wetland may not be clearly defined. Some flow may be into basins other than the Double Run Creek basin.
3. As the mining moves through the site water from basins other than the Double Run Creek basin will be impacted and the flow from those basins could be reduced because excess water is being discharged into the Double Run Creek basin. This could have a potential impact Lake Santa Fe level.
4. Chemours will be allowed to open new mine cells and expand the 160 acre mined area before the old mine cells are filled to the final reclaimed surface level. This could result in more discharged water than predicted in the Chemours modeling.

Response:

Proposed mining activities in this region were considered in the development of these MFLs with respect to surface and groundwater withdrawal effects on lake levels (as required by section 373.042, F.S.). Future increases in water use over the next 20 years were addressed in the 2021 Lake Hampton MFL Status Assessment memo.

Proposed changes to surface water drainage are addressed as part of the mine's Environmental Resource Permit and are not regulated by the District.