

Silver Glen Springs MFL – Public Comments and SJRWMD Responses

The SJRWMD held several conference calls with resource agencies in January and February 2017 to discuss the recommended Silver Glen minimum flow, and receive comments. These discussions were with US Fish and Wildlife Service (USFWS), the US Forest Service (USFS) and the Florida Fish and Wildlife Conservation Commission (FWC).

A formal letter was provided by FWC on March 3, 2017 regarding the proposed minimum flow. USFS also provided a comment letter on April 24, 2017. Both letters are attached below. In addition, comments were emailed from USFWS and USFS regarding the recommended minimum flow. The District's responses to USFWS and USFS comments are attached.



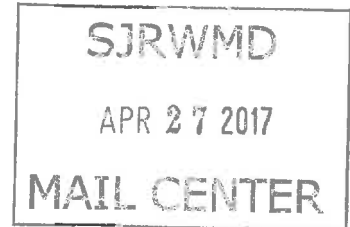
United States
Department of
Agriculture

Forest Service
Region 8, Southern
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File Code: 2520
Date: April 24, 2017

Andrew B. Sutherland, PhD
MFLs Technical Program Manager
Bureau of Resource Evaluation and Modeling
St. Johns River Water Management District
P.O. Box 1429
Palatka, FL 32178-1429



Subject: Silver Glen Springs Minimum Flows and Levels (MFL).

Dear Dr. Sutherland:

Thank you for the invitation and opportunity to participate and comment on the MFL Proposal for Silver Glen Springs. The National Forests in Florida and the Water Management Districts have a longstanding relationship and a shared goal for better managing our water resources and we hope to continue this productive and collaborative relationship into the future.

As the managers of the land based resources surrounding Silver Glen Springs and the majority of its springshed, we have a vested interest in the setting of the MFL and insuring the continued protection of the multiple terrestrial and aquatic organisms, preserved cultural artifacts and non-cultural organic materials, the ecology of the area, and its associated groundwater seeps and recreational opportunities on the Ocala National Forest.

The SJRWMD identified the warm-water habitat for Florida manatees as the most sensitive resource when determining the MFL for Silver Glen Springs. Based on the hydrodynamic model for water temperature developed for Silver Glen Springs there is no significant harm to the warm water refuge utilized by the Florida manatee until there is greater than 5% reduction in flow. If the recommended 2.5% reduction is accepted, we see no reason why this would affect the warm water refuge for the Florida manatee and we support the protection of the manatees and the warm water refuge. Nevertheless with the limited amount of data and current information on other sensitive ecological species and habitats as well as the interconnectivity of our groundwater systems, it is uncertain how a reduction in flow in Silver Glen Springs will affect surrounding rare and sensitive habitats and ecological resources.

Discussions with SJRWMD staff revealed the shortfalls in the available data for the determination of the MFL as well as the lack of information for surrounding sensitive ecosystems. The USFS must adhere to the National Forest Management Act (NFMA) in preventing trends towards federal listing. Other species that are severely declining in Florida could qualify for federal protection. Without monitoring and proper data collection we cannot determine the potential impacts a reduction in flows may have on species such as the Little Oecetis Longhorn Caddisfly, Blueback Herring, Bluenose shiner, Atlantic Striped Bass, Silver Glen Spring Crayfish, Ocala Vetch, Florida willow, and Yellow Anise Tree.

We support the establishment of a protective MFL for Silver Glen Springs. Since decisions made by the SJRWMD on waters within the Ocala National Forest will ultimately affect the protection and management of these sensitive species and ecosystems managed by the US Forest Service, it



is also our recommendation there be a continued and more robust monitoring and data analysis collection of the water quality, quantity, and ecological survey completed in and around Silver Glen Springs and its associated springshed done by the SJRWMD on a yearly basis.

It was shown that groundwater pumping outside the proclaimed boundary has reduced spring flow within the Ocala National Forest, indicating impacts to a greater springs and groundwater matrix relationship that has not been taken into account or modeled. Though outside of MFL rules and parameters it is our recommendation that a continued and well organized partnership be established between the USFS and SJRWMD to better understand and manage these complex systems. The aquifer and groundwater system from Alexander Springs to Salt Springs includes Silver Glen, Silver Glen Sand Boils, minor springs along Alexander Springs Creek, boils and riparian zones southeast of Alexander Spring's main vent, Juniper Springs, Fern Hammock, Sweetwater Springs, and the minor spring west of Sweetwater. All are within or adjacent to the determined Silver Glen springshed and possibly are conduit branches that would also be affected by reducing water flow. Current and future proposed reductions in flow would need to consider matrix impacts to the associated spring landscape, and the seepage systems (Mormon Branch, Glen Branch, Bill's Branch) that could lose their current hydrology by reduced head pressure below them. USFS would like to have modeled assurances that the hydrologic relationship of the collective MFL proposals that would reduce the aquifer pressure head would not have serious cumulative consequences to forest hydrology. This is a bigger picture view that will require a strong working relationship and a thoughtful approach to research and monitoring design.

We look forward to the continued collaborative process and appreciate the opportunity to provide comments in determining Minimum Flows and Levels for Silver Glen Springs. Silver Glen Springs, within the Ocala National Forest, is of great importance and an irreplaceable resource. We will continue to be engaged in all aspects of the management of these resources and any decisions made that affect them; and plan on having representation at any future meetings or deliberations regarding this and future MFLs that effect the National Forests in Florida. Thank you and I look forward to working closely with you in the future.

Sincerely,



KELLY RUSSELL
Forest Supervisor

cc: Carl Bauer - Ocala National Forest



SJRWMD responses to US Forest Service (USFS) comments regarding the draft Silver Glen Springs MFL, submitted via email on February 28, 2017.

March 29, 2017

Questions/concerns in email from USFS	Response from SJRWMD
<p>1. “Ideally we would like for the MFL to be set at a 0% reduction in discharge from the 2010 levels. In addition to the effect on manatees and potentially other species, some of our other major concerns are to the cultural and organic heritage resources in the area, recreation, and overall conservation of the natural environment.”</p>	<p>We understand and appreciate concerns for manatees, other species and important human-use values at Silver Glen Springs. We also understand the preference for setting an ideal flow. However, as mandated by statute, the MFL is not meant to represent optimal or ideal conditions, but rather set the limit to withdrawal, beyond which significant harm will occur.</p> <p>We agree that manatee are of primary concern at Silver Glen and our recommended minimum flow, which represents a 0.4% change from 2010, is based on maintaining manatee winter refuge habitat. Based on our hydrodynamic modeling of the relationship between flow and temperature, and based on consultation with FWC, the best information we have to date indicates that a 0.4% change from 2010 conditions will not cause significant harm to manatees or the extent of warm water refuge habitat within Silver Glen Springs run.</p> <p>Regarding organic heritage resources near the spring pool, our analysis of water level data indicates that the spring pool elevations are a function of water levels in the St. Johns River. As such, they there will be an insignificant change in water levels due to the proposed 0.4% change from 2010 conditions.</p> <p>We do agree that analyses of other important resources at Silver Glen Springs should be part of periodic reevaluations. We are proposing in the MFLs report that continued monitoring of temperature at Area 2 be considered to better understand the relationship between flow and manatee habitat at the more dynamic end of the spring run. If new information regarding this relationship, or manatee abundance, or habitat use indicates that the 0.4% change from 2010 is not protective of manatees, we will reevaluate this MFL.</p>

<p>2. (regarding effects on manatees and other species)</p> <p>“I. Manatee analysis must be for the reasonable foreseeable future, not current conditions. With continued increases to shoreline development, marinas, channels, boats, and invasive species, as well as warm-water discharge from power production being retired, Silver Glen is expected to continue to rise in manatee numbers and its importance as habitat.”</p>	<p>Avoiding a significant decrease in warm-water habitat due to water withdrawals that would be detrimental to the overall recovery of the species is an important consideration for this MFL. Warm-water habitat availability may be a limiting factor for Florida’s future maximum carrying capacity of manatees, and maintaining adequate flows at natural springs like Silver Glen Springs to prevent the loss of warm-water habitat is of critical concern for overall manatee recovery.</p> <p>As described in the response to #1 (above), based modeling results and consultation with FWC, the best information we have, to date, indicates that a 0.4% reduction in flow from 2010 conditions will not cause significant harm to manatees or the extent of warm water refuge habitat within Silver Glen Springs run.</p> <p>As mentioned above, if new information (e.g., significantly higher use of Silver Glen, new modeling with additional data) indicates that a 0.4% reduction is likely to cause significant harm to manatee (or other species of concern), this MFL will need to be reevaluated.</p>
<p>3. (regarding effects on manatees and other species)</p> <p>“II. Silver Glen has federal Critical Habitat Designation for manatees, which requires protection of the characteristics important for manatees in these areas (warm water and aquatic vegetation). Reduction in flow would fail to protect the current characteristic of Silver Glen, and its ability to support manatees. Current conditions are being used in analysis for changing Federal status from Endangered to Threatened.”</p>	<p>See responses to #1 and #2. We are recommending an MFL that does not significantly reduce habitat or forage beyond current conditions, according to the best available information.</p>

<p>4. (regarding effects on manatees and other species)</p> <p>“III. The USFS and its cooperators must adhere to the National Forest Management Act (NFMA) in preventing trends towards Federal listing. Other species that are severely declining in Florida could qualify for Federal protection if spring flows are reduced, consequently degrading habitat by sediment accumulation and further upstream mixing with dark tannin rich acidic water from Lake George and the St Johns River.</p> <p>Reduction in flow could impact population trends of species such as the: Little Oecetis Longhorn Caddisfly; Blueback Herring; Bluenose shiner; Silver Glen Spring Crayfish; Striped Bass; Ocala Vetch; Florida willow; and Yellow Anise Tree.”</p>	<p>Further evaluation of the effect of spring flow reduction on the species you have mentioned may be appropriate. For some of these species, little is known regarding their specific resource requirements.</p> <p>The purpose of the MFL is to establish a threshold of significant harm. The setting of this MFL does not preclude the USFS, or others, from other measures that prevent species trends towards Federal listing.</p> <p>The best available data we have, to date, indicates that a 0.4% reduction in flow from 2010 conditions will not significantly harm manatee or other species of concern. However, if new information is available that links significant harm to a specific species (or multiple species), with a specific flow decline due to withdrawal, SJRWMD is committed to using these new data to reevaluate the MFL.</p>
<p>5. (regarding impact on cultural artifacts and other organic heritage resources)</p> <p>“I. Any lowering of the water levels at Silver Glen will result in a loss of significant preserved organic cultural artifacts (which could also involve submerged, “wet-site” preserved human skeletal elements) as well as preserved organic environmental heritage resources, such as preserved botanicals and faunal materials (animal bone, scales, leaves, seeds, pollen, non-cultural materials, etc.). Once this material is desiccated it quickly deteriorates and a rare and significant cultural, environmental and climatological record that has been preserved for thousands of years will be lost.”</p>	<p>Water level elevations in Silver Glen Springs and Silver Glen Springs run are primarily controlled by water levels in the St. Johns River. Flow reductions from Silver Glen Springs will not impact water levels at the main spring vents or along the spring run.</p>

<p>6. (regarding conservation of natural environment)</p> <p>“I. Reduced flow will hinder the spring’s ability to flush eroded sediment and maintain a deep water channel. Sedimentation of the main channel has been steadily increasing, with any further decrease in spring flow the problem will not only persist but worsen.”</p>	<p>Flow, in part, is an important factor in determining the particle size profile of the bed of the spring run. Our limited analysis of thalweg particle sizes in the spring run indicates that flows are rarely high enough to flush average-size Silver Glen Springs thalweg particles from the spring run. Of course, flows may be high enough to transport smaller particles, otherwise the average size of Silver Glen Springs thalweg particles might be smaller.</p> <p>Based on conversations with USFS staff, some of the issue with sedimentation of the run is due to loading (increased source of sediment), which this MFL would not address. For this reason and others, it is extremely important to limit sediment inputs to the spring run.</p> <p>In general, Florida springs tend to have more consistent flows than rivers. Our data suggest that a reduction in flow of 0.4% would not significantly change the critical velocities necessary for entraining or transporting the mean bed particle size.</p>
<p>7. (regarding conservation of natural environment)</p> <p>“II. Additionally if water levels drop, even slightly, visitors and wave action from boaters would have access to freshly exposed un-vegetated banks increasing erosion, sediment deposition, and turbidity, further degrading the spring and run.”</p>	<p>Water level elevations in Silver Glen Springs and Silver Glen Springs run are primarily controlled by water levels in the St. Johns River. Flow reductions from Silver Glen Springs alone would not be expected to impact water levels at the main spring vents or along the spring run. However, a regional reduction in spring flows, most of which are not protected by MFLs, could potentially impact water levels. We do not anticipate an increase in un-vegetated bank exposure, increased erosion/ sediment deposition/turbidity due to an increase of 0.4% in flow reduction due to withdrawal.</p>
<p>8. (regarding effects on recreation”</p> <p>“I. Many unincorporated under-served communities rely on forest recreation and spring visitation for the majority of its direct and indirect economy. In addition to supplying local community members a steady income it also generates over \$300,000 in annual revenue not including money spent at local restaurants, gas stations and convenience stores by visitors.”</p>	<p>All WRVs, including recreation in and on the water, were included in determining Silver Glens Springs MFLs. Significant impacts are not expected to any of the WRVs, nor to the economies of any local communities, due to a 0.4% reduction in flow relative to 2010 conditions.</p>
<p>9. (regarding effects on recreation)</p> <p>“II. Recreation at Silver Glen Springs is dependent on the healthy ecology of the spring and surrounding areas. A reduction in flow will potentially degrade water clarity, decrease submerged aquatic vegetation growth, decrease fish populations, and cause areas of stagnant water or other natural effects (e.g. increased sedimentation) that would lessen the appeal of swimming and recreating in the spring.”</p>	<p>All WRVs, including recreation in and on the water, were included in determining Silver Glens Springs MFLs. Significant impacts are not expected to any of the WRVs, nor to the economies of any local communities, due to a 0.4% reduction in flow relative to 2010 conditions.</p>

<p>10. (regarding effects on recreation)</p> <p>“III. Ultimately, the setting of the spring is why it is a desirable place to recreate. If the setting is degraded, it becomes a less desirable destination. Silver Glen, in particular, is unique because it is not developed. Freshwater spring use and recreation is increasing every year, and if the reduction in flow creates conditions in which the ecology of the spring and the recreation site is more vulnerable to human impacts, we cannot support that decision.”</p>	<p>All WRVs, including recreation in and on the water, were included in determining Silver Glens Springs MFLs. Significant impacts are not expected to any of the WRVs, nor to the economies of any local communities, due to a 0.4% reduction in flow relative to 2010 conditions.</p>
<p>11. (regarding effects on recreation)</p> <p>“IV. The Springshed is almost entirely within Ocala NF, meaning a 0% reduction from 2010 levels in flow would have insignificant impact to the development of the area, but rather continue to protect the existing economy and ecology.”</p>	<p>Although projected increases of groundwater pumping within the boundaries of Ocala National Forest are minimal, water use in surrounding areas also has the potential to affect spring discharge at Silver Glen Springs. The purpose of an MFL is to establish a threshold of significant harm due to pumping. The best available data we have indicates that the 0.4% reduction in flow will not cause significant harm to any of the relevant environmental values identified.</p>

SJRWMD responses to US Fish and Wildlife Service (FWS) comments regarding the draft Silver Glen Springs MFL, submitted via email on March 3, 2017.

March 29, 2017

Questions/concerns in email from FWS	Response from SJRWMD
<p>1. (regarding manatee habitat)</p> <p>“Through the process of establishing a MFL for Silver Glen Springs, we appreciate the focus on manatees and available warm water habitat. It is the Service’s position that Silver Glen Springs is an important warm water site for manatees with additional future potential, and the identification and maintenance of minimum flow is an issue specifically addressed in the Florida Manatee Recovery Plan. Maintaining an adequate flow to prevent the loss of warm water habitat, especially for a natural spring site when artificial warm water sources may not be available for the long term, is a critical concern for the overall recovery of the species.”</p>	<p>The MFL we plan to recommend for Silver Glen Springs is intended to allow no significant decrease in warm-water habitat for manatees due to water withdrawals. A recommended minimum flow that only allows 0.4% reduction from 2010 conditions is based, in part, on the points you have mentioned, including:</p> <ul style="list-style-type: none"> • Silver Glen Springs is an important warm-water refuge for manatees • The identification/maintenance of minimum flows is an important component of the Florida Manatee Recovery Plan • Maintaining adequate flows at natural springs to prevent the loss of warm-water habitat is of critical concern for overall manatee recovery <p>Based on our hydrodynamic modeling of the relationship between flow and temperature, and based on consultation with USFWS and FWC staff, the best information we have to date suggests that a 0.4% change from 2010 conditions will not cause significant harm to manatees or the extent of warm water refuge habitat within Silver Glen Springs run.</p> <p>We do agree with the high importance of continued analysis of the effect of flow reduction on the long-term maintenance of manatee habitat at Silver Glen, and that this should be part of periodic reevaluations. We are proposing in the MFLs report the continued monitoring of temperature at Area 2 to better understand the relationship between flow and manatee habitat at the more dynamic end of the spring run.</p> <p>If new information regarding this relationship, or manatee abundance, or habitat use suggests that the 0.4% change from 2010 is not protective of manatees, we will reevaluate this MFL.</p>

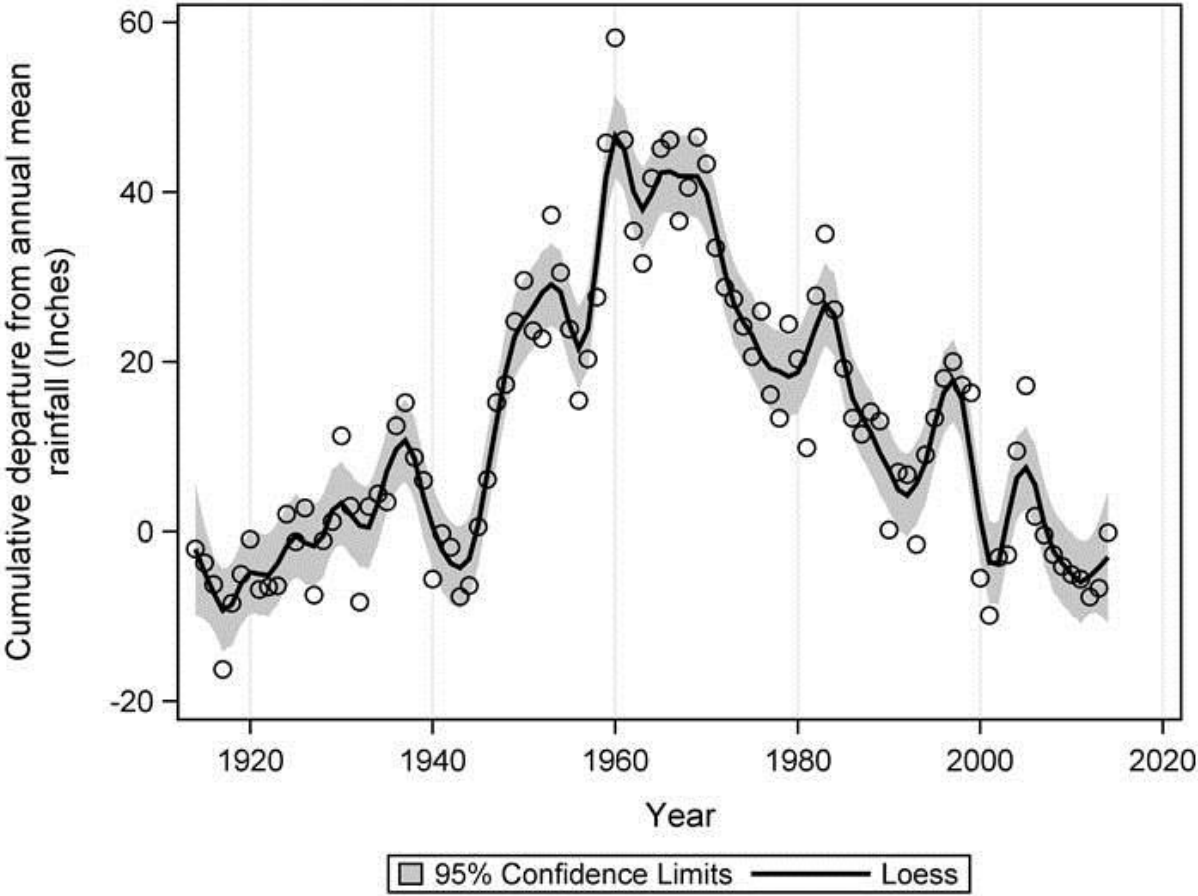
Questions/concerns in email from FWS	Response from SJRWMD
<p>2. (regarding manatee use)</p> <p>“Manatee monitoring at this site began during the 2009-2010 winter, so we are unsure about the frequency of manatee use and distribution patterns prior to this timeframe, when the average annual spring flow was considerably higher. During the 2009-2010 winter, 12 different manatees were sighted with a maximum daily count of seven manatees (Ross, 2011). Similarly, Blue Spring in Volusia County started with a maximum daily count of 11 in the 1971-1972 winter and now, following protective measures, has maximum daily counts exceeding 300 manatees. If flows do not decrease, Silver Glen Springs could see an increase in manatee use, given growth in the Upper St. Johns River manatee management unit which is increasing at approximately 6% per year. Should the Forest Service and the SJRWMD want to discuss additional protection options that would enhance this area for manatees, the Service would appreciate the opportunity to participate in those discussions.”</p>	<p>As you have mentioned, manatee use at Silver Glen Springs could increase significantly in the future, based on expected changes in the St. Johns River population and the statewide population of manatees. Drastic changes in manatee use patterns have been seen before, such as at Blue Spring in Volusia County where protected areas were established for manatees. Manatee monitoring at Silver Glen Springs has only occurred during a period of lower spring flows, from winter 2009 - 2010 to winter 2016 - 2017. We do not know if we would be currently seeing more manatees at Silver Glen Springs if spring flows were higher, or if the recreation area were managed differently.</p> <p>We agree that significantly decreasing warm-water habitat for manatees by reducing spring flows due to water withdrawals may be detrimental to the overall recovery of the species, especially as warm-water habitat availability may be a limiting factor for Florida’s future maximum carrying capacity of manatees.</p> <p>As discussed in the response to #1, our best available data suggest that a 0.4% reduction from 2010 conditions will not reduce manatee habitat significantly. If new information regarding the flow-habitat relationship, or new data regarding manatee abundance, or habitat use suggests that the 0.4% change from 2010 is not protective of manatees, we will reevaluate this MFL.</p>

<p>3. (regarding recent low spring flows)</p> <p>“In reviewing the Average of Annual Mean Spring Flows, it appears that there has been significant fluctuation in the mean spring flows over time, with a very marked drop since around 2010 or so. While the mean flows presented – average of 102.1 cubic feet per second (cfs) for 1931-2016 and 99.1 cfs for 1984-2016 - do not appear to be much different, it is important to note that there is a significant drop since 2010 or slightly before, down to just over 70 cfs. Please provide detailed discussions as to why this has occurred. Given manatee use as a warm water site and the need to protect natural warm water sites for the long term existence of the manatee, this is quite concerning. Based on the spring run characteristics, Silver Glen Springs has potential for increasing winter manatee use, if flows are adequate to maintain warm water habitat. We would like to see additional information from the District on this drop and any uses that may be contributing to this decrease in flow as well as any plans to address this situation.”</p>	<p>The US Geological Survey (USGS) has been the agency largely responsible for flow measurements at Silver Glen Springs. A period with markedly lower spring flows has occurred from from 2010 - 2017. In early 2017, it appeared (based on provisional data on the USGS website) that flows had at least temporarily exceeded 90 cfs, which had not since 2011. Additional information on spring flow measurement methods or accuracy over time may be available from USGS.</p> <p>District groundwater modeling suggests that water use has reduced spring flow by an average of about 2.1 cfs since 2010 and was similar leading up to 2010, and does not account for much of the closer to 30 cfs drop in spring flow seen at Silver Glen Springs. An analysis of cumulative departure from long-term mean rainfall suggests that there has been a prolonged drought since the 1970s (see attached graph). This deficit rainfall is likely contributing to recent low flows. If or when additional information becomes available about the reason for large decline in flow in 2010, SJRWMD will communicate with FWS.</p>
<p>4. (regarding recent low spring flows)</p> <p>“We are very concerned about the loss of spring flow and the potential impact in the future. In reviewing the modeling as it applies to Areas 1 and 2 where manatee use has been greatest, it is concerning that Area 2 already experiences water temperatures that are falling below 20 degrees Celsius and is more sensitive to flow reductions. With the current level of high human use in the area, any reduction in water temperature in Areas 1 and 2 could result in threats to the continued existence of this location as a warm water site without changes to the areas that are heavily used for human recreation. If there were measures that could reduce the level of human use, then it is possible that manatees would use areas farther west in the run but that is not the current condition.”</p>	<p>The MFL we plan to recommend for Silver Glen Springs is intended to allow no significant decrease in warm-water habitat for manatees due to water withdrawals. This includes warm-water habitat in both Areas 1 and 2, as well as elsewhere in the spring run. Our understanding and best available information indicate that both Areas 1 and Area 2 are important areas of warm-water habitat for manatees at Silver Glen Springs, especially under current patterns of human use of the spring run for recreation. If our understanding of flow/temperature patterns in the spring run changes, if human use changes, or new data regarding manatee abundance, or habitat use suggests that the 0.4% change from 2010 is not protective of manatees, we will reevaluate this MFL.</p>

<p>5. (regarding 20°C as a threshold of significant harm)</p> <p>“As the [water] temperature [at Silver Glen Springs] is a general minimum for a warm water site, the Service would not recommend a temperature decrease below the 20 degrees Celsius in order to prevent significant harm to manatees.”</p>	<p>Temperature modeling of the spring run indicates that reductions in spring flow lead to lower water temperatures, since spring flow is the source of warm water in the spring run in winter. Our conclusions related to temperature modeling for this MFL are based on temperature changes due to spring flow reductions, rather than on whether temperatures are above or below 20°C in a specific location at a given time. In colder winters, water temperatures may remain below 20°C over larger areas, while in warmer winters water temperatures may fluctuate around 20°C over larger areas. Although manatees may seek out and prefer water temperatures closer to 22°C, the threshold below which manatees are likely to suffer from cold stress is considered to be 20°C. In instances where we did evaluate specific temperatures, 20°C was used as the threshold.</p>
<p>6. (regarding recent low spring flows)</p> <p>“The Service is already concerned about the loss of flow since the late 2000’s. At this point and with some of the uncertainties as to the drop in flow, we would encourage the SJRWMD to be extra cautious and to seek additional information as to reasons for the reduction. Until that information may be available, it will be difficult for us to fully assess.”</p>	<p>The MFL we plan to recommend for Silver Glen Springs is intended to allow no significant decrease in warm-water habitat for manatees due to water withdrawals.</p> <p>Our groundwater modeling suggests that the majority of the decline since 2000 is not due to groundwater withdrawal. An analysis of cumulative departure from long-term mean rainfall suggests that there has been a prolong drought since the 1970s (see attached graph). This deficit rainfall is likely contributing to recent low flows.</p> <p>If or when additional information becomes available, SJRWMD will communicate with FWS.</p>
<p>7. (regarding projected water use)</p> <p>“The District expects that water use will double in this area by 2035 (from 1.06 million gallons per day in 2010 to 2.1 mgd), but water use is expected to decrease significantly around nearby DeLeon Spring. Can the District provide some additional background on this particular issue and local effects associated with the two springs that may account for the differences?”</p>	<p>Increases in water use by 2035 around Silver Glen Springs are mainly due to domestic self-supply, and to a lesser extent due to an anticipated increase in water use by a very small number of agricultural user(s) many miles southwest of the spring. The human population in the area many miles southwest of the spring has grown considerably (more than quintupled) since the 1970s, and more growth is anticipated in that area.</p> <p>Regarding De Leon Springs, water use in the immediate area is primarily agricultural, and is projected to decrease over the planning horizon.</p>

<p>8. (regarding model year weather)</p> <p>“Can the District describe the weather year of 2014-2015, in comparison to some period of record? Were these years dry, wet, or average in temperatures and rainfall?”</p>	<p>The winter of 2014 - 2015 was relatively warm and rainfall was mainly above-average. Lake George had above-average water levels during that time period. A comparison of winter 2014 - 2015 and other winters since 2008 will be available in our draft MFL report.</p>
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Cumulative departure from annual mean rainfall (inches) for Ocala and Lisbon rainfall stations.





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MyFWC.com

March 3, 2017

Andrew B. Sutherland, Ph.D.
MFLs Technical Program Manager
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RE: Silver Glen Springs Minimum Flows and Levels, Marion County

Dear Dr. Sutherland:

We appreciate the presentation that the St. Johns River Water Management District (SJRWMD) provided on February 16, 2017, on the approach and modeling that is being taken regarding the development of the Silver Glen Springs Minimum Flows and Levels (MFL).

During the discussion, SJRWMD staff requested that the Florida Fish and Wildlife Conservation Commission (FWC) staff provide wildlife-related technical information that would assist their determination of "at what percent flow reduction does significant harm to manatees occur?" and information on usage of the spring-run by other species that may also need to be considered in the development of the MFL.

Maintaining adequate warm water for manatees has been identified by SJRWMD as the guiding parameter for determining the Silver Glen Springs MFL. Silver Glen Springs is a secondary warm water site and a critical component of the network of natural warm water sites utilized by hundreds of manatees each winter in north-central Florida. SJRWMD modeling efforts indicate that reductions in flow could affect this wintertime manatee thermal refuge, located in the St. Johns River system. We understand that only limited data collection occurred near the St. Johns River portion of the spring-run (Area 2) resulting in a less than desirable amount of data used in the modeling efforts. We recommend that additional data collection occur in the vicinity of the St. Johns River portion of the spring run (Area 2) due to its consistent use by manatees. The SJRWMD modeling and the 2035 pumping projections indicated a potential 0.4 cfs change in flow from 2010 conditions. We have no indication that the proposed 0.4 cfs change in flow will affect the current extent of warm water habitat. The 5% change in flow also modeled would likely affect the amount of warm water habitat available for manatees; however, the extent of the affect is unclear based on the information currently available. FWC supports the establishment of MFLs to ensure that warm water habitat that is accessible to manatees is protected.

The St. Johns River is the southernmost extent of the Atlantic striped bass (*Morone saxatilis*) range. Silver Glen Springs is a primary summer thermal refuge habitat which holds one of the largest aggregations during the summer and fall months. Spring-flow reductions during the summer months that limit passage to this thermal refuge may affect the Atlantic striped bass population in the St. John River. The current SJRWMD analysis

Andrew B. Sutherland
Page 2
March 3, 2017

only models water temperature during the winter months. We recommend incorporation of water temperatures during the summer and fall months during future modeling efforts.

Additionally, bluenose shiner (*Pteronotropis welaka*, State Threatened) has disjunct populations in the Florida panhandle and the St. Johns River drainage, which may include Silver Glen Springs. Bluenose shiners from the St. Johns River population typically occupy spring-fed rivers and spring runs that contain dense emergent and submersed aquatic vegetation. The bluenose shiner Species Action Plan lists several threats pertinent to the Silver Glen Springs MFL including changes in water quality and quantity, and habitat alteration. FWC staff supports the establishment of MFLs that is protective of water quality and quantity that supports habitat for this species.

We appreciate the opportunity to provide you technical assistance as part of the development of the Silver Glen Springs MFL. We look forward to reviewing the draft Silver Glen Springs MFL document when it is completed. If you need any further assistance, please contact Jane Chabre either by phone at (850) 410-5367 or at FWCConservationPlanningServices@MyFWC.com. If you have specific technical questions regarding the content of this letter, please contact Ted Hoehn at (850) 488-8792 or by email at Ted.Hoehn@MyFWC.com.

Sincerely,



Jennifer D. Goff
Land Use Planning Program Administrator
Office of Conservation Planning Services

jdg/th
ENV 1-12-2
Silver Glen Springs MFL_32549_030317

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Save the Manatee® Club

The Voice for Manatees Since 1981

Governing Board
St. Johns River Water Management District

Submitted via electronic mail and online comment form

May 4, 2017

Re: Minimum Flows and Levels for Alexander, Silver Glen, and Gemini Springs

Members of the Governing Board:

Save the Manatee Club (SMC) opposes any flow reductions to the three Outstanding Florida Springs subject to this rulemaking. The Minimum Flows and Levels (MFLs) process as implemented by the St. Johns River Water Management District has developed into a process to circumnavigate public stakeholder interests in favor of carving out additional consumptive use allowances, and risks permanent damage to the springsheds, aquifer, and dependent ecosystems.

Save the Manatee Club is an award-winning national 501(c)(3) scientific and advocacy nonprofit, established in 1981 by singer and activist Jimmy Buffett and former Senator Bob Graham. The organization is based in central Florida, and represents 11,000 members and supporters throughout the state and an additional 33,000 nationwide in efforts to protect manatees and their aquatic habitat from threats posed by human activity and development. It is with this mission in mind that we offer the following comments regarding the draft MFLs for Alexander, Silver Glen, and Gemini Springs.

These three springs are designated Outstanding Florida Springs (OFS) for which the St. Johns Water Management District (SJRWMD) is required to adopt minimum flows and levels (MFLs) by July 1, 2017. 373.042 Fla. Stat. Alexander Springs is almost unique as a low-impacted first magnitude spring. The spring is regionally important both as habitat for state and federally listed species and as a recreational area for Floridians. The Draft MFL allows a 6.8 percent reduction from no-pumping conditions, and so concludes that there is an allowable 6.3 cubic feet per second (cfs) reduction in mean flow from current conditions.

Alexander Springs and the need for a precautionary approach to MFL development:

The essential problem with the Alexander Springs draft MFL is one of policy. The MFL program is designed to delineate the point at which *significant harm* would likely occur to spring as a result of consumptive use withdrawals. In other words, the MFL should be the bare minimum threshold for flow that springs never drop beneath. In reality, however, the MFL becomes akin to a permit shield, providing *carte blanche* justification for additional permitting up to that point of significant harm.

There is an inherent danger in setting an MFL that is not sufficiently protective of the system's ecological functions, because once established, MFLs form a primary basis for water supply planning, regulation, and permitting decisions within the water management district. It is therefore imperative that these levels be set carefully, applying a precautionary and conservative approach to water management.

Underscoring this point, the District's recent decision to allow an additional 10 million gallon per day reduction at Silver Springs, despite a concurrent finding that significant harm would likely occur by 2025, exemplifies the lack of common sense applied in these rulemaking processes. The more impaired the system becomes, the greater the expense of recovery (and burden on the taxpayer) and reduced likelihood of successful restoration.

Moreover, because the District, in multiple draft MFLs, cites decreased rainfall as a primary reason for flow declines. Because of the uncertainty in changing climate patterns, MFLs should be set conservatively to account for long-term drought conditions.

Alexander Springs is one of the few remaining largely first magnitude springs with flow rates comparable to historic levels. The SJRWMD and the State do a disservice to Floridians to allow any further impacts to this relatively unimpaired natural resource. Arguably, part of Alexander's value as an ecological resource is its uniquely minimally-impacted state, and that value should be the criterion evaluated in adopting an appropriately protective MFL.

Silver Glen Springs' importance as a warm water manatee habitat:

Save the Manatee Club appreciates the District's recognition of the critical importance of Silver Glen Springs as a warm water refuge for Florida Manatees, but we dispute that any flow reductions are supportable.

The recent US Fish and Wildlife rule to downlist the Florida manatee from endangered to threatened relies on the sufficiency of local regulations to protect manatees and their habitat from increasing degradation. With the loss of artificial warm water habitat from shuttered power plants being compounded by flow reductions in other essential springs habitat, Silver Glen Springs is likely to have increasing significance in sustaining Florida's manatee population. Accessibility is already a problem for manatees in Silver Glen Springs as a result of a shallow system and heavy boat traffic, and decreased flows are likely to exacerbate access issues.

The Draft MFL notes that significant harm would occur at flow levels 2.5% below no-pumping conditions as a result of a loss of warm water habitat in downstream portions of the spring run, and current conditions are already 2.1% below no-pumping conditions as a result of consumptive use withdrawals. The MFL should take climate and rainfall uncertainty into account and should implement a prevention strategy to ensure the continued and increased availability of Silver Glen Springs as a warm water refuge for Florida manatees.

The same concerns about policy and planning expressed with regard to Alexander Springs likewise apply to Silver Glen Springs, and we urge the District to develop a more protective MFL and recovery strategy to restore historic flows at this ecologically significant spring.

Gemini Springs 15 Percent Flow Reductions:

The District proposes a 15% allowable reduction from no-pumping conditions for Gemini Springs (an additional 5% reduction from current conditions). Yet, in its assessment of Alexander Springs, the draft MFL notes that the insufficiency of data for Alexander led to a conclusion of greater than the 0-10% normal range for flow reductions below no-pumping conditions.

Gemini Springs is a regionally significant second magnitude spring and park that has experienced substantial impairment in recent years. The most sensitive criterion for Gemini Springs was deemed to be aesthetic and scenic attributes, rather than the ecological or recreational value of the resource.

The SJRWMD selected residence time as the criterion by which to evaluate both scenic value and fish and wildlife habitat. The District first fails to justify its proposed 15% reduction in aquatic habitat and change in resource value, simply stating that other water management districts have suggested doing so, and it has been peer reviewed once, over 15 years ago, as a possible approach to minimum flows and levels. They conclude that, because Gemini Springs is already impacted, the 15% reduction is reasonable.

On its face, one might agree that the District should direct its greatest resources to preserving pristine areas or restoring critically important first magnitude springsheds – except we have seen the failure of the District to apply this philosophy to Alexander and Silver Springs, respectively. Given that no tradeoff in protections is being balanced against allowing Gemini Springs to further deteriorate, it makes no sense to simply write off 15% of the system's ecological value, except possibly as a matter of convenience to development interests.

It is also unclear how a 15% reduction in ecological resource value for both fish and wildlife and scenic and aesthetic value necessarily translates linearly to a 15% increase in residence time.

A threshold question though is why the District did not evaluate Gemini springs in terms of its recreational value, since the spring was historically used for swimming and other water-based activities. Again, as with Alexander Springs, the State and the District are undermining the democratic nature of Florida's waters as our shared natural heritage in favor of divvying up consumptive use rights.

As a final concern, the District's primary model, the NDMv5 used in the creation of these Draft MFLs, has repeatedly come under fire for its failure to accurately reflect both historical baseline models and for questionable underlying assumptions. At best, the model lacks transparency. Given that this model is consistently used to justify additional flow reductions from the Upper Floridan Aquifer and haphazard approaches to water management statewide, these concerns should be thoroughly addressed and the model should be subject to journalistic peer review standards.

The St. Johns Water Management District should revise its Draft MFLs for Alexander, Silver Glen, and Gemini springs to preclude further withdrawals, and should refrain from permitting additional detrimental groundwater consumptive use permits. Finally, we object to the fact that the DeLeon Springs MFL was finalized with little to no public notice and opportunity for comment. Thank you for the opportunity to offer comments on this important matter. Please do not hesitate to contact me with any questions or concerns.

Regards,

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