for estimating hydraulic conductivity in materials of moderate to high hydraulic conductivity. I'm referring here to short duration, single-well tests involving low rates of discharge or injection, not to long term tests with observation well arrays. Slug tests have gained popularity in ground water contamination studies because of problems and restrictions regarding the disposal of pumped water, or the injection of water into a contaminated aquifer. In a regional hydrogeologic investigation these issues do not arise; moreover, the effort involved in a short term single well discharge test is not much greater than that involved in a slug test. In many cases, drawdown and flow measurements made during normal well purging prior to (or during) sampling can provide adequate data for a reliable estimate of hydraulic conductivity.

7.(c) **Provide suggestions on the applications of such assessments in hydrologic - hydraulic modeling of alternative water management strategies for ecosystem restoration.**

The objectives in the Alligator Chain drawdown investigation were relatively narrow. More commonly, the objective of simulation would be to test a variety of alternatives or strategies using simulation, and to determine which alternative will have overall hydrologic consequences which most favor the eco-system restoration objective, whatever that may be. In many cases, particularly where questions of cost effectiveness arise, close comparison of the results of various alternatives or strategies is necessary. In this situation, conservative assumptions may not be appropriate, since their impact on different alternatives may differ, and those differences may drive the entire comparison. My general suggestion is therefore to do the most thorough job of simulation that the project resources will allow, in every study or investigation. Models have a way of taking on a life of their own, and of being used sooner or later for purposes far removed from those for which they were built. The model developed for the Alligator Chain project, for example, is suited to the purposes of the study, but could fall seriously short in a more general application. Whenever an already-existing model is proposed for use in a new application, a careful review of the objectives and tasks should be made, and the ability of the model to handle those tasks and meet those objectives should be evaluated.

Sincerely,

S. S. PAPADOPULOS & ASSOCIATES, INC.

Gordon D. Bennett
Senior Associate

GDB:mi

Review of:

"Analysis of Projected Impacts Of the Alligator Chain Drawdown Project On the Surrounding Water Table Aquifer", SFWMD, October 28, 1998.

By Henk Haitjema

January 15, 1999

Report organization

In general the report is a well organized and forms a professional documentation of a careful and thorough analysis of the impacts of the proposed lake drawdowns on the surrounding groundwater regime. The preliminary analysis followed by the comprehensive modeling study form a logical progression toward the presentation of the final detailed water table drawdown scenarios

I found the graphical illustrations and presentations of the results clear and helpful. I was spoiled by the color graphics in appendix J showing the maximum drawdown distributions in the aquifer for the two scenarios under "typical conditions". I wish that similar color figures had been included in appendix K, and I as these figures may form the most effective presentation of the final study results.

The discussions of the "Results of Scenario Simulations" in the body of the report (page 11 through page 23) might benefit from some additions and reorganization. It took me a while before I realized the differences in the lake drawdown scenarios for the "wet winter", "typical" and "severe drought" conditions. These scenarios should be presented concisely, perhaps with composite lake stage graphs, at the start of the discussion in the main body of the report (page 11). Similarly, if full size color graphics would be provided in the appendices, smaller scale versions (gray scale would be fine) of the "projected impact" figures can be grouped on one page (or two opposite pages). This would greatly facilitate comparisons between the drawdown patterns for the wet, typical and dry conditions.

I would also recommend that differences between the wet, typical and dry scenarios be briefly explained. For instance, I believe these differences to be due, at least in part, to differences in the drawdown scenarios and differences in the surface water occurrences (groundwater boundary conditions) for the three cases. It is also recommended to explain some of the major differences in spatial distribution of drawdowns for each of the scenarios themselves. For instance, spatial variations in aquifer properties and different distances to surface waters (constant head boundaries) may help explain spatial variations in drawdown responses. Such explanations serve two purposes: (1) they increase confidence of the reader in the results and (2) they help anticipate local drawdowns under conditions not explicitly represented by the modeling scenarios in the report. Some additional modeling work may help to better understand the drawdown patterns (and thus better explain them in the report), see my recommendation on additional analyses.

In view of the fact that the bulk of the report consists of appendices, it may be helpful if a consistent page numbering scheme would be applied. For instance, numbering the appendices A1, A2,... B1, B2... etc. in the right bottom corner of the pages. During our phone conference on January 8, I had great difficulty finding my way through the appendices even though I was generally familiar with the organization of the report

Study approach

The study, as presented, consisted of two phases: (1) a preliminary assessment based on (limited) field data and (2) a comprehensive computer modeling effort including saturated and unsaturated groundwater flow, surface water flow and interactions between surface waters, topography and groundwater. The simulations treated the various components of the hydrological cycle conjunctively and under transient conditions. The computer simulations, therefore, are of substantial complexity requiring many types input parameters, such as aquifer properties, rainfall and evapotranspiration data, surface water and terrain elevation data, soil composition data, etc. In addition, because of the transient nature of the simulations, initial conditions (e.g. water table elevations) needed to be specified.

While the preliminary study provided only a qualitative indication of the lake drawdown effects, the computer simulations are designed to provide a realistic quantitative assessment of the drawdown distributions in the aquifer surrounding the lakes. Data uncertainties and limited data resolution (and limited model resolution) will cause some discrepancies between observed and modeled groundwater elevations (see the model calibration results in appendix H). However, provided that the main characteristics of the hydrogeology and surface water hydrology are properly represented, at least on average, much more accurate results may be expected from the lake drawdown *impact* simulations. That is to say that the modeled differences between water level elevations, with and without the lake drawdowns, are more reliable than the absolute value of the modeled water levels. Consequently, the "Projected Impact of Lake Drawdown" figures (color floods) will be realistic, provided the main aquifer and surface water characteristics are properly represented in the model.

Additional analyses

In order to test the robustness of the complex MIKE SHE model I recommend that a single aquifer *steady state* groundwater analysis be performed. I suggest that the SFWMD construct a single aquifer (surficial aquifer) model with the same (approximately) hydraulic transmissivity distribution as used in the MIKE SHE model. The surface water features used in the MIKE SHE model may be introduced as head specified boundary conditions (constant head boundaries). It would be best to create three models using the surface water distributions from the *winter-wet*, *typical* and *severe-draught* conditions, respectively. The aquifer recharge rate may be taken constant over the model area, reflecting an average for each of the three conditions. The advantage of this basic model is that few input data are needed and that interpretation of the results is relatively simple. For instance, it is easier to understand why the drawdown in one area is lower than in another, when they result from the steady state groundwater model than when they are predicted by the transient MIKE SHE model. The downside of this simple model is that it can not be calibrated reliably, as the modeled groundwater regime does not really occur at any one time. However, as discussed for the MIKE SHE simulations, as long as the main aquifer characteristics are reasonably represented in the model, the impact of lake level reductions on the water table in the aquifer should be fairly accurate. Since the simulation is steady state, the water table reductions in the aquifer are expected to be larger than those predicted by the MIKE SHE model: The steady state impacts form an upper bound for the transient effects. The trends in the

drawdown distributions, however, should be similar. This means, for instance, that if in the MIKE SHE model the drawdown in the Simmons2 well is much less than in the Beekman well, the same should be seen in the steady state simulations.

The proposed steady state simulations would bridge the gap between the very preliminary analysis discussed in the report and the very complex and sophisticated MIKE SHE simulations. The steady state analyses is important to help explain phenomena observed in the MIKE SHE model and to improve our confidence in its predictions.

Recommendations for future studies

Computer simulations are excellent quantitative tools to analyze the consequences of water resource management decisions, as seen in the current report. The realism of the simulations depend both on the sophistication of the model and the availability and reliability of the input data. Unfortunately, data availability and reliability becomes increasingly problematic with increasing complexity (sophistication) of the model. This circumstance tends to undo much of the gain that may be expected from a sophisticated model when compared to a simpler model. For instance, a single layer steady state groundwater flow model will necessarily fail to recognize the transient effects of changing surface waters. On the other hand, the data needed to parameterize a transient conjunctive surface water and groundwater model may well exceed the available information, at least the available *reliable* information. As a result it is uncertain whether or not the refinements due to the more complex model will provide meaningful extra information.

To overcome this impasse a stepwise modeling approach may be adopted. The idea is to gradually build up complexity in the modeling process until additional refinements do not provide further meaningful information. This approach has several important advantages over the "all at once" comprehensive modeling approach:

1. Initial quantitative results are obtained early on in the study at little expense.
2. The relative importance of various data becomes evident when gradually more data is being used.
3. The modeling process and data collection process may be aborted when no significant changes in the outcome occur between modeling steps, thus avoiding some of the most complex and expensive simulations.
4. The gradual convergence toward an end result provides confidence in those results.

For the case of this study a stepwise approach would have started with the preliminary analysis presented in the current SFWMD report, followed by a simple steady state model with uniform aquifer properties and average aquifer recharge. Variations in aquifer properties and (net) recharge rates could have been added, followed by a distinction between wet, typical and dry conditions. Next, a transient groundwater simulation may be conducted. Finally, the Mike She model could have been introduced, again, gradually increasing the complexity of its data structure. During this process the purpose of the study should be kept in mind: what are the maximum drawdowns in the aquifer near the fishponds? Perhaps, the answer would have been obvious before the MIKE SHE model would have been implemented in all of its complexity. Perhaps the answer would have been obtained even before the MIKE SHE model would have been used at all.

Conclusions

The analyses presented in the report appear technically sound. The predicted water table impacts (drawdowns) as presented in Figures 7, 9 and 14 seem reasonable. However, an additional steady state analysis could significantly increase our confidence in these predictions by forming an upper bound to the drawdowns and by helping to explain some of the differences in drawdowns, both spatially and between scenarios. The proposed report reorganizations are cosmetic

9 Jan 99

Richard C. Peralta, PE,PhD,
h 435 563 0356 hfax 435 563 1823
o 435 797 2786 ofax 435 797 1248
peralta@cc usu edu

Peer Review of:
Alligator Lake Drawdown Model

General Comments

1. Have the groundwater /surface relationships in the study area been reasonably characterized?

The answer depends on the intended purpose of the model. Suggestions made below are intended to promote confidence that the model can be suitable for assessing the impact of lake drawdown on fish ponds. However, even with the recommended changes, the model will not be suitable for future purpose of assessing 'the time scale of refilling the lake and the aquifer systems assuming different climatic scenarios' (page 1, paragraph 3 of Appendix L).

At this time, the reader does not know how well the model predicts areas of ponding. Ponded waters provide a buffer that reduces the impact of lake drawdowns. It is important that the model predicts ponding reasonably, or at least in the right locations. Suggestions under comment 3 address this

The report should clearly specify which canals are modeled using 1D flow equations, (Blackwater and Russell)and that they and all surface water bodies are sinks.

2. Is the MIKE SHE modeling system an appropriate tool to use to analyze groundwater / surface interactions?

The MIKE SHE model can be appropriately used to model groundwater / surface interactions

3. Is the methodology and approach used in this assessment sound?

The task of calibrating a model without knowing initial heads is challenging. The general approach is sound but relies on the accuracy of the groundwater model. To improve confidence in the model, the areas the model predicts as having ponding should be verified using field data, aerial photography or remote sensing. Steady-state simulation using representative boundary conditions should be used to verify that the model will not cause ponding in inappropriate locations. This will give more confidence in the employed conductivity values.

The report should mention whether any groundwater extraction wells exist in the area or are modeled.

4. Has the methodology been appropriately applied?

See above comment 3

5. Is the data collection network in proper locations and is the data sufficient for the analysis?

The monitoring well network is reasonable. However, more water level information can be used than is provided by the wells. For sites such as this, one should verify locations of ponding (see comment 3)

It is also useful to use field crop evaluation to provide spatially distributed upper limits on acceptable water levels during calibration. Field observation of agricultural crop robustness can help identify areas having high water tables. When water levels intrude too much into the normal crop root zone, the plants do not grow normally and crop yields suffer. If crops are growing normally, the water levels are beneath the bottom of the root zone.

6. Are the conclusions reached reasonable (accurate?) And supported by the analysis?

The projected impacts of lake drawdown on water levels near fish farms should be adjusted to reflect the calibration error observed for those wells. The calibration was performed during a wet period, during which ponded water might ameliorate the drawdown due to lake drawdown. That might mean that if the model overpredicted head x feet during calibration, it might overpredicted head by more than x feet during normal or dry scenarios. For example, p 3 of Appendix H shows a 0.5 ft final over prediction at Blackwater well. Appendix K, p 5 predicts Blackwater levels as low as 69.1 ft to result from lake drawdown. Subtracting 0.5 ft from 69.1 yields a 68.6 ft head for Blackwater well. One can use that value to evaluate impact on the fish farm. (P 9 shows a 1 ft over prediction at Chestnut well. Applying the same process yields 64.7 - 1.0 or 63.7 feet.)

Using the error observed at the end of the calibration period (for the adjustment) is justifiable because SFWMD did not consider much early observed data to be valid, and calibration error would not necessarily be decreasing with time.

7. Has the project taken advantage of available groundwater / surface interaction assessment techniques / methodologies? Suggest future improvements of such assessments and design of data collecting systems. Suggest application of such assessments in hydrologic-hydraulic modeling of alternative water management strategies for ecosystem restoration.

Including ponding area, and in some cases ponding depth, is important. Evaluating depth to water by observing plant robustness is also useful. Both acts can be enhanced by aerial surveillance techniques. Evaluating ponding area is especially important when one is trying to predict impacts on nesting areas and endangered habitats.

Detailed Comments

Comments Concerning Report Body

p1, para 1, last line. Replace 'drawdown project' with 'drawdown project and structure locations'. Better maps are needed in the body of the report. The best one in the document is that at the beginning of Appendix E. However, it does not identify the roads and the lake structures that are mentioned in the report.

P1, para 2, sentence 1. Please clarify how large a head drop is represented by the mentioned lowering.

P3, para 4, line 3. Shouldn't 'excess' be replaced with 'excessively' here and in other places in the report?

P3, para 5. The available map should show both wells and the highways.

p4, para 2. Rearrange this paragraph to initially indicate its intent of showing that Alligator Lake does not influence heads at Castelli Farms. As written, the reader was wondering why the well farthest from the lake had an intermediate head value. Later I realized that distance from the lake was not very important for that well.

p4, para 2. This reader is curious as to why OSS68 had intermediate head values. Are these heads possibly due to the wetlands near OSS68. Why are the wetlands not mentioned in the report? How are they represented in the MIKE SHE model? It would be helpful to know the relative ground surface elevation for these locations if that is what is impacting the relative head elevations of the two wells

p4, para 2 and elsewhere. It would be very helpful to see assumed or simulated water table contour maps. I found none in the report. I realize data is sparse, but would rather see such maps than not. Similarly, ground surface elevation and depth to water maps for a representative scenario would help.

P4, para 2, line 7. Remove 'the' between 'during' and 'drought'.

P4, para 4. This paragraph would benefit by a lead-in. What is its relation to what preceded it? Please clarify what are the 'wet season' and dry season months.

P4, para 3-5. A table summarizing this information would be helpful. The same or similar table should be used to summarize the results of simulated scenarios.

P5, para 2. Please break this into more than one phrase and reword. If head difference during the severe drought (1980-81) were close to their long term averages, why was the head difference not 'average' when rainfall was far below normal in 1980? I though the definition of a drought was a penod of very low rainfall.

p5, para 4 I could not find Lake Joel on any of the maps in the report body

p5, para 4, line 4 Shouldn't you replace 'consistent' with 'similar'? If not, what does consistent mean here?

P5, para 5, lines 5-7 Please replace 'There are important role ' with 'Many interacting parameters affect groundwater levels Rainfall plays an especially important role '

P5, para 5, line 9 Does this mean all the fish would die at Blackwater Fishery unless supplemental water is provided?

P5, para 5, lines 9,10 Please replace 'up to an additional one foot lower' with 'as much as one foot lower'

P5, para 5, lines 12,13 Please consider replacing 'Head. table) ' with 'Head difference increases as groundwater levels rise in response to rainfall '

P7, table, column 2 Consider replacing 'Water Body' with 'Nearby Water Body', and adding a table number.

P8, Fig 2 It would be helpful to have the roads labeled, and to know what the intermediately shaded areas are. I assume they are wetlands

P8, para 1, line 3 This seems misleading An Appendix indicates that the Floridan aquifer was also simulated in this study, and that flow between aquifers was simulated.

P9, para 2, line 1. Although the sentence is accurate, 'during the calibration period' left me wondering whether this was a computer simulated aquifer response test, or whether it was a field test that was conducted during the same period for which the model was being calibrated.

P9, para 2, line 3. The water level did not reach 62 feet according to Fig 3

P9, Para 2, line 8 Where is Structure S-60 located on a map?

P9, Fig 3 The lines need to be distinguishable in the final report Also, please indicate in the legend that 'normal schedule;, 1 in 3 schedule' and 'actual stage' all refer to lake levels.

P9, para 3, sentence 1. Please consider replacing 'hydrographs show the relationship between the lowered lake' with 'hydrographs show the relative weakness of the relationship between the lowered lake'. Mention that rainfall affects well stage more immediately and probably significantly than lake level (when contrasting Figs 3 and 4). The well level rose almost 2 feet in response to a rainfall event.

P 10, Figures 4 and others The figure titles and legends could be improved Many look like they were prepared as slides or transparencies For example, the title of Figure 4 should be something other than 'Well Stage'

P12, para 2 It would help to mention the Figure 7 cell size, and whether those cells were what were used in the simulation model

P 13, Figure 7 and others What was the maximum drawdown? I don't think it should have exceeded the maximum lake drawdown, except possibly a very small bit due to computational roundoff Showing 2-3' begs the question about how great the change really was

P 14 It would be helpful to see a figure or table that shows both calibration error statistic(s) and predicted water level change At this point, a reader is uncertain how to assess the predicted drawdowns for a well (for example a well at which the model might have consistently overpredicted head by 2')

P14, para 2, line 3 Replace 'projectted' with 'projected'

P 17, para 1, last sentence. Please clarify. Does this mean that water levels actually dropped below pond bottom and that fish died?

P 23, para 3. Input Lake Gentry (LG) head values were supposedly lowered enough to permit canal flow from Lake Alligator (LA). Is there any lower limit on how much canal flow should occur between LA and LG? If so, were any hydraulic computations performed to assure that the head decline was sufficient to cause that flow

p 23, para 4 Please clarify the time lag relationship between when a gate is set and the target lake level is achieved? Is it on the order of hours, days or weeks for the gate setting changes being invoked in these scenarios?

P 26, para 2, lines 2,3. Consider replacing 'those fish farms such as' with 'the fish farms:'.

Several pages and figures. Figures or text discussing predicted heads at wells should include discussion of calibration error and its significance on the conclusions. (See comment concerning Appendix I).

<u>Comments Concerning Appendix B (Preliminary Hydrologic Analysis).</u>

p1, para 4, line 4. Replace 'primarily' with 'primary'.

P1, para 5, line 1. Replace 'There are six fish farmers who' with 'Six fish farmers'.

P 2, para 5, line 8. Replace 'current' with 'the present'.

P2 and 3. It would help if you referred to a water table contour map that also shows the discussed wells, farms, and S60

P5, para 1, line 2. Please insert 'be' between 'also' and 'caused'

P 6, Fig 1. Why are there two p_A

P 12, Fig 7. Please label the curves (and the precipitation). The figure title is misleading

Comments on Appendix E (Data from Monitoring Wells).

p 1, Fig 1?. This was the most useful figure for my review. The reader should see such a figure earlier in the report

P2, Fig 2. This is a useful drawing (especially so because there are currently no water level contour maps). It would help if the legend listed the wells in the same order as their lines begin (on the left and from top to bottom). It took me awhile to be sure that I could distinguish between Moonlight 2 and Chestnut, etc.

P 3, Fig 3. In the body of the report can you please refer to the upward gradients, and explain why they occur.

Comments on Appendix H (Model Calibration).

P1, para 1, lines 3 and 4. This says 3-D flow is modeled in the SAS and the SAS is modeled as a 1 layer system. Are you including the downward vadose zone flow to justify describing the SAS modeling as 3-D? That seems nonstandard.

P1. How might water levels change during a 24 hour period that does not experience precipitation or pumping. In other words, what is the maximum water level change that might occur during a single day due to ET (ask someone that has conducted a lysimeter study with a saturated zone). Mention whether ET can affect the calibration comparisons between simulated and observed values for the soils of the area?

P 1, para 3. Clarify which figures include the canal. If all simulation results in the report do so, please say that. This reader was left wondering whether some simulation results should not be regarded highly because they did not include the canal.

P1, para 3. Please clarify how the canal was included in the model and the ramifications thereof. Was it represented using specified-head cells, or in some other way? What were the input parameters and assumptions? Is this the Blackwater Creek referred to on p 2, para 2 of Appendix L? I don't think it is clearly stated in the report what channel flows are simulated as such in the model.

P 7 and 9, Figures of Moonlight 1 and Chestnut well. Please be sure the report discusses the reason that early data is unreliable

P9, Figure of Chestnut well. I am unsure about how good the calibration is here. It looks like the error is increasing with time. It is hard to trust predictions for this well.

P 12, Figure of OS-181. The trend is not good here. Please justify stopping calibration.

Comments Concerning Appendix I (Wet Winter Scenario).

P 1, para 1. Please clarify that the wet winter condition scenario is the same as the calibration era. In that case, the head figures should have additional curve(s) showing the predicted heads adjusted by the known error.

P1, para 1, line 5 and subsequent figures. Line 5 states that the figures illustrate predicted heads, with and without lake drawdown. The figures declare one of the curves to be 'Actual 97-98'. Both statements cannot be true since simulated heads for that era do not equal actual observed heads. If both curves represent simulated heads, both curves should be corrected as mentioned in the previous comment.

P1 and report body. Discussions of scenario results should explain the ramifications of calibration error on the predicted impacts.

Comments Concerning Appendix J (Typical Condition Scenario).

P 1 and figures in Appendix J and in the Report Body. It would be good to mention the ramifications of any calibration error on the predictions.

P 5, Figure on Projected Impact of Drawdown..... Why is there drawdown just west of Exotic Acres? I do not understand the modeling feature that would have caused this. Is there ponding of surface water above the ground surface anyplace other than in lakes? Also, if both Lake Alligator and Lake Gentry are drawn down 2 ft, would not the canal cells connecting the two lakes also draw down 2 ft?

Comments Concerning Appendix K (Severe Drought Scenario).

P 16, Figure for OS-181. There is an unusual difference between simulated and actual heads beginning about May 30. Can you explain that?

p 20, and in report body. In the physical system, how long does it take for the model-specified Lake Gentry and Lake Alligator heads to be achieved? In the model the heads are achieved within one simulated day, I assume.

Comments Concerning Appendix L (Model Documentation)

P1, para 2, line 4 Insert 'be' between 'would' and held'

P1, para 3, line 3 Do you mean 'time period' instead of 'time scale'

P1, para 3, lines 3 and 4 This implies that the model simulates reservoir head response to management

P1, para 3, line 6 Does 'current level' mean 'present' or do you envision changing the changing the model (in which case perhaps 'current level of development' would be better)?

P1, 2nd bullet below para 5, and ramifications on subsequent text This indicates that 2D overland flow was simulated in the model In that case, it would be good to show map(s) indicating that the area predicted by the model to be under water was indeed under water in real life.

P1, 3rd bullet below para 5 and ramifications on subsequent text. Somewhere you should mention that there was insufficient data to calibrate the 1D flow in the channels

P 2, top bullet and ramifications on subsequent text. To the extent possible, one should use depth to water beneath fields as a calibration parameter, even if there is no monitoring well Crops and native plants have different rooting depths and their tolerance to saturated conditions within their root zone varies. For example, if the water table were within 3 feet of the ground surface beneath corn, one would expect an adverse affect on the crop and its yield By field observation one can estimate a reasonable upper limit on the water table beneath cropped areas (and possibly beneath some native vegetation) It would be good to know whether the calibrated heads are beneath those upper limits.

P2, para 3, line 2. Unless there are cliffs or levees, topographic watershed boundaries normally to not lie on stream banks. Please confirm in text that the northern boundary follows sub-basin boundaries or revise the statement.

p3, para 1, line 2. Cell size seems reasonable. To better evaluate the calibration, it would be helpful if we knew how much change in head there in between cell centers in the vicinity of the monitoring wells. We need water table contour maps (including the model grid on one would be helpful) to get a feel for this

P7, para 1, line 1. What is the vertical conductivity between layers 1 and 2 and 2 and 3

P7, para 1. Where are the storativity values provided?

P 8, para 1. We recognize the difficulty in determining initial heads without more observation locations and with so many surface waters. There should be more checks on the suitability of the initial heads than merely a close match at OS-181. I would prefer to know that the initial heads include consideration of ponding depths and areas and depth to water based upon field and crop observation For example, do simulated heads cause water levels that lie beneath the bottom of the agricultural root zones in the areas shown in Fig 15, p 15?

p 8, para 1 What do simulated steady-state heads resulting from mean boundary conditions look like? Please justify not presenting those.

P 8, para 2 I missed the discussion of what a T2 filename is If it does not precede this text, it should be clarified.

P 8, para 3 Why not mention the northwestern and northeastern boundary conditions?

P 8, para 3, lie 4 Please insert 'peripheral' before 'cells'.

P 8, para 4, line 2. Please insert 'specified' before 'variable'.

P8 para 5, line 6. It would be helpful to see a gridded map showing where drainage water is routed to. Where was water east of Gentry Lake routed to?

P 9, Fig 7 I would use 'specified variable' instead of just 'variable' in the legend.

P 9, Fig 7 Is the effect of the eastern no flow boundary on the head at OS-181 insignificant?

p 14 It would be good to present the reported accuracy of the employed ET method in SFWMD Might not head decline in some areas be due more to ET than to horizontal groundwater flow?

p 17, para 2, line 1 Clarify whether sub-regional head boundaries are specified and time-varying?

P 17, para 2, line 10. Please replace 'feature that is' with 'feature than is'.

p 17 para 2, next to last line. Please clarify whether the hardpan is used to represent layer 2 in the model, and the deep well is used to represent the Floridan Aquifer.

p 19, Figures here and in subsequent figures The legend should indicate which line is from regional and which is from sub-regional model.

P 19, para 2, lines 1 and 2. Please clarify. Does this mean that matching deep well heads was considered more important than matching shallow well heads?

P 20, Table 4, wells 1 and 2. What are the entries in the right hand column?

P 22, para 1, line 6. Please replace 'that portrayed' with 'than portrayed'.

P 24, para 1. Please clarify that this covers the same time period as the dry condition scenario. What are any ramifications of that?

Stemle, Andersen & Associates, Inc.
ENVIRONMENTAL AND HYDROLOGIC CONSULTANTS

555 N. Congress Avenue
Suite 302
Boynton Beach, FL 33426
(561) 738-0017
(561) 738-2065 FAX

5307 Pennock Point Road
Jupiter, FL 33458
(561) 745-9545
FAX (561) 745-9545

ORIGINAL

May 27, 1999

Mr. John Yudin, Esq.
Law Offices of William E. Guy, Jr.
55 East Ocean Boulevard
P.O. Box 3386
Stuart, FL 34995-3386

Re: Alligator Chain Drawdown Model – Peer Review Report

Dear John:

Stemle, Andersen and Associates, Inc. has reviewed the Peer Review Report of the South Florida Water Management District (SFWMD) publication, *"Analysis of Projected Impacts of the Alligator Lake Chain Drawdown Project on the Surrounding Water Table Aquifer"* This letter provides a summary of the SFWMD peer review as is relates to our October 1998 review. In summary, the peer reviewers have conflicting opinions about the model's adequacy to predict drawdowns. Dr. Peralta's review agrees with our concerns that drainage through wetlands may not be adequately represented in the model. If the model does not treat the wetlands as surface water drainage features, the model will underestimate the areal extent of the drawdown.

Three individuals were included in the peer review: Gordon Bennett of S.S. Papadopulos & Assoc.; Heak Haitjema; and Richard Peralta P.E., Ph.D. Two of the three (Bennett and Haitjema) agreed that the model was technically sound and the projected drawdown reasonable but were uneasy with SFWMD's reliance on the transient calibration. The two also recommended changes to the model to improve their confidence in the results. Bennett suggested that the model be run to steady state conditions, do additional calibration runs using specific yield, and that additional calibration be performed using the steady state model. Bennett also recommended using a more reliable method than slug tests for estimating permeability (as we did in our review). Neither men discussed surface water flow through wetlands. Perhaps this is because they had not physically seen the modeled region as we have and didn't pick up on it from the model documentation.

The third reviewer, Dr. Richard Peralta, is a professor at Utah State University. Peralta gave recommendations to improve confidence in the model but did not agree that the model reasonably characterized the study area (question 1); did not agree that the approach was sound (question 3) did not agree that the methodology was appropriately applied (question 4); did not agree that the conclusions are reasonable/accurate (question 6); did not agree that the project has taken advantage of available assessment techniques (question 7). He agreed that the MIKE SHE is appropriate for this application and that the well data network was sufficient for the analysis (questions 2 and 5) but felt that more water level information could have been used than provided by the wells. Peralta had the same concerns about how wetlands were represented in the model, as did we in our review. He specifically linked water levels in well OSS68 (Castelli Farms) with

Attachment #3

wetlands and asked why the nearby wetlands are not mentioned in the report. (*If you remember we indicated that it was unclear in the model documentation if surface water flow through the submerged wetlands, canals and ditches impact the modeled surficial aquifer correctly.*) Peralta asked almost the exact same question by asking how the wetlands were represented in the MIKE SHE model and what the relative ground surface elevations are.

Peralta also had concerns with the calibration of the model. He had questions regarding the sensitivity of the model to evapotranspiration, and had concerns with the calibration of the Chestnut well and OS-181.

In agreement with our comments concerning initial heads, (*In our review we said "The starting heads were selected based on one stress period in the test simulation that was found to have a water level in the model cell, containing well OS181, that was near the observed water level in well OS181. So the initial groundwater heads in layers 1 and 2 were based on one cell out of the 166 x 125 square grid cells. One groundwater data point is not an adequate basis for a model wide interpretation of starting heads. With the exception of the modeled lakes, no initial heads were measured in any of the wetland systems within the model area.*") Peralta had similar views. He indicated that there should be more checks on the suitability of the initial heads that merely a close match at OS-181. He went on to recommend that the initial heads include consideration of ponding depths (wetlands) and field and crop observation.

In summary, the peer review confirms that the model used by the SFWMD to project impacts from the Alligator Lake Chain drawdown is not a sufficient demonstration that the drawdown does not significantly affect the fish farmers. Had the peer review group been able to physically see the area that was modeled, as we did, their opinions may have been different. We recommend open discussions with the peer review group to determine if they share our specific concerns with the model.

We appreciate the opportunity to provide these services to you. Please contact me if you have any questions.

Sincerely,
Stemle, Andersen & Associates, Inc.

James L. Andersen, P.G.
Principal Hydrogeologist
State of Florida Registered Geologist #1103

PC Rhonda Walther, Blackwater Fishery

AFFIDAVIT OF RHONDA WALTHER

STATE OF FLORIDA)
)
COUNTY OF OSCEOLA)

BEFORE ME the undersigned authority personally appeared, RHONDA WALTHER who deposes and says as follows:

1. My name is Rhonda Walther and I have personal knowledge of the allegations contained herein

2. Blackwater Fishery, Inc. is owned and operated by a corporation of which I am a principal

3. Blackwater Fishery, Inc. is located in Osceola County at 3460 Hickory Tree Rd., St Cloud, Florida

4. Blackwater Fishery Inc. was in operation in April of 1998

5. Blackwater Fishery Inc. is almost immediately adjacent to Alligator Lake

6. Blackwater Fishery, Inc. mainly uses groundwater in its fish farming operations, which is supplemented by well water

7. I am aware that Alligator Lake has a seasonal fluctuation of water levels, through the South Florida Water Management District altering the lake levels

8. I am aware that a drop in water level from approximately 64.0 feet to 62.0 feet is normal for the regulation of Alligator Lake between what is commonly referred to as "summer pool" and "winter pool". "Winter pool" level is approximately 64.0 feet, "summer pool" is normally approximately 62.0 feet.

9. I am also aware that the drop between "summer pool" and "winter pool" normally takes 2-3 months time

10. In years when Alligator Lake has been taken from "winter pool" to "summer pool" on a normal schedule over the period of 2-3 months, there has been a drop in water levels in the ponds Blackwater Fishery, Inc. However, due to the fact that the drop in water levels occurred over a 2-3 month period of time, Blackwater Fishery, Inc. was able to maintain operable water levels through pumping water to its ponds. The exception to this would have been in 1986/87 when Florida Game & Freshwater Fish Commission conducted a drawdown of Lake Tohopekiliga.

11. I am aware that in April of 1998, a "test drawdown" of the Alligator Chain of lakes was undertaken by the Florida Game and Freshwater Fish Commission and/or the South Florida Water Management District.

12. I am aware that in the "test drawdown", the water level in Alligator Lake was dropped from 63.8 feet to 62.0 feet between April 1 and April 14, 1998.

13. I am aware that by April 21, 1998, the water levels at Blackwater Fishery, Inc. ponds had dropped by almost two feet.

14. As a result of losing two feet of water immediately after the "test drawdown", there was insufficient water in the ponds at Blackwater Fishery, Inc. to maintain normal operations at the farm.

15. Due to the fact that the drop in water levels dropped so rapidly during the "test drawdown", Blackwater Fishery, Inc. could not maintain normal operations primarily for two reasons. First, was that it was impossible to pump sufficient amounts of water to maintain operable pond levels. In other words, groundwater drained from the ponds faster than it could be pumped in from deep wells. Secondly, even if sufficient water could have been pumped to maintain water levels, tropical fish must have "seasoned" groundwater to survive. Tropical fish cannot survive in ponds filled with water from deep wells, they are only able to tolerate deep well water in small quantities to remain healthy.

16. I am aware that the ground water levels at Blackwater Fishery, Inc. has not returned to normal since the "test drawdown" in April of 1998.

17. Thus, groundwater supplies at Blackwater Fisheries, Inc. have not returned to normal since the "test drawdown" in April of 1998.

18. It appears that as a result of the "test drawdown" the aquifer beneath Blackwater Fisheries, Inc. has been depleted since it has not recharged since the "test drawdown"

19. I am aware that the videotape included in the Comment packet submitted to the USACOE's by the Osceola Tropical Fish Farmers, Inc. is a true and accurate representation of the water levels at the farms specified in the video

20. I am aware that the color copies of the photographs included in the Comment packet submitted to the USACOE's by the Osceola Tropical Fish Farmers, Inc. is a true and accurate representation of the water levels at Castelli Farms, Blackwater Fishery, Inc., Mako Tropicals and Sunset Tropicals fish farms on the dates and times specified in the photographs

FURTHER AFFIANT SAYETH NAUGHT

Rhonda Walther
RHONDA WALTHER

STATE OF FLORIDA)
COUNTY OF OSCEOLA)

The foregoing instrument was acknowledged before me this 1 day of June, 1999 by RHONDA WALTHER, who is personally known to me (X) or who has produced _____ as identification ( ).

KRISTIN J. BRAYTON
My Comm. Exp. 5/5/2002
No. CC 726786
Personally Known | Other I.D.

Kristin J. Brayton
Signature
KRISTIN J. BRAYTON
Typed, printed or stamped name
5/05/2002
My commission expires

Attachment #4

AFFIDAVIT OF ARTHUR DAVID CASTELLI

STATE OF FLORIDA)
COUNTY OF OSCEOLA)

BEFORE ME the undersigned authority personally appeared, ARTHUR DAVID CASTELLI who deposes and says as follows.

1. My name is Arthur David Castelli and I have personal knowledge of the allegations contained herein.

2. I am the owner and operator of Castelli Farms.

3. Castelli Farms is located in Osceola County at 7580 E. Irlo Bronson Memorial Highway, St. Cloud, Florida 34771.

4. Castelli Farms was in operation in April of 1998.

5. Castelli Farms is within 3.5 miles from Alligator Lake.

6. Castelli Farms mainly uses groundwater in its fish farming operations, which is supplemented by well water.

7. I am aware that Alligator Lake has a seasonal fluctuation of water levels, through the South Florida Water Management District altering the lake levels.

8. I am aware that a drop in water level from approximately 64.0 feet to 62.0 feet is normal for the regulation of Alligator Lake between what is commonly referred to as "summer pool" and "winter pool". "Winter pool" level is approximately 64.0 feet, "summer pool" is normally approximately 62.0 feet.

9. I am also aware that the drop between "summer pool" and "winter pool" normally takes 2-3 months time.

10. In years when Alligator Lake has been taken from "winter pool" to "summer pool" on a normal schedule over the period of 2-3 months, there has been a drop in water levels in the ponds at Castelli Farms. However, due to the fact that the drop in water levels occurred over a 2-3 month period of time, Castelli Farms was able to maintain operable water levels through pumping water to its ponds.

11. I am aware that in April of 1998, a "test drawdown" of the Alligator Chain of lakes was undertaken by the Florida Game and Freshwater Fish Commission and/or the South Florida Water Management District.

12. I am aware that in the "test drawdown", the water level in Alligator Lake was dropped from 63.8 feet to 62.0 feet between April 1 and April 14, 1998.

13. I am aware that by April 21, 1998, the water levels at Castelli Farms ponds had dropped by almost two feet.

14. As a result of losing two feet of water immediately after the "test drawdown", there was insufficient water in the ponds at Castelli Farms to maintain normal operations at the farm.

15. Due to the fact that the drop in water levels dropped so rapidly during the "test drawdown", Castelli Farms could not maintain normal operations primarily for two reasons. First, was that it was impossible to pump sufficient amounts of water to maintain operable pond levels. In other words, groundwater drained from the ponds faster than it could be pumped in from deep wells. Secondly, even if sufficient water could have been pumped to maintain water levels, tropical fish must have "seasoned" groundwater to survive. Tropical fish cannot survive in ponds filled with water from deep wells, they are only able to tolerate deep well water in small quantities to be healthy.

16. I am aware that the ground water levels at Castelli Farms has not returned to normal since the "test drawdown" in April of 1998.

17. Thus, groundwater supplies at Castelli Farms have not returned to normal since the "test drawdown" in April of 1998.

18. Castelli Farms is adjacent to a portion of Big Bend Swamp.

19. I am aware that immediately following the "test drawdown" in April of 1998, the portion of Big Bend Swamp adjacent to Castelli Farms experienced a significant and substantial loss of water.

20. I am aware that in the time since the "test drawdown" the portion of Big Bend Swamp immediately adjacent to Castelli Farms has not returned to what would be considered a normal water level.

21. I am aware that in the time since the "test drawdown", that there has been an obvious increase in numbers of exotic and nuisance species of terrestrial plants in the Swamp adjacent to Castelli Farms.

22. It appears that as a result of the "test drawdown" the aquifer beneath Castelli Farms has been depleted since it has apparently not recharged since the "test drawdown".

23. I am aware that the videotape included in the Comment packet submitted to the USACOE's by the Osceola Tropical Fish Farmers, Inc. is a true and accurate representation of the water levels at the farms specified in the video.

24. I am aware that the color copies of the photographs included in the Comment packet submitted to the USACOE's by the Osceola Tropical Fish Farmers, Inc. is a true and accurate representation of the water levels at Castelli Farms, Blackwater Fishery, Inc., Mako Tropicals and Sunset Tropicals fish farms on the dates and times specified in the photographs.

FURTHER AFFIANT SAYETH NAUGHT.

ARTHUR DAVID CASTELLI

STATE OF FLORIDA)
COUNTY OF OSCEOLA)

The foregoing instrument was acknowledged before me this 1 day of June, 1999 by ARTHUR DAVID CASTELLI who is personally known to me (X) or who has produced _____ as identification ( )

KRISTIN J. BRAYTON
My Comm Exp 5/5/2002
No. CC 726755
Personally Known | Other I.D.

Kristin J. Brayton
Signature

KRISTIN J. BRAYTON
Typed, printed or stamped name

05/05/2002
My commission expires

AFFIDAVIT OF LORETTA GARDNER

STATE OF FLORIDA)
)
COUNTY OF OSCEOLA)

BEFORE ME the undersigned authority personally appeared, LORETTA GARDNER who deposes and says as follows

1. My name is Loretta Gardner and I have personal knowledge of the allegations contained herein.

2. Exotic Acres is owned and operated by myself.

3. Exotic Acres is located in Osceola County at 4580 Cypress Creek Ranch Rd., St Cloud, Florida.

4. Exotic Acres was in operation in April of 1998.

5. Exotic Acres is in close proximity to Alligator Lake.

6. Exotic Acres mainly uses groundwater in its fish farming operations, which is supplemented by well water.

7. I am aware that Alligator Lake has a seasonal fluctuation of water levels, through the South Florida Water Management District altering the lake levels.

8. I am aware that a drop in water level from approximately 64.0 feet to 62.0 feet is normal for the regulation of Alligator Lake between what is commonly referred to as "summer pool" and "winter pool". "Winter pool" level is approximately 64.0 feet, "summer pool" is normally approximately 62.0 feet.

9. I am also aware that the drop between "summer pool" and "winter pool" normally takes 2-3 months time.

10. In years when Alligator Lake has been taken from "winter pool" to "summer pool" on a normal schedule over the period of 2-3 months, there has been a drop in water levels in the ponds of Exotic Acres. However, in normal years the water loss did not cause a problem because the water loss was gradual and lasted only a short period of time. Due to the fact that the availability of water was never a problem, Exotic Acres did not have the capability or need to pump water in to its ponds.

11. Last year however, in April of 1998 Exotic Acres experienced an atypical rapid loss of water, far in excess of the amount of water normally lost due to the change from "winter pool" to "summer pool".

12. I am aware that in April of 1998, a "test drawdown" of the Alligator Chain of lakes was undertaken by the Florida Game and Freshwater Fish Commission and/or the South Florida Water Management District.

13. I am aware that in the "test drawdown", the water level in Alligator Lake was dropped from 63.8 feet to 62.0 feet between April 1 and April 14, 1998.

14. I am aware that by April 21, 1998, the water levels at Exotic Acres ponds had dropped more than two feet.

15. As a result of losing two feet of water immediately after the "test drawdown", there was insufficient water in the ponds at Exotic Acres to maintain normal operations at the farm.

16. Due to the fact that the drop in water levels dropped so rapidly during the "test drawdown", Exotic Acres could not maintain normal operations primarily for two reasons. First, was that Exotic Acres had no capability to pump well water in to its ponds. Exotic Acres has always had sufficient supply of groundwater such that it never had the need for a capability to pump well water in to its ponds until April of 1998. Secondly, even if Exotic Acres could have pumped sufficient water to maintain its water levels, tropical fish must have "seasoned" groundwater to survive. Tropical fish cannot survive in ponds filled with water from deep wells, they are only able to tolerate deep well water in small quantities to be healthy.

17. I am aware that the ground water levels at Exotic Acres has not returned to normal since the "test drawdown" in April of 1998.

18. Thus, groundwater supplies at Exotic Acres have not returned to normal since the "test drawdown" in April of 1998..

19. It appears that as a result of the "test drawdown" the aquifer beneath Exotic Acres has been depleted since it has not recharged since the "test drawdown".

20. I am aware that the videotape included in the Comment packet submitted to the USACOE's by the Osceola Tropical Fish Farmers, Inc. is a true and accurate representation of the water levels at the farms specified in the video.

21. I am aware that the color copies of the photographs included in the Comment packet submitted to the USACOE's by the Osceola Tropical Fish Farmers, Inc. is a true and accurate representation of the water levels at Castelli Farms, Blackwater Fishery, Inc., Mako Tropicals and Sunset Tropicals fish farms on the dates and times specified in the photographs.

FURTHER AFFIANT SAYETH NAUGHT

LORETTA GARDNER

STATE OF FLORIDA)
COUNTY OF OSCEOLA)

The foregoing instrument was acknowledged before me this 1 day

June, 1999 by LORETTA GARDNER, who is personally known

to me ( ) or who has produced FLA. Drivers License as identification (Y)

KRISTIN J. KRAYTON
My Comm Exp. 5/5/2002
No. CC 726755
Personally Known / Other I.D.

Signature

KRISTIN J. BRAYTON
Typed, printed or stamped name

05/05/2002
My commission expires

AFFIDAVIT OF SHEILA KLINGENSMITH

STATE OF FLORIDA)
)
COUNTY OF OSCEOLA)

BEFORE ME the undersigned authority personally appeared, SHEILA KLINGENSMITH who deposes and says as follows:

1. My name is Sheila Klingensmith and I have personal knowledge of the allegations contained herein.

2. Sunset Tropicals is owned and operated by myself and my husband Mike Klingensmith.

3. Sunset Tropicals is located in Osceola County at 3981 Doe Dr., St. Cloud, Florida.

4. Sunset Tropicals was in operation in April of 1998.

5. Sunset Tropicals is approximately 2 8 miles from Alligator Lake and 1.6 miles from Lake Tohopekaliga.

6. Sunset Tropicals uses groundwater in its fish farming operations

7. I am aware that Alligator Lake has a seasonal fluctuation of water levels, through the South Florida Water Management District altering the lake levels.

8. I am aware that a drop in water level from approximately 64.0 feet to 62 0 feet is normal for the regulation of Alligator Lake between what is commonly referred to as "summer pool" and "winter pool". "Winter pool" level is approximately 64.0 feet, "summer pool" is normally approximately 62.0 feet.

9. I am also aware that the drop between "summer pool" and "winter pool" normally takes 2-3 months time.

10. In years when Alligator Lake has been taken from "winter pool" to "summer pool" on a normal schedule over the period of 2-3 months, there has been a drop in water levels in the ponds of Sunset Tropicals. However, the drop in groundwater levels was limited enough whereby Sunset Tropicals was always able to maintain operable groundwater levels without the need to pump well water. The only exception to this was in 1986/87, when the Lake Tohopekaliga drawdown was undertaken by Florida Game and Freshwater Fish Commission.

11. I am aware that in April of 1998, a "test drawdown" of the Alligator Chain of lakes was undertaken by the Florida Game and Freshwater Fish Commission and/or the South Florida Water Management District

12. I am aware that in the "test drawdown", the water level in Alligator Lake was dropped from 63.8 feet to 62.0 feet between April 1 and April 14, 1998.

13. I am aware that by April 21, 1998, the water levels at Sunset Tropicals ponds had dropped by more than half a foot. By May 7, 1998 water levels at Sunset Tropicals had dropped by more than 1 foot By June 7, 1998, water levels at Sunset Tropicals had dropped by more than 21/2 feet.

14. As a result of losing 21/2 feet of water after the "test drawdown", there was insufficient water in the ponds at Sunset Tropicals to maintain normal operations at the farm.

15. Due to the fact that the drop in water levels dropped so rapidly during the "test drawdown", Sunset Tropicals could not maintain normal operations. Even if Sunset Tropicals had possessed the capability to pump water in to the ponds to maintain the water levels, tropical fish must have "seasoned" groundwater to survive. Tropical fish cannot survive in ponds filled with water from deep wells, they are only able to tolerate deep well water in small quantities to remain healthy.

16. I am aware that the ground water levels at Sunset Tropicals has not returned to normal since the "test drawdown" in April of 1998.

17. Thus, groundwater supplies at Sunset Tropicals have not returned to normal since the "test drawdown" in April of 1998..

18. It appears that as a result of the "test drawdown" the aquifer beneath Sunset Tropicals, has been depleted since it has not recharged since the "test drawdown".

19. I am aware that the videotape included in the Comment packet submitted to the USACOE's by the Osceola Tropical Fish Farmers, Inc is a true and accurate representation of the water levels at the farms specified in the video.

20. I am aware that the color copies of the photographs included in the Comment packet submitted to the USACOE's by the Osceola Tropical Fish Farmers, Inc is a true and accurate representation of the water levels at Castelli Farms, Blackwater Fishery, Inc., Mako Tropicals and Sunset Tropicals fish farms on the dates and times specified in the photographs

FURTHER AFFIANT SAYETH NAUGHT.

Sheila Klingensmith
SHEILA KLINGENSMITH

STATE OF FLORIDA)
COUNTY OF OSCEOLA)

The foregoing instrument was acknowledged before me this 1 day

May, 1999 by SHEILA KLINGENSMITH, who is personally known

to me (X) or who has produced _____ as identification ( ).

KRISTIN J. BRAYTON
My Comm Exp. 5/5/2002
No. CC 726755
Personally Known ( ) Other I.D.

Kristin J. Brayton
Signature
KRISTIN J BRAYTON
Typed, printed or stamped name
05/05/2002
My commission expires

AFFIDAVIT OF MARVIN JOHNSON

STATE OF FLORIDA)
)
COUNTY OF OSCEOLA)

BEFORE ME the undersigned authority personally appeared, MARVIN JOHNSON who deposes and says as follows:

1. My name is Marvin Johnson and I have personal knowledge of the allegations contained herein.

2. Moonlight Fishery is owned and operated by a corporation of which I am a principal.

3. Moonlight Fishery is located in Osceola County at 6458 Hickory Tree Rd., St. Cloud, Florida.

4. Moonlight Fishery was in operation in April of 1998.

5. Moonlight Fishery is in close proximity to Alligator Lake.

6. Moonlight Fishery mainly uses groundwater in its fish farming operations, which is supplemented by well water.

7. I am aware that Alligator Lake has a seasonal fluctuation of water levels, through the South Florida Water Management District altering the lake levels.

8. I am aware that a drop in water level from approximately 64.0 feet to 62.0 feet is normal for the regulation of Alligator Lake between what is commonly referred to as "summer pool" and "winter pool". "Winter pool" level is approximately 64.0 feet, "summer pool" is normally approximately 62.0 feet.

9. I am also aware that the drop between "summer pool" and "winter pool" normally takes 2-3 months time.

10. In years when Alligator Lake has been taken from "winter pool" to "summer pool" on a normal schedule over the period of 2-3 months, there has been a drop in water levels in the ponds of Moonlight Fishery. However, due to the fact that the drop in water levels occurred over a 2-3 month period of time, Moonlight Fishery was able to maintain operable water levels through pumping water to its ponds.

11. I am aware that in April of 1998, a "test drawdown" of the Alligator Chain of lakes was undertaken by the Florida Game and Freshwater Fish Commission and/or the South Florida Water Management District.

12. I am aware that in the "test drawdown", the water level in Alligator Lake was dropped from 63.8 feet to 62.0 feet between April 1 and April 14, 1998.

13. I am aware that by April 21, 1998, the water levels at Moonlight Fishery ponds had dropped by almost two feet.

14. As a result of losing two feet of water immediately after the "test drawdown", there was insufficient water in the ponds at Moonlight Fishery to maintain normal operations at the farm.

15. Due to the fact that the drop in water levels dropped so rapidly during the "test drawdown", Moonlight Fishery could not maintain normal operations primarily for two reasons. First, was that it was impossible to pump sufficient amounts of water to maintain operable pond levels. In other words, groundwater drained from the ponds faster than it could be pumped in from deep wells. Secondly, even if sufficient water could have been pumped to maintain water levels, tropical fish must have "seasoned" groundwater to survive. Tropical fish cannot survive in ponds filled with water from deep wells, they are only able to tolerate deep well water in small quantities to be healthy.

16. I am aware that the ground water levels at moonlight Fishery has not returned to normal since the "test drawdown" in April of 1998.

17. Thus, groundwater supplies at Moonlight Fishery have not returned to normal since the "test drawdown" in April of 1998.

18. It appears that as a result of the "test drawdown" the aquifer beneath Moonlight Fishery. has been depleted since it has not recharged since the "test drawdown".

19. I am aware that the videotape included in the Comment packet submitted to the USACOE's by the Osceola Tropical Fish Farmers, Inc. is a true and accurate representation of the water levels at the farms specified in the video.

20. I am aware that the color copies of the photographs included in the Comment packet submitted to the USACOE's by the Osceola Tropical Fish Farmers, Inc. is a true and accurate representation of the water levels at Castelli Farms, Blackwater Fishery, Inc., Mako Tropicals and Sunset Tropicals fish farms on the dates and times specified in the photographs.

FURTHER AFFIANT SAYETH NAUGHT

Marvin Johnson
MARVIN JOHNSON

STATE OF FLORIDA)
COUNTY OF OSCEOLA)

The foregoing instrument was acknowledged before me this ___ day of ____, 1999 by MARVIN JOHNSON, who is personally known to me (X) or who has produced _____ as identification ( )

KRISTIN J. BRAYTON
My Comm Exp. 5/5/2002
No. CC 726755
Personally Known (1 Other I.D.

Kristin J. Brayton
Signature
KRISTIN J. BRAYTON
Typed, printed or stamped name
05/05/2002
My commission expires

Marvinaff'd

AFFIDAVIT OF AUBREY DUQUESNAY

STATE OF FLORIDA)
COUNTY OF OSCEOLA)

BEFORE ME the undersigned authority personally appeared, AUBREY DUQUESNAY who deposes and says as follows.

1. My name is Aubrey Duquesnay and I have personal knowledge of the allegations contained herein

2. Exotic Fish Inc., is owned and operated by a corporation of which I am a principal

3. Exotic Fish, Inc. is located in Osceola County at 4525 Cypress Creek Ranch Rd., St. Cloud, Florida.

4. Exotic Fish Inc. was in operation in April of 1998.

5. Exotic Fish Inc. is in close proximity to Alligator Lake.

6. Exotic Fish, Inc mainly uses groundwater in its fish farming operations, which since 1999, has been supplemented by well water.

7. I am aware that Alligator Lake has a seasonal fluctuation of water levels, through the South Florida Water Management District altering the lake levels.

8. I am aware that a drop in water level from approximately 64.0 feet to 62.0 feet is normal for the regulation of Alligator Lake between what is commonly referred to as "summer pool" and "winter pool". "Winter pool" level is approximately 64.0 feet, "summer pool" is normally approximately 62.0 feet.

9. I am also aware that the drop between "summer pool" and "winter pool" normally takes 2-3 months time.

10. In years when Alligator Lake has been taken from "winter pool" to "summer pool" on a normal schedule over the period of 2-3 months, there has been a drop in water levels in the ponds of Exotic Fish, Inc However, in normal years the water loss did not cause a problem because the water loss was gradual and lasted only a short period of time. Due to the fact that the availability of water was never a problem, Exotic Fish, Inc. did not have the capability or need to pump water in to its ponds.

11. Last year however, in April of 1998 Exotic Fish, Inc. experienced an atypical rapid loss of water, far in excess of the amount of water normally lost due to the change from "winter pool" to "summer pool".

12. I am aware that in April of 1998, a "test drawdown" of the Alligator Chain of lakes was undertaken by the Florida Game and Freshwater Fish Commission and/or the South Florida Water Management District.

13. I am aware that in the "test drawdown", the water level in Alligator Lake was dropped from 63.8 feet to 62.0 feet between April 1 and April 14, 1998.

14. I am aware that by April 15, 1998, the water levels at Exotic Fish, Inc ponds had dropped b. 40 inches. Between April 15 and 21, 1998, I called South Florida Water Management District and invited Jim Carnes and Emily Hopkins out to view the drop in water level at Exotic Fish, Inc. Emily Hopkins did come out to view the water loss for herself and told me she believed the water loss was "due to"evaporation"

15. 40 inches of water has never "evaporated" from the ponds of Exotic Fish, Inc in less than one month.

16. As a result of losing two feet of water immediately after the "test drawdown", there was insufficient water in the ponds at Exotic Fish, Inc. to maintain normal operations at the farm

17. Due to the fact that the drop in water levels dropped so rapidly during the "test drawdown", Exotic Fish, Inc. could not maintain normal operations primarily for two reasons First, was that Exotic Fish, Inc had no capability to pump well water in to its ponds Exotic Fish, Inc. has always had sufficient supply of groundwater such that it never had the need for a capability to pump well water in to its ponds until April of 1998. Secondly, even if Exotic Fish, Inc. could have pumped sufficient water to maintain its water levels, tropical fish must have "seasoned" groundwater to survive. Tropical fish cannot survive in ponds filled with water from deep wells, they are only able to tolerate deep well water in small quantities to remain healthy.

18. I am aware that the ground water levels at Exotic Fish, Inc has not returned to normal since the "test drawdown" in April of 1998.

19. Thus, groundwater supplies at Exotic Fish, Inc. have not returned to normal since the "test drawdown" in April of 1998.

20. It appears that as a result of the "test drawdown" the aquifer beneath Exotic Fish, Inc has been depleted since it has not recharged since the "test drawdown".

21. I am aware that the videotape included in the Comment packet submitted to the USACOE's by the Osceola Tropical Fish Farmers, Inc is a true and accurate representation of the water levels at the farms specified in the video.

22. I am aware that the color copies of the photographs included in the Comment packet submitted to the USACOE's by the Osceola Tropical Fish Farmers, Inc is a true and accurate representation of the water levels at Castelli Farms, Blackwater Fishery, Inc , Mako Tropicals and Sunset Tropicals fish farms on the dates and times specified in the photographs

FURTHER AFFIANT SAYETH NAUGHT

Aubrey Duquesnay
AUBREY DUQUESNAY

STATE OF FLORIDA)
COUNTY OF OSCEOLA)

The foregoing instrument was acknowledged before me this 1 day

Jan, 1999 by AUDREY DUQUESNAY, who is personally known

to me ( ) or who has produced FL Drivers License as identification (x).

KRISTIN J. BRAYTON
NOTARY PUBLIC
My Comm Exp 5/5/2002
No. CC 726755
Personally Known ( ) Other I.D.

Kristin J. Brayton
Signature
Kristin J. Brayton
Typed, printed or stamped name
05/05/2002
My commission expires

RESPONSES TO COMMENTS FROM WILLIAM E. GUY, JR,
55 EAST OCEAN BLVD., STUART, FL 34995
ON BEHALF OF THE OSCEOLA FISH FARMERS, INC.

COMMENT: (1) All necessary permits required by the State of Florida have not been issued for the Alligator Chain of Lakes drawdown project.

RESPONSE: The lake regulation schedule changes required for this project are the subject of this EIS. Approval of the regulation schedules for the drawdown will be required from the U.S. Army Corps of Engineers' South Atlantic Division. According to the SFWMD, all other appropriate regulatory authorizations have been received for implementation of the lake drawdown project. The environmental resource permit and dredge and fill authorizations previously issued by the state and federal government are the only permits required under law.

COMMENT: (2) The "Test Drawdown" conducted by SFWMD in April of 1998 was and "unlawful" activity pursuant to Florida Administrative Code 40E-4.011 and 40E-4.041.

RESPONSE: The "test drawdown" conducted in April 1998 was appropriately authorized under the operational approvals issued by the U.S. Army Corps of Engineers, which regulates the operations and levels in the subject waterbodies and canals. The U.S. Army Corps of Engineers South Atlantic Division approved a temporary deviation to the Alligator Lake Chain and Lake Gentry regulation schedules to facilitate the aquifer response test.

COMMENT: (3) Neither SFWMD nor USACOE has specifically considered the potential for impacts to wetlands in and around the Alligator Chain of Lakes as a result of the "drawdown".

RESPONSE: It has been well documented in the DEIS as well as in many environmental publications that periodic drying, often accompanied by fire, in wetland ecosystems is necessary to the continued health of these systems (please refer to the list of references in the FEIS). As discussed in section 3.01.1, "...extreme water fluctuations played an important role in sustaining extensive areas of high-quality aquatic habitat." Stabilized water levels brought about by regulation schedules have lead to an artificial and narrow restriction of the range in which the Alligator Chain and Lake Gentry's water levels historically fluctuated. Long-term stabilized water levels lead to degradation of habitat value in adjacent wetlands as well as the lakes' littoral zones. It is the very disturbance of natural conditions by human intervention that has allowed loss of habitat value such as the proliferation of nuisance vegetation. Aquatic and wetland ecosystems benefit greatly from efforts to restore historic hydropatterns to the extent possible within systems that have been altered for flood control and other purposes.

COMMENT: (4) The United States Fish & Wildlife Service failed to require FWC to document the flyways and foraging sites for bald eagles.

RESPONSE: The U.S. Fish and Wildlife Service stated in their letter of June 24, 1997, that the bald eagle nest approximately 0.8 miles from the project area would not be impacted by the project due to the shielding effect of a line of pine and cypress trees. (Please see section 3.04 of the FEIS.)

COMMENT: (5) The failure of Alligator Lake to reach winter pool level after the "test drawdown" demonstrates a significant impact from this project.

RESPONSE: The regulation schedule for Lake Alligator ranges from 62 to 64 feet, NGVD, with a one in-three year low pool stage of 61.5 feet, NGVD. The low pool stage of 62 feet on the regulation schedule occurs on 1 June. The regulation schedule for the lakes of the Alligator Chain shows the rules for releasing water through the S-60 spillway; it does not guarantee that the water level in these lakes will rise to their regulation schedule. Water levels often fluctuate below, and at times above, the regulation schedule stages depending on hydrologic and climatic conditions. For example during the drought of 1980-1981 the Lake Alligator water level was below regulation schedule stage from June 1980 until June 1982, and the lake level was as low as 59.7 feet in 1981. More recently, during the drought of 1989-90, the Lake Alligator stage was around 62 ft NGVD in October 1990 and stayed around 62 ft NGVD through March 1991. Figure 28 shows the daily maximum, minimum, and average stage for Lake Alligator for the period of record 1970-1997 plotted versus the lake stage for 1998. Several times during February and March 1998 the lake Alligator stage was at or above the corresponding daily maximum stage for the period of record in response to the El Nino floods. At the end of water level lowering for the test drawdown the lake level was slightly below (about 0.2 feet) the corresponding daily normal lake stage. At the end of May 1998 the Alligator Lake level was just below the corresponding daily normal stage for the period of record. As shown on Figure 28 for the period 1970-1997 the Lake Alligator stage normally peaked at about 63 feet, NGVD or about one foot below the high pool stage of 64 feet, NGVD. Based on the graphs in Figures 12f through 12m of this EIS, during the period January 1966 to December 1998, which consists of 33 calendar years, there were 13 years during which Alligator Lake did not reach elevation 64.0 ft NGVD. Also, Figure 17 illustrates that in the years 1966-1998, Lake Alligator frequently did not reach the high pool elevation of 64.0 ft NGVD during the winter months . The inability of Lake Alligator water level to reach the high pool stage of 64 feet during November 1998 through March 1999 was a not an unusual event, and appears to be due to the dry conditions experienced in the Kissimmee Basin during June 1998 through March 1999, not the test drawdown in 1998.

COMMENT: (6) All lakes in the area are hydrologically connected contrary to the assertions of SFWMD.

RESPONSE: The C&SF Project contains a series of canals that connect a number of lakes in the Upper Kissimmee Basin. Project discharges from the Alligator

Chain of Lakes are usually south through S-60 to Lake Gentry, then through S-63 to Lake Cypress. Although rarely done, it is also possible to discharge water from the Alligator Chain of Lakes northward through S-58 to Lake Joel through the west chain of lakes. During January - May 1999 SFWMD opened S-61 when Lake Tohopekaliga water levels were at or above the regulation schedule stage. During this same period water levels in Lake Alligator were below regulation schedule and no releases were made from the Alligator Chain of Lakes. The comment was made that SFWMD caused Alligator Lake to be further depleted of water through dropping the level of Lake Tohopekaliga during this period. Generally, while the water level in Lake Tohopekaliga declined markedly after the reopening of S-61 in late March 1999, the water level in Alligator Lake continued to decline at about the same gradual rate from the February-March period (see Figures 30 and 31). The Lake Tohopekaliga water level dropped about 0.3 feet in March 1999, as did the Lake Alligator stage. But in April 1999 the Lake Tohopekaliga stage was lowered about 1.2 feet during the month in accordance with the regulation schedule. No releases were made out of the Alligator Chain of Lakes and the water level fell about 0.3 feet for the month of April 1999. Due to the dry conditions surface inflow into the Alligator Chain of Lakes was likely small to negligible from the Alligator Chain of Lakes in March-April 1999. The changes in lake levels during March-April 1999 should be similar to the difference between direct rainfall and lake evaporation. The pan evaporation at the National Weather Service Class A pan at Lake Alfred, Florida, was 6.87 inches in March 1999 and 8.81 inches in April 1999. A pan coefficient of 0.74 to estimate free water surface evaporation was determined from NOAA Technical Report 33 (Farnsworth et al., 1982). The SFWMD estimated that the average monthly rainfall in the Upper Kissimmee Basin was 0.81 inches in March 1999 and 2.51 inches in April 1999. Based on these data the difference between monthly rainfall and lake evaporation was about 0.3 feet for both March and April 1999, which is similar to water level recessions that occurred in Lake Alligator during March and April 1999. The operation of S-61 in the January - May 1999 period in accordance with the regulation schedule appears to not have affected the water levels in the Alligator Chain of Lakes.

COMMENT: (7) The Central and South Florida Project precludes permitting FWC's de-mucking project.

RESPONSE: The Central and Southern Florida (C&SF) Project is a multiple purpose water resources project which was first authorized by Congress in 1948. C&SF authorized project purposes include flood control, water supply for agricultural and urban areas, prevention of saltwater intrusion, water supply to the Everglades National Park, preservation of fish and wildlife, recreation, and navigation. The importance of ecosystem restoration within the C&SF Project has been emphasized by the efforts associated with the C&SF Comprehensive Review Study, authorized by Congress through the Water Resources Development Act of 1992. Other restoration efforts, being pursued under Section 1135 of the Water Resources Development Act of 1986, include the Upper Kissimmee Basin (Headwaters Revitalization) which involves modifications to the operation of the lakes, canal improvements, and land acquisition. Drawdown

projects continue to be the most effective management tool for fish and wildlife habitat enhancement in systems impacted by artificially stabilized water levels.

COMMENT: (8) Lowering Alligator Lake to 60.0 feet rather than 58.5 feet will have no practical benefit to the fish farmers. As a result of the April 1998 "test drawdown", wherein water levels were dropped to 62.0 ft., each of the fish farms were adversely affected by a significant drop in water levels.

RESPONSE: As discussed in Section 2.02.1 of this EIS, lowering the Alligator Chain's regulation schedule to 60.0 ft. vs. 58.5 ft. offers the following and other advantages:

A decreased potential for impacts to the adjacent surficial aquifer, and therefore a decreased potential for impacts to fish farms.
Increased potential to meet refill goals.

Please refer to the response to Comment No. 10, which concerns the test drawdown.

COMMENT: (9) There is sufficient reason to expect the existence of contaminated or hazardous soils.

RESPONSE: As stated in section 4.09 of the DEIS, The Florida Game and Freshwater Fish Commission has been conducting tests on these sediments, and analysis of the samples indicates that heavy metal contaminants are not present in levels that exceed U.S. Environmental Protection Agency (EPA) Region IV Sediment Screening Criteria for hazardous waste sites, or Florida Department of Environmental Protection (FDEP) Soil and Sediment Cleanup Goals Criteria. Therefore, it has been determined that excavation and placement of these materials should not cause degradation of water quality. A copy of these results is available in Appendix III of the FEIS.

COMMENT: (10) There is competent evidence to dispute SFWMD's groundwater modeling analysis which indicates that as of April 22, 1998, the aquifer response test had no effect on groundwater levels at the fish farms. SFWMD is therefore relying solely on its groundwater modeling, and not documentation which could easily have been obtained, to support its assertions.

RESPONSE: The SFWMD performed a groundwater modeling analysis of the test drawdown and concluded that as of April 22, 1998, the test drawdown had no effect on aquifer levels at the seven fish farms. These results were presented to fish farmers and FDACS on 30 April 1998. The SFWMD Report on analysis of projected impacts included in Appendix II of the EIS stated that the preliminary analysis concluded that the fish farms ponds in the project area are at risk of not being able to maintain adequate water levels in them under natural conditions. This condition exists without any artificial drawdown of Alligator Lake. The preliminary analysis also concluded that the proposed drawdown may change aquifer levels at Blackwater Fishery and Moonlight Fisheries.

The preliminary analysis concluded that the proposed lake drawdown would not change the aquifer levels at the other fish farms. SFWMD stated the subsequent investigation in Spring 1998 and computer modeling projections support the conclusions from the preliminary analysis. Additional information supporting SFWMD's conclusion regarding the test drawdown is provided below.

The USGS (Schiner, 1993) stated the surficial aquifer system in Osceola county is recharged primarily by infiltration of rainfall. Other sources of recharge are seepage from streams, lakes, and irrigated lands. Where heads in the underlying Floridan aquifer system are higher than those in the surficial aquifer system there is upward leakage from the Floridan. However, little upward leakage to the surficial system occurs within Osceola County because a thick confining layer of low permeability (Hawthorn Formation) separates the two systems. According to Schiner (1993) the discharge from the surifical aquifer system is principally by evapotranspiration. Some discharge occurs as seepage into lakes, streams, canals, ditches, and withdrawals from wells. The water table usually ranges from about 2 to 20 feet below land surface and typically is shaped as a subdued reflection of the land surface. In low, flat, poorly drained areas the water table commonly stands at or within a few feet of the land surface. In these areas, heavy rainfall can cause the water table to rise above land surface. The USGS has classified the Alligator Chain of Lakes as an area of known very low recharge to the Floridan Aquifer. In the Kissimmee Basin the wet season is from June through September. On average groundwater levels are usually at their maximum in September - October and their minimum in May. The control structure S-60 on Lake Alligator was completed in 1966 and the Kissimmee River Basin Project was completed in 1970.

According to the NOAA National Climatic Data Center (NCDC) the winter of 1997-1998 was marked by a record breaking El Nino event. December 1997 had record rainfall that drenched parts of central and northeast Florida with long term stations at Tampa receiving 15.57 inches, Orlando 12.63 inches, and Jacksonville 9.77 inches. Florida had the second wettest February since records began in 1895. During the months December 1997-February 1998 Florida had a record total of 19.28 inches, which was 222 percent of normal. According to the NOAA Climate Prediction Center the winter of December 1997-February 1998 was the wettest of record (1895-1999) for the North Central and South Central Florida Climatic Divisions. According to the NCDC February-March 1998 was the second wettest February-March two-month period for Florida for the period of record (1895-1999). The NCDC stated the remarkably rapid development of the strong El Nino of 97/98 exhibited an equally remarkable reversal during the Northern Hemisphere spring and summer of 1998 toward La Nina conditions.

The SFWMD has stated that the increase in rainfall across SFWMD due to strong El Nino's is greatest between November and March. For the six strongest El Nino events since 1950 the November through March total rainfall across the SFWMD has averaged about 150 % of normal (15.54" versus normal of 10.60"). The November-March rainfall for the 1997-1998 El Nino event was 227% of normal, the 1991-1992 event was 85% of normal, the 1986-1987 event was 153% of normal, the 1982-1983 event was 213% of

normal, the 1972-1973 event was 134% of normal, the 1965-1966 event was 98% of normal, and the 1957-1958 event was 197% of normal.

According to the Climate Prediction Center, by the end of June 1998 a widespread drought covered the southern part of the United States. The drought was most severe in Texas and Florida, where it adversely impacted crops, ranges and pastures. These drought conditions combined with excess ground cover resulting from the abundant winter rainfall, leading to numerous uncontrolled wildfires that burned nearly one-half million acres of Florida land. This drought resulted from well below normal rainfall and much above normal temperatures across the region during April-June 1998. They stated April-June 1998 was the driest such period in 104 years of record in Florida. During this period many locations in Florida received less than half the normal rainfall. This dryness was a dramatic change from the surplus rainfall observed from late 1997 through March 1998. The drought intensified during June 1998 in Florida in response to near record heat and near record dryness. Daytona Beach, Melbourne, Orlando, and Miami each recorded the hottest June of record; and Orlando and Melbourne recorded the driest June of record. The National Weather Service (NWS) Forecast Office in Melbourne noted extremely wet conditions occurred across East Central Florida during the winter of 97/98, normally the dry season. Weather patterns shifted drastically by late March 1998, resulting in a 3-½ month period of abnormally dry conditions. The dry weather across East Central Florida persisted into summer 1998, delaying the onset of the wet season. The NWS-Melbourne classified the 1 November 1997 – 20 March 1998 period as excessively wet and the 21 March 1998 – 5 July 1998 period as excessively dry across East Central Florida. They noted from 1 November 1997 - 20 March 1998 the long term station at Orlando reported 31.77 inches of rain, which was 265 % of normal; while from 21 March – 5 July 1998 the Orlando station reported 5.27 inches of rain, which was 35 % of normal.

In a November 1998 Report on La Nina the Southeast Regional Climate Center (SERCC) stated oceanographic conditions in the Equatorial Pacific that drive the extremes of the El Nino-Southern Oscillation (ENSO) began shifting from the extreme warm phase (El Nino) to the extreme cold phase (La Nina) in May 1998. The transition phase between these El Nino and La Nina phases was quite short, on the order of about 2 months. They noted this is somewhat unusual from previous records to see the two extreme ENSO conditions back-to-back. The SERCC noted in November 1998 that dryness prevailed in the Southeast US, other than those regions immediately impacted by Hurricane Georges (Southern Mississippi, Southern Alabama, Southern Georgia, Northern Florida) and Hurricane Mitch (Southern Florida). According to the Florida Climate Center beginning in late summer of 1998, a moderate La Nina exerted its influence over Florida's weather patterns. Continued widespread dry conditions for 6-8 months in a row set the stage for a widespread drought across Florida. Although Florida received normal to slightly above normal precipitation in January 1999, the classic La Nina dry pattern became entrenched across Florida in February 1999. According to the NCDC February-March 1999 was the fifth driest February-March period for Florida for the period of record (1895-1999). According to SFWMD the basin average rain across the Upper Kissimmee Basin from 1 February – 30 April 1999 was

only 4.29 inches or 52% of normal for that three-month period. The monthly rainfall at St. Cloud for January 1998 through June 1999 is shown on Figure 27.

According to Schiner (1993), the magnitude of seasonal high levels in the summer and low levels in the winter of the surficial aquifer in Osceola County are apparently locally controlled by variations in the pattern of local rainfall. He noted that the seasonal fluctuations of the surficial aquifer system in Osceola County average about 5 feet. The groundwater well OS-181 is a long-term (since 1948) gage in the surfical aquifer located on the south side of U.S. 192 about 1.5 miles east from Lake Alligator. The land surface elevation is 79.1 ft NGVD at this well. Figure 29 shows the maximum, minimum, and average stage at well OS-181 for the period of record 1970-1997 plotted versus the water levels for 1998 and 1999. Figure 3 of the Preliminary Analysis in the SFWMD Report in Appendix I of the EIS shows the monthly maximum and minimum water levels at well OS-181. SFWMD noted that the water level at OS-181 often fluctuates approximately 2 feet within a month, but fluctuates more month to month and year to year. In late March 1998 the water level at OS-181 rose dramatically in response to a heavy rain event due to a trailing cold front, then began a rapid recession. The water level at OS-181 fell 1.65 feet between 20 March and 31 March (from 78.53 feet to 76.88 feet) before the test drawdown began on 1 April 1998. In contrast during the same period (20-31 March), the Lake Alligator level was lowered only 0.3 feet (64.1 feet to 63.8 feet). The water level receded from 76.82 feet, NGVD on 1 April 1998 to 74.12 feet, NGVD on 21 June 1998. During January through Mid-May 1998 water levels at well OS-181 were at, near, or above the corresponding daily maximums for that period of record (1970-1997). The water level at OS-181 was above its corresponding daily normal stage until 21 June 1998. Starting in late March and early April 1998 the hydrograph at OS-181 appears to show the expected recession that normally occurs with groundwater levels after a peak due to recharge. This recession appears to be especially pronounced due to the extremely dry conditions that developed in late March through early July 1998. In response to the drought conditions in the Winter 1998 and Spring 1999 due to La Nina, the water levels at OS-181 were near or at the corresponding period of record (1970-1997) minimum daily stages from March 1999 until June 1999.

For the period of record 1970-1997 the monthly net change in water level at OS-181 has been an average of about 0.5 feet in April and about 0.3 feet in May. On 1 April 1998 the stage at OS-181 was 76.82 feet, NGVD and by 30 April 1998 the water level had receded to 75.43 feet, a drop of 1.39 feet for the month. As a part of the test drawdown the Lake Alligator water level was lowered from 63.8 feet, NGVD on 1 April to 62.0 feet on 15 April, or a drop of 1.8 feet. By 30 May 1998 the water level at OS-181 fell to 74.74 feet, a drop of 0.69 feet in May. Similar large water level recessions during April-May at OS-181 have been recorded after the very wet winters that occurred due to the 1986-1987, 1982-1983, and 1972-1973 El Nino events. In the El Nino event of 1986-1987 the water level at OS-181 receded from 76.60 feet, NGVD on 1 April 1987 to 75.24 feet on 30 April, a drop of 1.36 feet for the month. By 30 May 1987 the stage fell to 74.09 feet, a drop of 1.15 feet in May. The Lake Alligator stage went from 63.0 feet on 1 April 1987, to 62.7 feet on 30 April, to 61.9 feet on 31 May 1987. In the El Nino

event of 1982-1983 the water level at OS-181 receded from 76.41 feet, NGVD on 1 April 1983 to 75.14 feet on 30 April, a drop of 1.27 feet for the month. By 30 May 1983 the stage at OS-181 fell to 74.28 feet, a drop of 0.86 feet in May. The Lake Alligator stage went from 63.1 feet on 1 April 1983, to 62.6 feet on 30 April, to 62.2 feet on 31 May 1983. In the El Nino event of 1972-1973 the water level at OS-181 receded from 75.65 feet, NGVD on 1 April 1973 to 74.58 feet on 30 April, a drop of 1.08 feet for the month. By 31 May 1973 the stage at OS-181 fell to 74.35 feet, a drop of 0.23 feet in May. The Lake Alligator stage went from 63.0 feet on 1 April 1973, to 62.4 feet on 30 April, to 62.2 feet on 31 May 1973.

The adverse effects the fish farmers stated they experienced in 1998-1999 appear to be due to the extreme climatic conditions that occurred, not the test drawdown.

COMMENT: (11) In its present state, no regulatory body would permit any private individual or entity to undertake this project.

RESPONSE: Pursuant to Section 404 of the Clean Water Act, 33 U.S.C. 1251 et seq. (PL 92-500), The FWC has applied for and received Florida Department of Environmental Protection Permit #49-128995-001, and Department of the Army Permit #1977-03143 (IP-EB), for work associated with the Alligator Lake Chain & Lake Gentry Habitat Enhancement Project. Pursuant to Florid State Statute 369.20 (7), private homeowners can apply for and receive permits from the Florida Department of Environmental Protection for the purpose of control, eradication and removal of nuisance vegetation from their own lakefront property.

MAKO TROPICAL'S

MEMBER

ph: 407-892-8873

fax: 407-892-6648

1220 Twelve Oaks Rd.

St. Cloud, Florida 34771

April 18, 1999

Hanley K. Smith
Department of the Army
Jacksonville Dist. Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Dear Mr. Smith:

This letter is in response to your report entitled "Draft Environmental Impact Statement for the Alligator Lake Chain and Lake Gentry Extreme Drawdown and Habitat Enhancement Project in Osceola County, Flroida". Which report I recently received in the mail.

I have been a fish farmer on this land, at Twelve Oaks Rd., for five and one half years now. I have been a champion breeder of guppies for over 20 years now; but I moved to this farm to expand my hobby into a business. I have the knowlege, the customers, and the facilities, here on this farm,to accomplish this goal. However, the test drawdown which occured last year (not the mention the extreme drawdown that is planned for the future) has already put me out of business. I have never had low water problems on this farm until April of 1998; when South Florida Water Management, performed their "test" drawdown of two feet. The locks were opened on April 1, 1998 and by April 20th, I had lost 22 inches of water. Which, to this date, has never been restored.

Yet, Jim Carnes of S.F.W.M. came to my farm at that time, and told me that my lack of water was due to evaporation. It is absolutely impossible for that much evaporation to occur in such a short period of time. Not to mention the fact that the weather was cool. The most evaporation that I have ever had, during the hottest parts of summer, has been one or two inches per month.

Since April of 1998, my ponds have continued to drop their water level, to the point that now I have ponds with absolutely no water in them at all. I do use a 5 H.P. well, and added water continually to the ponds; however, they do not maintain the water level longer than one or two days.

MAKO TROPICAL'S

MEMBER

ph: 407-892-8873

fax: 407-892-6648

1220 Twelve Oaks Rd.

St. Cloud, Florida 34771

Consequently, I have lost thousands upon thousands of dollars, because of this water problem. Because of my empty ponds, my net income for the year of 1998 was zero. When it should have been $ 200,000.00 if all fourty of my ponds had been filled with water.

I was forced to purchase fish from other farmers in the Tampa area, and then re-sell them to my customers. I also had to re-finance my home, so that we could have enough money to live. We moved here from a very exclusive area in Tarpon Springs, just so I could fulfill my dream of raising, and selling tropical fish. It took me a few years to prepare my breeder fish to produce the stock that I needed to fill my ponds. 1998 was suppose to be the year that I was to make a big profit from these fish. However, it is impossible to raise fish without water; and S.F.W.M. took care of that for me.

I have invested almost half a million dollars in the farm, hoping to make a good living from it. Had I known that there were going to be "drawdowns" which would put me out of business, I never would have purchased the farm in the first place. To make matters even worse (if it can get any worse) I am informed that there will be drawdowns all around the county for the next few years. Diminishing all hope for my farm. The only hope I see to maintain my farm is to go above ground, but this takes big money. Money which I no longer have, since I invested all my money in this farm already, and have even gone into debt to keep it from sinking.

If you let S.F.W.M. go ahead with their extreme drawdown, the water table will be <u>below</u> the bottom of my ponds, by at least 24 inches. Since my elevation is higher than any other farm, I am the first to lose the water, and the last to regain it back. How can I raise fish without water ?!

No matter what your hydraulic charts and people say, common sense tells you that if you lower the water level anywhere, it will first come from the highest point and then take from the lower points. But yet, your charts say that only two farms, BLACKWATER and MOONLIGHT will be effected by this drawdown. This is absolutely wrong; a total error. Since no one cares to come and visit my farm to see my empty ponds, I have enclosed a few pictures for your eyes to see reality.

MAKO TROPICAL'S

MEMBER

ph: 407-892-8873

fax: 407-892-6648

1220 Twelve Oaks Rd.

St. Cloud, Florida 34771

Since you asked for comments on your report, I will continue. These drawdowns are going to destroy the land. Wetlands, which normally are protected by the EPA or other government organizations when people want to do things on them, are severely punished. However, if another government agency wants to destroy the wetlands and its inhabitants, it is okay. All you seem to be concerned with is the fact that you have been granted millions/billions of dollars, and you have to come up with some way of spending that money. We know that securing jobs for the many people on these projects is a major concern for all involved in these drawdowns; but you refuse to consider the jobs and people you are putting out of business with fish farmers, citrus growers and other farm related businesses. Because, after all, they are not your friends. Enclosed you will find an article that truly expresses the opinion of the people of the state of Florida, who have not been conned by your deceitful practices.

I know that none of your agencies cares to discuss the damages done to Lake Apopka, but in fact, that is the perfect example of what government tampering with nature has done. It will takes many years to restore Lake Apopka. We do not believe the propaganda that television news is now claiming that everything is fine with the lake.

Many years ago Lake Okeechobee was tampered with by other government agencies but now they are changing this back to its original condition. Why don't you all just leave things alone in the first place!?

The bass fishermen tell us it will take at least 20 years before the lakes can return to be useful for fishing. We do not want to wait that long. Especially since we are having drought conditions now. Everyone seems to acknowledge the terrible conditions that exist during a drought. Yet we are scorned and mocked when we mention that the drawdowns create the same situtation as drought conditions. You can mock us as much as you want, but the facts remain, drawdowns are exactly the same as droughts. And if there are drought conditions, drawdowns only make matters much worse.

Almost all of the "factual" information that you give in your elaborate report is exaggerated to the point of being unbelieveable. But yet, the average citizen that sits at your meetings does not know this. You have deceived these people into thinking that all is well, when in fact, these drawdowns will be disastrous to the land.

MAKO TROPICAL'S

ph: 407-892-8873

fax: 407-892-6648

1220 Twelve Oaks Rd.

St. Cloud, Florida 34771

Come and see my empty ponds, which became empty because of your "test" drawdown, and then tell me that the extreme drawdown will do me, and my farm, no harm. Not to mention the fact that the timing of this coming drawdown is terrible.

We are in drought conditions now. Do it now! Don't wait until the rains come in June, when the water table will start to fill up again. This is no less than a deliberate act to put people out of business. There is no other reason for your timing of this current drawdown. You all say that you want to work with the people, but in fact, this is just more propaganda. If you really are concerned with the fish farmers and all other farmers and fishermen, you would truly take into consideration all that I have mentioned in this letter. No one can change a natural habitat without it effecting everyone and everything, around it. All of your non-governmental agencies say the same thing, WHEN it co-insides with what they are planning on doing; or when they are trying to stop a home owner from doing what he wants to do, on his own land. But when you are doing it, on a much, much grander scale, it is permissable.

You have not deceived the fish farmers, but you have deceived yourselves, and are destroying the land, and putting many people out of business. We expect compensation for the damages you have already caused, and the damages we will incur in the future.

encl: 4

Very truly yours,

Kenneth W. Klimpel

cc: Governor Jeb Bush
South Florida Water
Bob Crawford, Dept. of Agriculture
Bill Stimmel, South Florida water
Chuck Dunnick, Commissioner

RESPONSE TO KENNETH W. KLIMPEL
1220 TWELVE OAKS ROAD
ST. CLOUD, FL 34771

The SFWMD performed a groundwater modeling analysis of the test drawdown and concluded that as of April 22, 1998, the test drawdown had no effect on aquifer levels at the seven fish farms. These results were presented to fish farmers and FDACS on 30 April 1998. The SFWMD Report on analysis of projected impacts included in Appendix II of the EIS stated that the preliminary analysis concluded that the fish farms ponds in the project area are at risk of not being able to maintain adequate water levels in them under natural conditions. This condition exists without any artificial drawdown of Alligator Lake. The preliminary analysis also concluded that the proposed drawdown may change aquifer levels at Blackwater Fishery and Moonlight Fisheries. The preliminary analysis concluded that the proposed lake drawdown would not change the aquifer levels at the other fish farms. SFWMD stated the subsequent investigation in Spring 1998 and computer modeling projections support the conclusions from the preliminary analysis.

As discussed in section 3.01.1, "...extreme water fluctuations played an important role in sustaining extensive areas of high-quality aquatic habitat." Stabilized water levels brought about by regulation schedules have lead to an artificial and narrow restriction of the range in which the Alligator Chain and Lake Gentry's water levels historically fluctuated. Long-term stabilized water levels lead to degradation of habitat value in adjacent wetlands as well as the lakes' littoral zones. It is the very disturbance of natural conditions by human intervention that has allowed loss of habitat value such as the proliferation of nuisance vegetation. Aquatic and wetland ecosystems benefit greatly from efforts to restore historic hydropatterns to the extent possible within systems that have been altered for flood control and other purposes.

Alligator Lake Chain HomeOwners Association
Alligator, Brick, Center, Coon, Lizzie, Trout
a non-profit corporation
P.O. Box 701953
St. Cloud, Florida 34770-1953

May 27, 1999

Department of the Army
Jacksonville District Corps of Engineers
Attn: Ms. Christine Bauer
PO Box 4970
Jacksonville, FL. 32232-0019

Dear Ms. Bauer:

I am a member of the Alligator Home Lake Chain Homeowner's Association (ALCHA) and I write in support of the Alligator Chain and Lake Gentry Extreme Drawdown and Habitat Enhancement Project/Osceola County, Florida.

The Draft Environmental Impact Statement (March 1999) has been reviewed by ALCHA leadership and we are in agreement that the project should proceed as soon as possible.

Very Sincerely,

ALCHA MEMBER(S)

Alligator Lake Chain HomeOwners Association
Alligator, Brick, Center, Coon, Lizzie, Trout
a non-profit corporation
P.O. Box 701953
St. Cloud, Florida 34770-1953

May 27, 1999

Department of the Army
Jacksonville District Corps of Engineers
Attn: Ms. Christine Bauer
PO Box 4970
Jacksonville, FL. 32232-0019

Dear Ms. Bauer:

I am a member of the Alligator Home Lake Chain Homeowner's Association (ALCHA) and I write in support of the Alligator Chain and Lake Gentry Extreme Drawdown and Habitat Enhancement Project/Osceola County, Florida.

The Draft Environmental Impact Statement (March 1999) has been reviewed by ALCHA leadership and we are in agreement that the project should proceed as soon as possible.

Very Sincerely,

ALCHA MEMBER(S)

Alligator-Lake Chain HomeOwners Association
Alligator, Brick, Center, Coon, Lizzie, Trout
a non-profit corporation
P.O. Box 701953
St. Cloud, Florida 34770-1953

May 27, 1999

Department of the Army
Jacksonville District Corps of Engineers
Attn: Ms. Christine Bauer
PO Box 4970
Jacksonville, FL. 32232-0019

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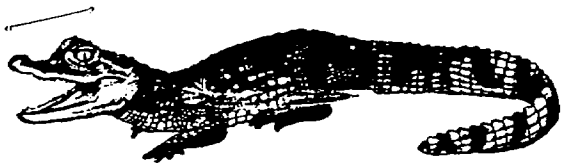
Kenneth H. Smith

ALCHA MEMBER(S)

Osceola County Commissioner
Dist. #4



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