

**FINAL
ENVIRONMENTAL IMPACT STATEMENT
ON
LAKE TOHOPEKALIGA EXTREME DRAWDOWN AND HABITAT
ENHANCEMENT PROJECT**

OSCEOLA COUNTY, FLORIDA

1. PROJECT PURPOSE AND NEED

1.1. PROJECT AUTHORITY.

This project is authorized by Section 309 of the 1992 Water Resources Development Act which reads in part: "...CENTRAL AND SOUTHERN FLORIDA – The Chief of Engineers shall review the report of the Chief of Engineers on central and southern Florida, published as a house Document 643, 80th Congress, 2nd Session, and other pertinent reports, with a view to determining whether modifications to the existing project are advisable at the present time due to significantly changed physical, biological, demographic, or economic conditions, with particular reference to modifying the project or its operation for improving the quality of the environment, improving protection of the aquifer, and improving the integrity, capability, and conservation of urban water supplies affected by the project or its operation."

Additional authority is provided in 33 CFR 222.5, Water Control Management (ER 1110-2-240). This regulation requires the Corps of Engineers to develop operations and maintenance criteria for water control plans. This regulation states that the Chief of Engineers or his designated representative may authorize or direct deviation from the established water control plan when conditions warrant such deviation.

1.2. PROJECT LOCATION.

Lakes Toho, Cypress, Hatchineha, and Kissimmee are part of the Upper Kissimmee Chain of Lakes. They are all located in Osceola County, which is south of Orlando. Lake Toho is the northern most lake listed, and is adjacent to the City of Kissimmee (refer to Figure 1).

1.3. PROJECT NEED OR OPPORTUNITY.

The purpose of the project is to lower water levels in order to address problems associated with degraded fish and wildlife habitat. Degraded habitat occurs as a result of long-term stabilized water levels, excessive nutrient inputs, overgrowth,

decomposition, and build-up of aquatic plants and algae. The resulting accumulation of organic sediments is consolidated by dense growth of aquatic plants that form organic berms around the littoral zones. During storm events, this plant material breaks away from the berm forming tussocks or floating islands.

Biological productivity of a diverse fishery decreases as organic sediment depths increase. Lake level stabilization has contributed to the rapid growth of dense vegetation in prime lakeshore aquatic habitat, which supports numerous species of fish, waterfowl, wading birds and wildlife (Dooris & Courser, 1976; Holcomb & Wegener, 1971; and Wegener & Williams, 1974). Reduced coverage of desirable aquatic vegetation negatively impacts diversity and abundance of forage organisms that depend on diverse and balanced plant communities. In turn, this directly contributes to reduced sport fish production and wading bird populations. Negative impacts related to water level stabilization are further compounded by excessive nutrient input that results from watershed development and rapid population growth.

1.4. AGENCY GOAL OR OBJECTIVE.

To address the problems associated with degraded habitat, the Corps, SFWMD, and FWC, through a series of meetings that also included members of the public, developed alternatives that would achieve a drawdown and habitat enhancement of Lakes Toho, Cypress, Hatchineha, and Kissimmee while minimizing impacts to the lower Kissimmee Valley.

The drawdown would provide the opportunity to perform habitat enhancement activities such as muck removal and herbicide application. Objectives of the project are:

- a. To temporarily lower water levels in Lakes Toho, Hatchineha, Cypress, and Kissimmee (by allowing a temporary deviation of the regulation schedules)
- b. To improve habitat for a better fishery
- c. To improve sport fish populations
- d. To improve habitat for wildlife
- e. To reduce muck and improve bottom substrate
- f. To reduce nuisance vegetation
- g. To reduce tussock problems
- h. To improve boat access to and from docks
- i. To maintain and/or improve fisheries (as measured by effort, catch, and/or harvest)

1.5. RELATED ENVIRONMENTAL DOCUMENTS.

The most recent related environmental document for Lake Toho is an Environmental Assessment prepared in 1986 for "Lake Tohopekaliga Drawdown." Another related environmental document that has been recently completed is the Final EIS dated

September 1999 for the "Alligator Chain and Lake Gentry Extreme Drawdown and Habitat Enhancement Project Osceola County, Florida." There is also currently under preparation a Draft EIS for the "Comprehensive Analysis of the Kissimmee Chain of Lakes, Florida," which involves a review of regulation schedules encompassing the entire Kissimmee Chain of Lakes.

Other relevant documents include: a) Central and Southern Florida, Kissimmee River, Florida, Final Integrated Feasibility Report and Environmental Impact Statement (USACE, 1991); and b) Kissimmee River, Florida, Headwaters Revitalization Project, Integrated Project Modification Report and Supplement to the Final Environmental Impact Statement (USACE, 1996).

1.6. DECISIONS TO BE MADE.

This Environmental Impact Statement will evaluate two action alternatives that allow for a temporary deviation of the regulation schedules for Lakes Toho, Cypress, Hatchineha and Kissimmee for the purpose of performing habitat enhancement activities and a no action alternative. A temporary deviation of the regulation schedule would allow Lake Toho to be taken down to 48.5 feet NGVD. Lakes Cypress, Hatchineha, and Kissimmee would be taken down to 48.0 feet NGVD. Corps decision makers will decide which of these three alternatives will be implemented.

1.7. SCOPING AND ISSUES.

The following have been identified during scoping as issues, concerns, and resources that members of the public were concerned about. These will be addressed or evaluated, as appropriate, in this EIS:

- a. Maintaining navigation channels
- b. Minimizing adverse impacts to endangered species
- c. In-lake disposal
- d. Protecting ground water
- e. Maintaining water supply for human and natural systems
- f. Minimizing adverse downstream impacts
- g. Managing water levels for environmental benefits

1.8. PERMITS, LICENSES, AND ENTITLEMENTS.

Department of the Army Permit (DA Permit) No. 1998-05442 (IP-EB) was issued May 1999 and expires May 2004. Department of Environmental Protection Permit No. SJ-98-498 for aquatic plant management was issued in lieu of a water quality certificate. Copies of these permits can be viewed in Appendix A.

The above DA Permit authorizes removal of 4 million cubic yards of aquatic vegetation and organic material from 2,844 acres of lake bottom along the 39.8-mile shoreline of Lake Toho. The removal would utilize heavy equipment such as bulldozers, front-end loaders, trackhoes, graders, and four to six-wheel drive dump trucks. Dredged material would be disposed through the creation of up to 47 in-lake disposal sites (totaling up to 141 acres) and on up to 29 upland disposal sites.

FWC proposes to modify the permit to increase the amount of dredging from 4 million cubic yards to 6.7 million cubic yards, extend the permit two years, and create two additional in-lake disposal islands. One island would be two acres, and the other island would be 8 acres. This permit modification (number 1998-05442[MOD-EB]) is currently being processed and under public review.

In addition to this permit modification there are other permit applications that are currently under review in association with this project. The requests are to remove organic material from Lake Cypress (1.4 million cubic yards of muck with 20 islands) and Lake Hatchineha (3.7 million cubic yards of muck with 40 islands).

An evaluation of alternative disposal sites (i.e. alternatives to in-lake disposal) was conducted as part of the permit process. The evaluation of reasonable alternatives to wetland fill included consideration of the following: avoidance of wetland fill, transportation costs, beneficial uses of the material, and minimization of wetland impacts. The conclusion of the alternatives evaluation was that based on the lack of nearshore disposal areas, lack of economically feasible beneficial uses, and the cost of transportation of materials, the use of in-lake spoil islands appears to be the only practicable alternative that would accomplish the project objective. This analysis is included in Appendix A.

2. ALTERNATIVES

The alternatives section is the heart of this EIS. This section describes in detail the no-action alternative, the proposed action, and other reasonable alternatives that were studied in detail. Then based on the information and analysis presented in the sections on the Affected Environment and the Probable Impacts, this section presents the beneficial and adverse environmental effects of all alternatives in comparative form, providing a clear basis for choice among the options for the decision maker and the public.

2.1. DESCRIPTION OF ALTERNATIVES.

Listed below are the alternatives evaluated in this EIS. Alternatives shown include only information on lowering the water levels, and do not go into detail about the

enhancement activities (muck removal), which would be evaluated in detail as part of the DA Regulatory process. Information about the muck deposition can be found in Sections 3.14, 4.5.3, and 4.19. Section 2.3 describes alternatives that were eliminated from detailed evaluation in this EIS. The alternatives considered were different variations of pump options, structures, and gravity flow methods. Table 1 summarizes the major features of each action alternative. The following alternatives are being evaluated in the following sections of the EIS:

- a) Alternative 1, gravity flow
- b) Alternative 4w, gravity flow w/ flexible refill, the preferred alternative
- c) Alternative 10, the no action alternative

Table 2 shows a comparison of Alternatives 1 and 4w to help the reader better understand the difference between these two alternatives.

Proposed lake regulation schedules for the evaluated alternatives, listed above, are shown on Figures 3a, 3b, 4a, 4b, 4c, 5a, 5b, and 5c.

Interpreting the Lake Regulation Schedules: Water management actions (such as holding or releasing water from lakes) vary throughout the year, to maintain flood control capabilities, navigation, or other authorized project purposes, as well as to allow seasonal variations of the water levels to mimic natural fluctuations for environmental purposes. The lake regulation schedules essentially show the elevations (levels) throughout the year, above which water is discharged from the lakes so as to return the lakes to their respective regulation schedules. The different zones on the regulation schedules refer to the operating rules that water managers use to control discharges through structures when water levels are in those zones.

Alternative 1: This alternative uses gravity flow (in other words, no pumps would be used to remove water from any of the lakes) to lower Lakes Toho, Cypress, Hatchineha, and Kissimmee, and was the method used for previous drawdowns in 1971, 1979, and 1987.

Lake Toho drawdown would start on 1 November and end 15 February, drawdown to 48.5 feet, NGVD. Lakes Kissimmee, Hatchineha, and Cypress drawdown would start on 15 November and end 15 February, drawdown to 48.0 feet, NGVD. The lakes would be held at drawdown levels until the refill begins 1 June. See Figure 3a.

Lake Toho Zone B1 is a zone of operational flexibility. In this zone, S-61 releases would be made to facilitate the extreme drawdown and habitat enhancement project. This would include lowering Lake Toho to reach 48.5 feet, NGVD on 15 February. After 48.5 feet, NGVD is reached, the lake would be managed to maintain 48.5 feet, NGVD until 1 June. In Zone B1, S-61 releases may be made to maintain minimum flows. To facilitate FDEP hydrilla treatments in Goblet's Cove/Lake Toho, S-61 releases would be coordinated with FDEP.

Lakes Kissimmee, Hatchineha, and Cypress Zone B1 is a zone of operational flexibility. In this zone, S-65 releases would be made to facilitate the extreme drawdown and habitat enhancement project. This would include lowering Lakes Kissimmee, Hatchineha, and Cypress to reach 48.0 feet, NGVD on 15 February. After 48.0 feet, NGVD is reached, the Lakes Kissimmee, Hatchineha, and Cypress would be managed to maintain 48.0 feet, NGVD until 1 June, see Figure 3b. In Zone B1, S-65 releases may be made to maintain minimum flows.

If the proposed regulation schedules for the extreme drawdown are not approved prior to the start date of the proposed regulation schedule modifications, water control operations would be performed according to approved regulation schedules until the drawdown schedules are approved. At that time, operations according to the drawdown schedules would be initiated. At the discretion of the Corps, the drawdown regulation schedules may be implemented at a later date if it appears that a successful drawdown and habitat enhancement project cannot be conducted in the time period for which it is planned. The drawdown plan shall be abandoned at the discretion of the Corps.

To summarize Alternative 1:

Drawdown phase: Beginning on November 1st, Lake Toho would be drawn down to 48.5 feet, NGVD. In order to do this, Lakes Kissimmee, Hatchineha, and Cypress would need to be a half-foot lower in order to allow for the gravity flow to occur. Beginning November 15th, Lakes Kissimmee, Hatchineha, and Cypress would be lowered to 48.0 feet, NGVD. The water would be slowly lowered and by February 15th, Lake Toho would be at 48.5 feet, NGVD, and Lakes Kissimmee, Hatchineha, and Cypress would be at 48.0 feet, NGVD. Water levels would be managed in an attempt to maintain these elevations until June 1st. East Lake Toho would be managed according to its existing approved regulation schedule. For information on the existing approved regulation schedules for East Lake Toho, Lake Toho, and Lakes Kissimmee, Hatchineha, and Cypress, please refer to Alternative 10 (the no action alternative) below.

Refill phase: Beginning June 1st, refill would be allowed on Lake Toho and Lakes Kissimmee, Hatchineha, and Cypress and operations according to the existing regulation schedules would be resumed.

Alternative 4w: This alternative uses gravity flow (no pump would be used to lower the lake level) with flexible refill (Modified Alternative 4).

Lake Toho drawdown would start on 1 November and end on 15 February, drawdown to 49.0 feet, NGVD. Lakes Kissimmee, Hatchineha, and Cypress drawdown would start on 15 November and end on 15 February, drawdown to 49.0 feet, NGVD. From 16 February to 1 June, Lake Toho would be allowed to go to 48.5 feet, NGVD and Lakes Kissimmee, Hatchineha, and Cypress would be allowed to go to 48.0 feet, NGVD, see

Figure 4b. From 16 February to 1 September, S-59, S-61, and S-65 releases may be made to provide flows downstream. From 1 June to 1 September, Lakes East Toho, Toho, Kissimmee, Hatchineha, and Cypress would be managed to provide refill of lakes if weather conditions permit. To facilitate work at Lake Toho, East Lake Toho from mid-March to 1 June would be managed to follow a more gradual lowering, than shown on the current approved regulation schedule, with a low pool of 56.5 feet, NGVD on 1 June.

Lake Toho Zone B1 is a zone of operational flexibility. In this zone, S-61 releases would be made to facilitate the extreme drawdown and habitat enhancement project. This would include lowering Lake Toho to reach 49.0 feet, NGVD on 15 February. In Zone B1, first priority: S-61 releases reserved to be passed through S-65. In Zone B2, Lake Toho may be lowered to 48.5 feet, NGVD, first priority: from 16 February to 1 June, to provide pass through flow at S-65. Any water in excess of that used for pass through at S-65 may be used for partial refill of lakes. First priority: from 1 June to 1 September, S-61 releases reserved to be passed through S-65. Any water in excess of that used for pass through at S-65 may be used for partial refill of lakes. Lake Toho releases after 1 June may be made to allow Lakes Kissimmee, Hatchineha, and Cypress to refill in conjunction with Lake Toho. However, until Lake Toho refills to its schedule, Zone B2 releases should be limited so that Lake Toho would be generally allowed to rise. To facilitate FDEP hydrilla treatments in Goblet's Cove/Lake Toho, S-61 releases would be coordinated with FDEP.

Lakes Kissimmee, Hatchineha, and Cypress Zone B1 is a zone of operational flexibility. In this zone, S-65 releases would be made to facilitate the extreme drawdown and habitat enhancement project. This would include lowering Lakes Kissimmee, Hatchineha, and Cypress to reach 49.0 feet, NGVD on 15 February, see Figure 4c. First priority from 16 February to 1 June would be to manage the lakes no higher than elevation 49.0 with excess water being passed through S-65. In Zone B2, from 16 February to 1 June, Lakes Kissimmee, Hatchineha, and Cypress may be lowered to 48.0 feet, NGVD to provide pass through flow at S-65. First priority from 1 June to 1 September is to make releases through S-65. Any water in excess of that used for releases at S-65 would be stored. However, until Lakes Kissimmee, Hatchineha, and Cypress refill to schedule, Zone B2 releases should be limited so that the lake stage is generally allowed to rise.

East Lake Toho Zone A, from mid-March to 1 June, S-59 releases would be made to obtain 56.5 feet, NGVD on 1 June, see Figure 4a. In Zone B1, from mid-March to 1 June, S-59 releases reserved to provide pass through flow at S-65. Any water in excess of that used for pass through at S-65 may be used for partial refill of lakes. First priority from 1 June to 1 September is to reserve water for pass through flow at S-65. Any water in excess of that used for pass through at S-65 may be used for partial refill of lakes. However, until East Lake Toho refills to its schedule, Zone B2 releases should be limited so that the lake stage is generally allowed to rise. To facilitate FDEP hydrilla

treatments in Goblet's Cove/Lake Toho, S-59 releases would be coordinated with FDEP.

If the proposed regulation schedules for the extreme drawdown are not approved prior to the start date of the proposed regulation schedule modifications, water control operations would be performed according to approved regulation schedules until the drawdown schedules are approved. At that time, operations according to the drawdown schedules would be initiated. At the discretion of the Corps, the drawdown regulation schedules may be implemented at a later date if it appears that a successful drawdown and habitat enhancement project cannot be conducted in the time period for which it is planned. The drawdown plan shall be abandoned at the discretion of the Corps.

To summarize Alternative 4W:

Drawdown phase: Beginning 1 November, Lake Toho would be slowly lowered to 49.0 ft NGVD by 15 February. Beginning 15 November, Lakes Kissimmee, Hatchineha, and Cypress would be slowly lowered to 49.0 ft NGVD by 15 February. From 16 February to 1 June, Lake Toho may be lowered to 48.5 ft NGVD and Lakes Kissimmee, Hatchineha, and Cypress may be lowered to 48.0 ft NGVD to provide water to downstream lakes or the Kissimmee River (providing water to the River would be 1st priority). East Lake Toho from mid-March to 1 June would be managed to follow a more gradual lowering, with a low pool of 56.5 feet, NGVD on 1 June. However, during this period, releases from East Lake Toho may be made to provide water to downstream lakes or the Kissimmee River (providing water to the River would be 1st priority).

Refill phase: Beginning June 1, East Lake Toho, Lake Toho, and Lakes Kissimmee, Hatchineha, and Cypress would be managed in an attempt to return them to their existing regulation schedules by 1 September. During this period, releases from these lakes may be made to provide water to downstream lakes or the Kissimmee River (providing water to the River would be 1st priority). However, the releases should be limited so that the lakes are generally allowed to rise.

Alternative 10: This is the No Action Alternative. Under this alternative, no action would be taken. The existing approved lake regulation schedules, Figures 5a, 5b, and 5c would continue to be implemented and no habitat enhancement activities would be undertaken. The October 2000 Interim Operating Schedule for the Upper Kissimmee Basin chain of Lakes (S-65) which includes a 300 cfs release from S65 when the S-65 headwater is 49.5 feet, NGVD would continue to be implemented.

To summarize the No Action Alternative:

Alternative 10 consists of the existing approved regulation schedules for East Lake Toho, Lake Toho, and Lakes Kissimmee, Hatchineha, and Cypress. These approved regulation schedules vary from their high pool elevations on 1 November to their low pool elevations by 1 June. The regulation schedules increase to their summer pool

elevations on 1 June and remain at those elevations through August. Beginning 1 September, the regulation schedules rise back to their high pool elevations by 1 November.

2.2. PREFERRED ALTERNATIVE

The preferred alternative, Alternative 4w, is to lower Lake Toho using gravity flow, with a flexible refill schedule to benefit downstream areas (the Kissimmee River downstream of S-65).

2.3. ALTERNATIVES ELIMINATED FROM DETAILED EVALUATION

There were many constraints/issues to consider in accomplishing lowering water levels in the lakes. Table 1 displays a summary of the action alternatives considered, their basic features, as well as pump cost estimates. The pump cost estimate only includes necessary pump rental, maintenance, and delivery/pickup. After numerous meetings among the different agencies and members of the public to discuss various issues, alternative 4w became the preferred alternative. The selection was based primarily on the elimination of pump alternatives due to costs and logistical difficulties such as pump transport/assembly, site selection, site preparation/construction, and site security. Alternatives 2, 3, 5, 6, 7, 8, and 9 would require the use of pumps and therefore were eliminated. Alternatives that have been eliminated from further analysis are located in Appendix C. Alternatives 1, 4, 4w, and 4z do not require pumps. Other methods that could have been used to remove the organic material, such as using a hydraulic dredge, were considered very early during the planning process but were found to be too costly to pursue in detail and were eliminated right away. The following paragraphs provide more information about all the alternatives and why they were eliminated.

Alternatives 2 and 5 are very similar. These two alternatives would involve installing structures (weirs) so pumps could be installed to allow Lake Toho to be lowered independently of Lakes Hatchineha, Cypress, and/or Kissimmee. The Table of Original Alternatives for Lake Toho Drawdown (Table 1) lists the features, including the pumps, included in these action alternatives. However, these two alternatives were eliminated from detailed analysis because of logistical difficulties of implementing them and due to their high costs. Also, Alternative 2 did not allow for the flexibility of using East Lake Toho for storage of water that could be used for refill of Lake Toho or for downstream uses.

Alternatives 3 and 6 were eliminated from additional analysis because they would not include decreasing the water levels in Lakes Cypress and Hatchineha that would be part of Alternative 5. Under Alts 3 and 6, there would be no opportunity for passive drying, oxidation, and removal of muck and would eliminate the opportunity for mechanical excavation of muck should additional state funds become available.

Alternative 4 was eliminated from detailed analysis after initial comparison to two other alternatives. It is very similar to Alternative 1; the method used in previous drawdowns, which relied upon gravity-induced discharge from the lakes, not pumps, to accomplish lowering the water levels. The fact that Alternative 1 has been effectively used for drawdowns in the past was deemed more important than Alternative 4 and its flexibility to store water in East Lake Toho. Alternative 4 provides the same drawdown opportunities as Alternative 4w, it was considered inferior to Alternative 4w because it had no flexibility to manage the multiple lakes in the area during the refill period.

Alternative 4z was developed to possibly reduce expected adverse impacts relative to some of the other alternatives. However, Alternative 4z does not provide low enough drawdown of Lake Toho to allow for sufficient mechanical excavation. Not enough muck would be removed to generate benefits that are widespread and long lasting.

Alternatives 7, 8, and 9 were eliminated due to operational concerns and logistical difficulties such as pump transport/assembly, site selection, site preparation/construction, and site security. These three alternatives would include installing a pump between Toho and East Lake Toho to alter the normal flow of water between the two lakes. The benefit of having more water than normal in East Lake Toho and less water than normal in Lake Toho could be achieved by operating this proposed pump at large cost or by simply reducing the discharge from East Lake Toho to Lake Toho, at almost no cost. In addition, the pump would be unlikely to be effective because the extensive shallow areas between the two lakes would limit the ability of the pump to move water.

After initial screening, the alternatives left for detailed analysis were alternative 1, which is Gravity Flow method, alternative 4w, which is Gravity Flow with flexible refill, and alternative 10, the no action alternative.

2.4. SUMMARY COMPARISON OF ENVIRONMENTAL BENEFITS AND IMPACTS OF THE ALTERNATIVES

Below is a summary listing the alternatives evaluated in detail and the major benefits and impacts of the proposed action and alternatives. Refer to Section 4.0 Environmental Effects for a more detailed discussion of the impacts.

Summary of Direct and Indirect Impacts

ALTERNATIVE RESOURCE IMPACTED	Proposed Alternative 4w – Gravity Flow with Flexible refill	Alternative 1 Gravity Flow	Alternative 10 No Action
VEGETATION	Improved by removal of nuisance vegetation Littoral zone improvement by fluctuating water levels	Improved by removal of nuisance vegetation Littoral zone improvement by fluctuating water levels	Nuisance vegetation would continue to expand and form monocultures
RECREATIONAL FISHING	Benefits to fisheries associated with improved habitat	Benefits to fisheries associated with improved habitat	No immediate direct impact, but fisheries would decline over time
WILDLIFE HABITAT	Wildlife habitat gained, fish habitat lost, both due to in-lake disposal islands	Wildlife habitat gained, fish habitat lost, both due to in-lake disposal islands	No immediate impact, long term impacts are continued degradation of habitat, loss of littoral zone habitat for fish, wildlife, and wading birds
AESTHETICS	Short term negative impacts while work is being performed, Long term impacts caused by disposal islands on shoreline	Short term negative impacts while work is being performed, Long term impacts caused by disposal islands on shoreline	Shoreline not impacted by creation of wildlife islands Negative impact - Nuisance plant growth unattractive
MACRO-INVERTEBRATES (especially apple snails)	Short-term impact. Loss of recruitment (minimum of 2-3 years to recover)	Short-term impact Loss of recruitment (minimum of 2-3 years to recover)	No immediate impact
WATER QUALITY	Short term negative impacts (turbidity) due to construction Possible long term impacts from in-lake disposal islands	Short term negative impacts (turbidity) due to construction Possible long term impacts from in-lake disposal islands	No immediate impact, long term negative impacts expected due to continued habitat degradation and accumulation of muck

ALTERNATIVE RESOURCE IMPACTED	Proposed Alternative 4w – Gravity Flow with Flexible refill	Alternative 1 Gravity Flow	Alternative 10 No Action
ENDANGERED SPECIES	<p>Snail kite possibly affected due to:</p> <ul style="list-style-type: none"> a) above mentioned impacts to apple snail (primary prey) b) (potential) nesting season of snail kite conflicting with time of water levels being lowered c) in-lake disposal islands reducing foraging areas 	<p>Snail kite possibly affected due to:</p> <ul style="list-style-type: none"> a) above mentioned impacts to apple snail (primary prey) b) (potential) nesting season of snail kite conflicting with time of water levels being lowered c) in-lake disposal islands reducing foraging areas 	<p>No short-term impact. Potential long-term impact due to loss of foraging habitat</p>
DOWNSTREAM EFFECTS	<p>In the dry year, the target flow met 28% of the time In the normal year, the target flow was met 73% of the time</p>	<p>In the dry year, the target flow out of S-65 met 20% of the time In the normal year, the target flow met 68% of the time</p>	<p>In the dry year, the target flow was met 27% of the time In the normal year, the target flow met 49% of the time</p>
NAVIGATION	<p>Temporary impacts to boaters during drawdown and refill period, Long term improvement due to reduction of floating tussocks</p>	<p>Temporary impacts to boaters during drawdown and refill period, Long term improvement due to reduction of floating tussocks</p>	<p>No immediate impact, long term decline due to increased vegetation</p>
SOCIO-ECONOMICS	<p>Minimal negative local impacts until lake levels are restored</p>	<p>Minimal negative impacts until lake levels are restored</p>	<p>Long term potential impacts if fishery declines</p>
WATER SUPPLY	<p>Uncertainty of lakes refilling (only if drought conditions)</p>	<p>Uncertainty of lakes refilling (only if drought conditions)</p>	<p>Normal supply of water available for natural system/water supply needs</p>