

SECTION 3

SUPPORTING DOCUMENTS FOR LAKE LEVEL AND NAVIGATION

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

S.D. Warren Company

Project No. 2984-042

NOTICE OF AVAILABILITY OF FINAL ENVIRONMENTAL ASSESSMENT

(November 29, 2005)

In accordance with the National Environmental Policy Act of 1969 and the Federal Energy Regulatory Commission's (Commission) regulations, 18 CFR Part 380 (Order No. 486, 52 F.R. 47897), the Office of Energy Projects' staff has reviewed the application for new license for the Eel Weir Project, located at the outlet of Sebago Lake, and has prepared a final Environmental Assessment (EA) for the project. In the final EA, Commission staff analyzed the potential environmental effects of relicensing the project and concludes that issuing a new license for the project, with appropriate environmental measures, would not constitute a major federal action that would significantly affect the quality of the human environment.

A copy of the final EA is available for review in the Public Reference Room or may be viewed on the Commission's website at <http://www.ferc.gov> using the "eLibrary" link. Enter the docket number excluding the last three digits in the docket number field to access the document. For assistance, contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll-free at 1-866-208-3676, or for TTY, (202) 502-8659. You may also register online at <http://www.ferc.gov/docs-filing/esubscription.asp> to be notified via e-mail of new filings and issuances related to this or any other pending projects. For assistance, contact FERC Online Support.

Magalie R. Salas
Secretary

FINAL ENVIRONMENTAL ASSESSMENT
FOR HYDROPOWER LICENSE

Eel Weir Hydroelectric Project
FERC Project No. 2984-042

Maine

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Licensing
888 First Street, NE
Washington, DC 20426

November 29, 2005

2004).²¹ Both the bald eagle and the small whorled pogonia are federally listed as threatened. There is no designated critical habitat for either species in the project area.

Interior, by letter dated November 19, 2002, indicates that, based on currently available information, no federally listed species under the jurisdiction of the USFWS are known to occur in the project area, with the exception of occasional, transient bald eagles. Interior concludes that no further action (or consultation) is required under Section 7 of the ESA, unless new information reveals effects not previously considered, the action is modified in a manner not previously considered, or a new species is listed.

5. Section 106 Consultation

Relicensing is considered an undertaking within the meaning of Section 106 of the NHPA of 1966, as amended.²² Section 106 requires that every federal agency "take into account" how each of its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties, and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register.

As described in section V.C.6 (*Archeological and Historic Resources*), to meet the requirements of Section 106, the Commission, on September 14, 2005, executed a PA for the protection of historic properties from the effects of the continued operation of the Eel Weir Project. The terms of the PA would ensure that S.D. Warren addresses and treats all historic properties identified within the project area through a HPMP. The HPMP entails on-going consultation involving historic properties for the term for the license.

V. AFFECTED ENVIRONMENT AND ENVIRONMENTAL ANALYSIS

In this section, we address, in detail, only those resources affected by the operation of the Eel Weir Project, and include analysis of comments by interested parties on the

²¹ There are no documented bald eagle nests in the project area, though there are known nesting eagles located within a 14- to 35-mile radius of the Eel Weir Project (Woodlot Alternatives, 2002). No primary roost trees (e.g., trees habitually used on a daily basis) have been documented in the project area. However, potential secondary roost trees (e.g., large live or dead white pine used for short periods during active feeding) occur along the shoreline throughout the project area. The small whorled pogonia occurs in the vicinity of S.D. Warren's Dundee Project (FERC No. 2942) located downstream in North Gorham, Maine. However, the small whorled pogonia has not been documented in the Eel Weir Project area.

²² Public Law 89-665; 16 U.S.C. 470.

project's proposed operation. Unless otherwise indicated, the sources of our information include the license application (S.D. Warren, 2002a), S.D. Warren's additional information submitted (S.D. Warren, 2002b; 2003), the final Environmental Impact Statement for the Presumpscot River Projects (FERC, 2002), and supplemental filings made by the applicant and other entities.

A. General Description of the Locale

The Eel Weir Project is located at the outlet of Sebago Lake in the Presumpscot River Basin in southern Maine. The Sebago Lake sub-watershed stretches from Bethel, Maine in the north to Standish, Maine in the south, a distance of 47 miles, and is approximately 10 miles wide. Sebago Lake and the Presumpscot River are part of the Casco Bay watershed (Sebago Lake Association, 2004).

Sebago Lake is the second largest lake in the state of Maine, and is considered a significant regional recreational resource. The watershed for Sebago Lake is about 436 square miles (mi²), and is primarily drained by the Crooked and Songo Rivers. Land use within the Sebago Lake watershed is approximately 74 percent forested, 14 percent water surface, 6 percent developed, and the remaining 6 percent is primarily farmland and open space. Sebago Lake serves as the public water supply source for residents in the greater Portland area, as well as many lake residents.

The Presumpscot River originates at the outlet of Sebago Lake. The river flows in a southeasterly direction for about 25 miles, through Gorham, Windham, Westbrook, Portland, and Falmouth, eventually emptying into the Atlantic Ocean at Casco Bay. Flow in the river is highly regulated by the Eel Weir Project, which controls nearly 70 percent of the river's drainage area.²³

The topography of the area is gently rolling and hummocky, with a few isolated hills. Elevations range from lows of about 80 feet msl on the Presumpscot River in the vicinity of the Saccarappa Project to 188 feet between Sebago and Little Sebago Lakes. The general geology of the area is typical of southern and central Maine. Igneous rocks and highly deformed metamorphic rocks underlie Wisconsin glacial sediments of variable composition and thickness, some of which are good sources of groundwater.

The climate in southern Maine is a continental climate, highly influenced by the proximity of the North Atlantic Ocean. Average temperatures range from 22 degrees Fahrenheit (°F) in the winter to 69° F in the summer. Peak temperatures normally occur

²³ In addition to Sebago Lake, seven tributaries feed the Presumpscot River between Sebago Lake and the Saccarappa Project in Westbrook (FERC, 2002).

b. Environmental Effects:

Shoreline and Beach Erosion

Many organizations have recommended changes to the LLMP, other than the change proposed by S.D. Warren. These recommendations can be generally grouped into two categories, those that believe that high lake levels are increasing the amount of shoreline and beach erosion, and those that believe high lake levels do not increase erosion, but that higher lake levels are needed for other uses of Sebago Lake.

S.D. Warren's proposed change to the LLMP would be to establish a 0.25-foot tolerance range around the August 1 target elevation for Sebago Lake. This is a slight change from the current LLMP, which specifies the target level without variance. S.D. Warren does not support the changes in the LLMP recommended by Interior, the MDIFW, Sebago Lake Coalition, FOSL, Mr. Frechette, or Mr. Kasprzak. S.D. Warren states:

- (1) The reports by Maine Geology, and the 5 years of beach profiling conducted by S.D. Warren show normal sand movement and stability since 1990.
- (2) Although certain beaches, at points in time, show short-term changes, the beaches show long-term stability interrupted at times by changes due to storms that occur during high water periods.
- (3) While seasonal erosion and accretion does occur along all surveyed areas, there is an ongoing cycle of material loss and replacement, which maintains beach profile equilibrium.
- (4) The dynamics of erosion and accretion through wind and wave action result in a shifting of materials, but subsequent storm events cancel out any major change in profiles.

The Maine Geological Survey (Maine Geology) commented that the beach profiles on record do not support item 4 above, and states that in fact storm events do not "cancel out any major change in profiles, but are the sources for significant long-term changes to the profiles." The powerful storm events of October/November 1996 produced significant erosion in the upper profiles of many Sebago Lake beaches that were evident for many years thereafter.

S.D. Warren also commented on Maine's recommended revisions to the LLMP, by letter filed July 15, 2004. S.D. Warren states that:

- (1) For the January to March 1 period, the target lake level should be a stated elevation of 262.0 feet, instead of the long term (1910-86) median level. The LLMP should also include an expeditious process to allow S.D. Warren to obtain a temporary variance, such as approval from the MDEP, from maintaining 262.0 feet, or the 1910-86 median level, in recognition of high snowpack or watershed saturation.
- (2) Maine's recommendation requires that flows be increased immediately whenever the lake level rises above the spillway crest, up to a maximum of 1,667 cfs or higher, if needed, to prevent the lake level from reaching 267.15 feet. The LLMP should include a provision to allow S.D. Warren to obtain a temporary variance from the flow release requirements into the Presumpscot River, in recognition of flood or other severe conditions on the river downstream of the project, such as obtaining concurrence with the MDEP.
- (3) The November 1 lower limit should be elevation 262.0 feet instead of 263.0 feet.²⁶
- (4) For the November 1 to January 1 time period, the 2 in every 9-year, low-level, drawdown to elevation 261.0 feet should be eliminated, because:
 - (a) the theory of beach accretion during a drawdown level of 261.0 feet is unsupported and not beneficial to the constituents of Sebago Lake as a whole;
 - (b) following a drawdown to 261.0 feet, S.D. Warren can not guarantee that Sebago Lake will refill the next year, due to hydrological issues;
 - (c) the project is not designed to pass large amounts of flow at low head, and maintaining the lake level within a 6-inch window near 261.0 feet is difficult; and
 - (d) significant flow releases might be required during the last two weeks in November, to meet the 261.0 feet target level, since flows from the lake are limited to 1,000 cfs from mid-October to mid-November due to salmon spawning requirements.

Maine's recommended LLMP is similar to the existing LLMP, but with some small differences. For example, there would be a minimum/maximum elevation of 266.0/266.65 feet on, but not before May 1. Lake levels may also be at the spillway crest, for no more than a 3-week period, anytime between May 1 and the 3rd week in June, but levels above the spillway would trigger flow releases to bring the lake level

²⁶ S.D. Warren indicates that the MDEP concurs with this change.

back down to the spillway crest elevation. After the spring fill-up, the lake would be managed to achieve a minimum target elevation of 265.17 feet on August 1. After August 1, water levels would be managed to reach a target level on November 1 of 262.5 feet plus or minus 0.5 feet. Water levels above a line drawn from 266.65 feet at the end of the 3rd week of June to 265.0 feet on September 1, then 263.0 feet on November 1, would trigger increased flows according to the operating parameters outlined in Appendix B. During 2 in every 9 years, with the exact years to be determined by Maine and S.D. Warren, the lake level would be managed to achieve a level of 261.0 feet on or about December 1. From January 1 through March 1, the lake levels would be maintained above the 1910-1986 median level, which is approximately 262.25 feet. Between March 1 and May 1, S.D. Warren would manage the lake levels so that the spillway crest elevation is reached by May 1.²⁷ Maine says that its revisions would:

- (1) increase winter water levels to improve the likelihood that the lake would hit the May 1 full pond target level;
- (2) eliminate, as a normal operating range, the lake levels above full pond, to reduce damage to beaches and shoreline;
- (3) expand the target range to allow higher water levels from July to November;
- (4) maintain the current periodic low water level in the fall (with a few adjustments) to promote accretion of sand to beaches; and
- (5) reduce summer minimum flows to better maintain lake levels without threatening downstream water quality attainment.

Maine contends that the aforementioned changes would appropriately balance the competing uses of the lake, and would be more workable than the current plan.

Mr. Frechette recommends a water surface elevation of 266.0 feet or above from May 1 until July 7, with a limit on the lower water surface elevation of 263.5 feet during other times of the year. Mr. Frechette contends that other stakeholders are more concerned about beaches than boating and other users on the lake, and elevations below 263.5 feet harm the Sebago Lake wetlands.

Interior recommends that drawdowns in Sebago Lake not exceed 2 feet from April 1 through December 15, and no more than 3 feet from December 16 through March 31.

²⁷ The water level would not be higher than a straight line between 263.5 feet on January 1 to 266.65 feet on May 1.

Additional discussion of Interior's recommendation is included in section V.C.3, *Fisheries and Aquatic Resources*.

The MDJFW indicates that lake level changes would be useful to reduce lake trout spawning success. The MDJFW recommends that a delayed drawdown beginning in late November, resulting in a 5 to 8-foot drop in water level, would realize the highest level of egg mortality. This is discussed in greater detail in section V.C.3, *Fisheries and Aquatic Resources*.

FOSL recommends that the spring target elevation be lowered to 265.65 feet. In addition, it recommends that in 1 of every 2 years, the water surface elevation should reach 261.0 feet by November 1, in 1 of every 4 years lower the lake to elevation 260.0 feet by November 1, and in 1 in every 10 years lower the lake to 259.0 feet by November 1. FOSL states that this range of drawdown by November 1 would mimic the 50, 20 and 10 percentile water surface elevations for the period of 1910 to 1980. FOSL also states that this lake level regime would:

- (1) return Sebago Lake to the levels and range of fluctuation typical of historic conditions (1910-1980) to help preserve the size, character and stability of Sebago Lake's natural beaches and shoreline; and
- (2) return a greater magnitude to the range of lake level fluctuations than what currently exists to mimic the more natural lake level regime that existed prior to 1987.

Mr. Kasprzak recommends that the spring target water level be lowered to elevation 265.65 feet, with an acceptable range between 265.15 and 266.65 feet, and the same lake drawdown regime for November 1 as recommended by FOSL. Mr. Kasprzak states that this lake level regime would:

- (1) facilitate the rebuilding of the upper profile of Sebago Lake's beaches, by minimizing the opportunity for both beach and upland erosion during periods of high energy wave events when the lake is at full pond;
- (2) not reduce S.D. Warren's maximum generation capacity, but would significantly increase storage capacity and mitigate flooding along the lakeshore and downstream during periods of above-normal events, including the 10 and 25-year storm events; and
- (3) allow for acceleration of sand accretion on the beaches during low water levels.

Sebago Lake Coalition states that the levels in Sebago Lake are too low and recommends that the levels be between 266.0 and 266.5 feet on June 1, 265.8 and 266.0

if Sebago Lake did not have available storage capacity below the spillway crest. Without this storage, the peak water surface for Sebago Lake during this event or soon after would have likely exceeded 266.65 feet. This would have resulted in uncontrolled spillage out of Sebago Lake. The precise effects of this, in terms of additional flow in the Presumpscot River at the Westbrook gage on the April 1 peak flow, are difficult to determine because of several factors, such as:

- the timing delay of the peak inflow reaching the Sebago Lake outlet, compared to the peak for the drainage area below Sebago Lake reaching the Westbrook gage;
- effects of any available storage, however limited, within Sebago Lake at even the higher lake levels; and
- rainfall intensity and distribution differences between the two watersheds for this storm event.

One possible result would have been a peak not much higher than recorded on April 1, 1987, but a much longer period of flow above 5,000 cfs at the Westbrook gage. Based on figure 15 and table 15, the approximately 4,400 mcf of storage (at 263.0 feet) remaining in Sebago Lake on April 1 under historical operations would substantially limit the possible effects of this type of an event, as compared to the current, S.D. Warren proposed or Maine recommended LLMPS. Maine's plan would maintain higher winter and early spring water levels, compared to the other alternatives and, therefore, would have the potential to cause the highest amount of downstream flooding, if a high runoff event was to occur in early spring.

Eliminate the springtime range above full pond. All parties appear to agree that water levels above the spillway crest should be limited or eliminated to the extent possible. The current LLMPS allows a +/- 0.5-foot range on either side of the spillway crest elevation of 266.65 feet, up to 267.15 feet, on, or after, May 1 through June 15.

In its comments, Maine recommends that: (1) the fluctuation above the spillway crest be eliminated; and (2) flow releases be increased whenever the lake rises above the spillway to present the lake from reaching 267.15 feet. S.D. Warren responded to Maine's plan, in a letter dated July 15, 2004, stating the following: (1) the current LLMPS recognizes that some leeway above the spillway crest, up to the limits of the flow easements (267.15 feet), is necessary to achieve full pond, and some leeway is needed if the spillway level is the target elevation; (2) increased flow releases whenever the lake level has the potential to exceed the spillway elevation would have the potential to cause or contribute to flooding downstream of the project; and (3) if the requirement to release flows when the lake has the potential to exceed the spillway elevation is adopted, a provision should be included to allow S.D. Warren to obtain a temporary variance of the flow requirement, under circumstances such as flooding on the Presumpscot River downstream of the Eel Weir Project.

Stephen Kasprzak and FOSL state that Sebago Lake has reached full pond only 38 years in the 1910 to 2004 time period, and recommend a maximum target elevation of 265.65 feet. Mr. Kasprzak also recommends a tolerance range of from +1 foot to -0.5 foot. The Sebago Lake Coalition recommends a full pond target of 266.0 to 266.5 feet occurring as early as May 1, and that the full pond target can be reached between May 1 and late-June. They also recommend that the full pond not stay at or above the spillway for more than 3 weeks, followed by a slow decline through the summer, and state that a high lake level is important to fisheries, wildlife, wetlands, and the boating economy.

Stephen Kasprzak's and FOSL's recommendation would provide approximately 1,220 mcf or 28,000 acre-feet of storage below the spillway crest at an elevation of 265.65 feet. This volume of water is equal to approximately 2,000 cfs discharging over a 7-day period. However, since Kasprzak's recommendation has a tolerance of +1 foot, the maximum elevation would be 266.65 feet, which is equal to full pond proposed and recommended by S.D. Warren and Maine.

Peak annual elevations and dates of the occurrences, since 1910, are shown in figure 17. This figure shows that the lowest peak elevations occurred from 1910 to 1986 and may have influenced the historic mean of approximately 265.4 feet for that period. For example, if the five lowest peak values, which occurred in 1911, 1941, 1948, 1957 and 1965, are removed, the mean value for the 1910 to 1986 period becomes approximately 266.0 feet. The median elevation for the 1910 to 1986 period is 266.5 feet.³⁰ This compares to a mean of 266.2 feet and a median of 266.3 feet for the 1987-2004 period.

³⁰ The median value is often used in hydrological analyses to indicate the value that is most likely to occur, because it limits the influence of peaks and valleys associated with floods or droughts.

implemented, while day use figures from the marinas spanned the highest and lowest levels of visits during the same years. Lower lake levels produce wider beaches at the state park (FERC, 1997a), which could accommodate more beach goers and possibly account for the higher usage figures. However, lake levels above elevation 263.5 feet (the minimum level considered adequate for boating) would likely have little effect on boating resources. Furthermore, S.D. Warren reported that good weather may be an even better predictor, as both 1999 and 2001 had the highest ratio of good weather days (temperature above 70° F and no precipitation) to weekend days during the 6 years of study (S.D. Warren, 2003b). As such, there is no clear relationship between lake level and number of day users at Sebago Lake. Overall, summer lake levels have been both above and below the accepted range of the LLMP, while the number of day use visitors using the State Park has shown a general upward trend. This could be a direct result of aggressive population growth (12 percent from 1995-2000) in the communities surrounding Sebago Lake (see section V.C.7, *Socioeconomics*), in turn affecting day use recreation at the lake.

and compromises the recreational resources. Numerous other citizens claim that high spring levels in anticipation of meeting the full pool target elevation at the earliest date (May 1) has reduced the flood storage capacity necessary in the late spring to minimize risks to the shoreline associated with a full pool and strong storm events.

Our Analysis

Table 34 shows the difference between the measured lake elevation and the LLMP August 1 target elevation, and the lake level for each year is qualitatively characterized for that recreation season. Due to region wide droughts, the lake elevation was below the August 1 target level in 1999 and 2001 (6.6 and 3.72 inches, respectively) (S.D. Warren, 2002a). In addition to these lake levels not meeting the LLMP target, these levels were outside the range of the applicant's proposed 3-inch tolerance. Our examination of the measured lake levels throughout the recreation season, compared to the LLMP target elevations, indicates that the August 1 elevation is a good indicator of lake levels throughout most of the recreation season (see figures 7 through 9 in section V.C.2, *Water Resources*). As such, recreation usage observed during 1999 and 2001 may provide some insight into potential recreational use that may occur under future similar lower lake levels.

Table 34. Recorded lake water level in relation to August 1 target, 1997-2002.

| Year | Aug 1 ^a | | Difference (Actual - Target) | Lake Water Level ^b |
|------|-------------------------|----------------------|---------------------------------|----------------------------------|
| | Elevation (feet msl) | Target (feet msl) | | |
| 1997 | 265.11 | 265.17 | -0.06 feet (-0.72 inches) | Medium |
| 1998 | 265.35 | 265.17 | 0.18 feet (2.16 inches) | Medium |
| 1999 | 264.62 | 265.17 | -0.55 feet (-6.6 inches) | Low |
| 2000 | 265.42 | 265.17 | 0.25 feet (3 inches) | Medium |
| 2001 | 264.86 | 265.17 | -0.31 feet (-3.72 inches) | Low |
| 2002 | 265.04 | 265.17 | -0.13 feet (-1.56 inches) | Medium |

^a Staff reviewed the lake levels during the recreation season and found that the August 1 level was indicative of the entire recreation season levels. Ratings for lake level:

- Low -- did not meet LLMP most months; below the proposed 3" tolerance on August 1.
- Medium -- within the LLMP majority of months; within proposed 3" tolerance on August 1.

Table 35 summarizes the visitation to Sebago Lake day use areas and boat access sites, and characterizes navigation hazards (through accident reports) in relation to the lake levels between 1997 and 2002. During the two "low lake elevation" years, day use levels at the State Park reached the highest numbers recorded since the LLMP was

achieved to appropriately balance the competing uses of the lake. Maine recommends five changes that may have an effect on recreational resources. We evaluate, below, the potential effects of these changes on recreation.

Increase winter water levels

Adequate boating access at the start of the fishing season (April 1, if waters are ice free) is the single recreational issue identified that may be affected by early spring lake level management strategies. Maine recommends a revision to the LLMP that would require, beginning on January 1 and continuing until March 1, that flows from the lake be reduced to achieve and maintain lake levels at or above the long term (1910-1986) median levels for this period (generally above 262.3 feet). Thereafter, lake levels would be managed as deemed appropriate by S.D. Warren based on precipitation, snow pack, energy needs and other considerations, with the goal of reaching 266.65 feet on, but not before, May 1. Whenever possible, water levels would be managed during this period to be no higher than elevation of 263.5 feet on January 1 to 266.65 feet on May 1. The state's intent in providing a minimum lake level from January to March 1 is to ensure that lake levels reach the minimum elevation levels necessary for boating by the start of the fishing season, in case there is a dry fill period, which could compromise spring boating.

S.D. Warren, commenting on Maine's proposed plan, agrees with the state in setting a minimum over-winter lake elevation, but would prefer to use a set elevation (262.0 feet) in the LLMP, rather than the "long-term median" value as suggested by Maine. This would result in a standard minimum lake elevation rather than the long-term median value, which may vary from day to day, and from year to year. Consequently, although this recommendation would result in potentially higher lake levels in the winter and early-spring, if levels do not reach 263.5 feet by the open-water season, boaters might not be able to access the lake during the start of fishing season, and possibly through May during springs with low precipitation and runoff.

FERC (1997a) cites that the minimum lake level for decent boating access at marinas on Sebago Lake is 263.5 feet. Between 1997 and 2002, S.D. Warren's management of the lake resulted in one time that lake levels that were not conducive to boating on April 1 or after ice out which resulted in delaying boat access during the early part of the fishing season. Table 36 summarizes whether ice cover or lake levels compromised boat access at the start of fishing season on Sebago Lake for the years 1997 to 2002. During the 6 years, ice cover prevented boating access on April 1 for 2 years, the lake was too low for 1 year, while lake levels were above the boating threshold for 3 years. During the year boating access was delayed due to low lake levels (2002), the lake had been drawn down to the 2-in-9 deep drawdown of 261 feet the preceding November 1, which was followed by extremely low inflow in January, February, and March (at about the 95 percent exceedance level).

Table 36. Boat accessibility at the start of fishing season between 1997 and 2002. (Source: USGS, 2004a and annual ice out information, as modified by staff)

| Year | Ice Out Date (lake elevation at ice out) | April 1 Lake Level (feet) | Lake Level or Ice Cover Limiting on April 1 ^a |
|------|--|---------------------------|--|
| 1997 | April 14 (264.23 feet) | 263.25 | Ice Cover |
| 1998 | No complete ice cover | 265.09 | neither |
| 1999 | No complete ice cover | 264.37 | neither |
| 2000 | March 29 (263 feet) | 263.6 | neither |
| 2001 | April 24 (263.6 feet) | 261.4 | Ice Cover |
| 2002 | No complete ice cover | 261.76 | Lake Level ^b |

^a Assumes the minimum lake level to launch a boat is 263.5 feet.

^b Year following a 2-in-9 deep drawdown below 261 feet in November 2001.

Table 37 compares the amount of inflow required to reach the boating threshold under various lake elevations and hydrological conditions. Most importantly, table 37 shows that even if lake levels are below 261.0 feet at the beginning of January, they could reach levels that support boating by the start of fishing season in moderately dry winters (75 percent exceedance flows),⁸¹ and shortly after April 1 in extreme dry winters (90 percent exceedance flows), assuming the lake is ice free. Table 37 also helps to illustrate the 2002 scenario, when lake levels were between 260.5 and 261.0 feet between January 1 and March 1, but reached elevation 263.5 feet by the third week of April, after receiving 95 percent exceedance inflows during the refill period. This type of scenario could be addressed by adopting Maine's recommended change to the LLMP (higher winter lake levels), but as table 37 shows, it would be unnecessary in all but the most extreme years, and may only be warranted in years following a 2-in-9 drawdown to elevation 261.0 feet, such as in 2002.

⁸¹ This information is similar to that shown earlier in table 4. It is conservative and for general reference only. For a more detailed discussion on the assumptions used to calculate this information see section V.C.2, *Water Resources*.

Table 37.

Summary of the inflow* needed to reach minimum boating levels by April 1 after a November 1 drawdown. (Sources: USGS, 2004a; data emailed from M. Winters, Devine Tarbell & Associates, Inc., Portland, ME, to J. Hart, Louis Berger, Needham, MA, May 6, 2004; USGS, 2004b)

| January 1 Lake Elevation (feet) | Million cubic feet required to reach 263.5 feet | Mean inflow (January 1-April 1) | | 75% Exceedance inflow (January 1-April 1) | | 90% Exceedance inflow (January 1-April 1) | | % of inflow required |
|---------------------------------|---|---------------------------------|----------------------|---|----------------------|---|----------------------|----------------------|
| | | Total (mcf) | % of inflow required | Total (mcf) | % of inflow required | Total (mcf) | % of inflow required | |
| 260.6 | 3330 | 5,181 | 64% | 3,604 | 92% | 2,854 | 117% | |
| 261 | 2919 | 5,181 | 56% | 3,604 | 81% | 2,854 | 102% | |
| 262 | 1869 | 5,181 | 36% | 3,604 | 52% | 2,854 | 65% | |
| 263 | 524 | 5,181 | 10% | 3,604 | 15% | 2,854 | 18% | |

* Based on flows shown in table 8 for water years 1987-2004.

To ensure boating access at the start of fishing season, any future LLMP should consider the balance between the start of fishing season (April 1 or ice-out) and the proper lake elevation necessary to launch a boat (263.5 feet). Maine's recommendation comes close to meeting both these requirements by addressing the issues raised by the community and S.D. Warren. However, as illustrated in table 37, a higher minimum lake level in January and February may be unnecessary in all but the most extreme cases. In addition, even if lake levels are suitable for boating on April 1, boat access could still be compromised because ice cover could be present in early April. An alternative that would promote adequate boating lake levels at the start of fishing season would be a minimum lake elevation of 263.5 feet on April 1. Unfortunately, this alternative could pose additional risk to the beaches, the shoreline and shoreline residents, should Sebago Lake have substantial ice cover or should the watershed experience high precipitation resulting in flooding. As such, it would be more appropriate to adopt a strategy that lake levels be maintained at, or above, the long-term (1910-86) median in January and February following deep drawdowns below 261.0 feet, as a way to protect the boating resources from extreme low-flow conditions. This would be a minor change to the existing LLMP, which currently does not require a minimum elevation between November 1 and May 1.

Eliminate the target range above full pond

The beaches and shorelines of Sebago Lake are most susceptible to sand loss and erosion at higher lake levels (FERC, 1997a). The goal of this modification to the LLMP would be to reduce the susceptibility of beaches to erosion and the loss of sand, as a result of high water levels. This recommendation would be beneficial to the lake's beaches, if less erosion occurs, resulting in a positive effect on recreational usage of the beaches. To achieve this goal, this recommendation may involve higher flow releases from the lake to prevent the lake from exceeding the full pond level. This could result in higher flows in the bypassed reach, since the maximum flow that can pass down the power canal is limited to 1,000 cfs. If higher flows are released to the bypassed reach, these flows could hinder the recreational fishing that occurs within that reach during May/June, compromising the popular and intense sport fishery in the reach, by reducing the "fishability" of the reach.

Typically, S.D. Warren manages flows out of Sebago Lake in March and April to accommodate the hydrological conditions of the season, while at the same time managing lake levels to fill by the earliest allowable date, May 1. This strategy results in a nearly full lake in late April, which coincides with the end of the "storm season." Although maybe not the sole intent, the state's recommendation addresses this issue by lowering the maximum fill target below the spillway crest. An alternative that would enhance flood control capacity would be to delay the earliest date of maximum pool to May 15. This alternative would continue to meet the boating lake level thresholds while providing additional benefits to the competing resources around the lake. This alternative may require S.D. Warren to pass more water to the bypassed reach during wet springs to manage the lake elevation to meet the target range; however, it would also provide benefits by making it easier to achieve a full pool after a deep drawdown or a dry winter. We discuss the effects of this alternative, in relation to bypass flows, in section V.C.2, *Water Resources*, and in section V.C.3, *Fisheries and Aquatic Resources*.

Expand the summer/fall target range

Various stakeholders have commented on the management of Sebago Lake during the late summer and early fall. Numerous individuals state the lake is too low during the summer, and S.D. Warren proposes to add a three-inch tolerance around the August 1 lake elevation target. Maine recommends an additional expansion of the lake elevation target range between July and November, with the goal of protecting boating and marina interests throughout the summer and into the fall, from exposure to low lake levels and possibly reducing the recreational experience for boaters and reducing marina usage. In comments responding to Maine's recommended plan, S.D. Warren recommends lowering the November 1 minimum lake elevation from 263.0 to 262.0 feet, which has been agreed to by the Maine DEP. This lower lake elevation, however, could compromise late-season boating access, should the lake levels need to drop (in order to reach the proposed target)



Maine Department of Inland
Fisheries and Wildlife
358 Shaker Road
Gray, Maine 04039

Telephone: 207-657-2345 ext.112
Fax: 207-657-2980
Email: francis.brautigam@maine.gov



Paul R. Lepage
Governor

Chandler E. Woodcock
Commissioner

June 17, 2011

Ms Kimberly D. Bose
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

RE: Eel Weir Project (FERC 2984-ME) Supplement to Application

Dear Ms. Bose:

The Maine Department of Inland Fisheries and Wildlife (MDIFW) offers comments in response to S.D Warren's (SAPPI) Supplement to its Application for New License for the Eel Weir Project (FERC 2984).

S.D. Warren consulted with MDIFW and other resources agencies regarding the proposed LLMP, as well as other proposed license modifications. The MDIFW supports key elements of the proposed flow-based LLMP detailed in Appendix A of the supplemental, which appears to offer a better management strategy to address biological and social concerns than the current LLMP. However, some requested modifications in the supplement to the application are contrary to MDIFW's interests and are not supported.

Proposed LLMP

In general, the proposed LLMP framework (as described in Appendix A) will better address fisheries and boating related concerns, particularly in regards to the proposed elimination of the 2 in 9-year low water level requirement designed to rebuild the State Park Beach. Difficulty in attaining this significant drawdown resulted in almost annual attempts to draw down the lake in the fall. These repeated drawdown attempts flooded out the very popular fall fishery in the bypass, causing extended periods of lost angling and requiring MDIFW to prepare stocking cancellation and rescheduling/relocation orders when conditions were not conducive to stocking and angling. Lower lake levels also eliminated boating launching/boating/fishing opportunities

on the lake. The 2 in 9-year drawdown has been a source of frustration for a number of MDIFW's constituent groups and evidence to date suggests the beach has not improved under the 2 in 9 drawdown plan. Given the lack of success and the associated adverse impacts on bypass fisheries, the MDIFW supports removal of the 2 in 9-year drawdown.

Other proposed modifications to the LLMP ~~appear to maintain a desired range of "historical" water levels on the lake~~ important for maintaining wetlands. Proposed modifications also ~~increase opportunities for higher water levels through the fall for boaters and anglers,~~ including better utilization of an important existing public boat launch (MDIFW's Raymond Beach), where current shallow conditions in the fall precludes use by all but the smallest watercraft. As with the current LLMP, the proposed plan also maintains safeguards to address concerns associated with unusually high or low water levels. ~~Anticipated higher winter water levels under the proposed plan may also alleviate winter fish kills documented in shallow bays like Turtle Cove.~~ Perhaps as importantly the proposed LLMP provides more latitude and flexibility in managing under changing lake conditions (precipitation, inflow, snowmelt, etc). Increased flexibility can offer considerable advantages by allowing the applicant to be more sensitive to resource/stakeholder interests as long as agency/stakeholder consultation is an integral component of the LLMP.

The bypass fishery receives the greatest public use between April 1 and July 1, and September 15 through mid December. The Department appreciates the current level of coordination and cooperation between the applicant's new operations manager (Brad Goulet) and the MDIFW in coordinating releases to the bypass so as to minimize lost angling opportunity during peak fishing periods. Under the proposed LLMP, the applicant proposes to continue coordination /consultation efforts in response to managing periods of elevated lake levels so as to minimize resource and stakeholder impacts. This measure is supported.

Under the current and proposed LLMP the applicant is required to cap flows at 1,000 cfs between Oct 16 and November 15 to reduce the number of salmon straying from the Jordan River, where MDIFW maintains a salmon collection facility to support hatchery salmon production. While this cap is supported in concept, there is currently no data to confirm whether the existing provisions are effective, or whether a lower cap would be more effective.

The proposed LLMP (Appendix A) identifies time periods and associated operational provisions throughout the year. Under the "Other Provisions" heading there is a statement for each time period readings "Minimize duration of releases into the Project bypass of above 4,500 cfm (75 cfs), except..." The threshold (75 cfs) should reflect MDIFW recommendations for minimum flows, both detailed below.

Other requests identified in the "supplement to the application"

Additional requirements discussed in the supplement to the application include a request for no further wetland studies under the proposed LLMP, maintaining current bypass minimum flows, a request to not implement a shoreline permitting program, and a request to eliminate a requirement to construct a boat launch.

Wetland Studies

The proposed LLMP does not appear to reflect a mode of operation that would likely result in significant changes to lake wetland communities. Range of water levels and operation appears to

reflect a "more natural" situation, recognizing this lake and many others in the upper watershed are regulated by dams, which is an unnatural situation. As such MDIFW Fisheries is not requesting additional wetland investigations.

Bypass Flows

The applicant's proposal to maintain existing bypass minimum flows contradicts MDIFW's previously stated position on this issue. The applicant proposes the following bypass flow schedule: Nov 1 – Mar 31 = 25 cfs, April 1 – June 30 = 75 cfs, July 1 – Aug 31 = 50 cfs, Sept 1 – Oct 31 = 75 cfs. Habitat and wadability studies conducted by SAPPI demonstrate another flow regimen is more appropriate under MDIFW's current fisheries management objectives.

The current minimum flow provisions were developed to address very different fishery management goals back in 1985. Existing flow provisions were developed to accommodate the development of a self-sustaining salmon fishery. This effort has not proved successful and the bypass is currently managed principally for brook trout, although some salmon and browns are also stocked to diversify angling opportunity. The presence of existing year-round minimum flows has allowed the MDIFW to develop a coldwater fishery in the bypass, however, higher year-round minimum bypass flows are now needed to achieve current fishery management goals and objectives, based on the results of the wadability and instream flow studies completed by the applicant. Study results clearly show that higher year round flows significantly increase the habitat suitability for managed cold water fish and their prey, further increasing the opportunity to support higher densities of trout and salmon. Furthermore, higher flows provide better angling conditions, thereby increasing the opportunity to catch fish. Higher flows also enable more anglers to fish the reach, because more available and fishable habitat is created, reducing the potential for crowding. Study results indicate that habitat quality and quantity increase to 200 cfs and angler wadability/fishability is generally enhanced by higher flows measured between 115 and 172 cfs. Measured flows at 310 cfs reduced conditions for fishing/wadding. Areas of desirable coldwater refugia may be negatively affected under some higher minimum flows exceeding 115 cfs unless minor instream rock work is undertaken to deflect flows around the springs. The configuration and location of these springs are such that they can be readily protected by realigning some instream boulders. Based on available study results, the MDIFW recommends a non-winter minimum flow of 200 cfs, unless the spring refuge areas cannot be adequately protected, in which case summer minimum flows should be reduced to a level that provides the needed level of protection (~110cfs). The MDIFW is willing to entertain a reduced minimum flow of 115 cfs during the winter period (November 1 through April 30); a period when water temperatures are not limiting and angler safety is of greater concern. 115 cfs was selected for a winter minimum flow based on the results of the wadability study, which concluded that 115 cfs study flow consistently received very favorable ratings from those participating in the study.

Shoreline Permitting Program

The MDIFW concurs with the applicant's request to eliminate the requirement to establish another shoreline permitting program. Maine's waterways are currently very well regulated under a number of state and municipal permitting programs. The addition of another permitting program administered by the applicant would offer little "valued added" and the additional bureaucracy would not be well received by the general public. The aforementioned is just an opinion, as this issue has little bearing MDIFW fisheries concerns or interests.

Boat Launch

The applicant requests the requirement for a new boat launch to be removed from the license. This request contradicts MDIFW's position on this matter. The MDIFW has previously stated the need for additional public access. Furthermore, the applicant has not offered any new information to support their position.

Low-cost / no-cost public boat access is very limited on Sebago Lake, considering its large size, its geographic location in heavily populated southern Maine, and its importance as a major tourist destination in the northeast. Until recently there were only 3 public boat ramps with reasonable parking provisions (State Park day use area, Town of Standish boat ramp, and the Raymond Beach Boat ramp). Currently there are essentially only 2 public boat ramps since the Town of Standish started charging a day use fee of \$20 for anyone not a resident of the Town during weekends and holidays. This measure effectively resulted in a significant loss of affordable public access. The regional population around Sebago Lake is growing and creating a larger demand for recreation in the area. There is not only a need to increase boat access to Sebago Lake to meet growing demand, but also to satisfy existing use. It is well known that seasonal use exceeds available parking at the 3 public launch facilities (even prior to the Town of Standish charging high use fees) that service this large 28,000-acre lake. Although numerous commercial marinas are located along the lake it is very difficult and very expensive to obtain boat slips and many, maybe most no longer provide day-use boat ramps, and those that do charge high fees. With a growing human population, an increasing demand for public boat access, and reduced access opportunities at private marinas there is and will continue to be need for low/no cost public access. The "basin" is currently the only major lake basin that does not have low / no-fee public access. In fact, low / no-cost public boat access is very limited on Sebago when you consider it's large size and configuration. The MDIFW is requesting that the applicant develop plans for a shallow water boat launch facility on land owned by the applicant to provide public access to the "basin" for smaller watercraft. The intent would be to provide access for small-trailer boats and car top boats seeking to recreate in the more sheltered "Basin". Relatively shallow water depths in combination with exposed rocks and stumps adjacent to SAPPI lands will effectively restrict access to smaller boats. MDIFW requests a low impact launch and associated parking. Additional consultation with MDIFW is requested regarding the size and design of the launch facility.

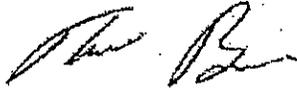
In more recent conversations with the applicant the MDIFW has expressed a willingness to consider alternatives to constructing a new boat launch, while addressing the need for more and better access. Suggestions for consideration included entering into a partnership with an existing private marina to provide free public boat access and parking in exchange for annual compensation by the applicant. The MDIFW also expressed a willingness to consider investments in the two existing public facilities to improve access opportunities, so as to provide increased and needed public access to Maine's second largest lake.

In summary, the MDIFW supports the proposed LLMP framework outlined in Appendix A of the Supplemental. The proposed LLMP will likely better address boating interests and lessen fisheries concerns. The MDIFW does not object to the applicant's request for no additional wetland studies, and for eliminating the requirement for a shoreline permitting program.

However, the MDIFW does object to the applicant's request to remove the requirement to construct a boat launch and to maintain current minimum flows in the bypass.

Please call me at 657-2345 (ext. 112) if you have any questions.

Sincerely,

A handwritten signature in cursive script, appearing to read "Francis Brautigam".

Francis Brautigam
Fishery Biologist
Sebago Lake Region

ON SEPTEMBER 26, 1995 A MEETING TO DISCUSS THE WATER LEVELS OF SEBAGO LAKE WAS HELD. ON THE ENCLOSED SERVICE LIST I HAVE SHOWN WHO ATTENDED FROM THE LEGISLATURE AND NOTABLE ASSOCIATIONS. THE MEETING FOCUSED ON COMING UP WITH A PLAN THAT EVERYONE WOULD SUPPORT AT THE NEXT OPPORTUNITY TO ADDRESS THE FEDERAL ENERGY REGULATORY COMMISSION, SHOWING THAT THE MAJORITY OF USERS OF THE LAKE ARE AGAINST LOW WATER.

THE CURRENT STATE PLAN WILL LOWER THE MEDIAN OF SEBAGO LAKE NOT ONLY FOR THE LAST THIRTY YEARS, BUT FOR THE LAST SEVENTY!

TESTIMONY AT THE MEETING INDICATED REDUCED BOATING, DECLINING FISHERIES, DRY WELLS, DRY WETLANDS AND SHALLOW WATER AQUATIC HABITAT, AND MORE WEEDS AND ALGAE, LED TO THE CONCLUSION THAT THE ECOLOGY AND ECONOMY OF OUR REGION HAS SUFFERED ENOUGH WITH LOW WATER. THE DOUBLED MINIMUM FLOW IN THE PRESUMPCOTT DOUBLED THE ADVERSE AFFECTS OF DROUGHT ON SEBAGO LAKE.

THE ENCLOSED GRAPH AND WATER LEVEL PLAN IS FOR YOUR REVIEW. THE SCATTERGRAM SHOWS WHERE THE LAKE HAS BEEN AND SHOULD BE USED TO PLOT ANY OTHER ALTERNATIVE PLAN THAT HAS BEEN SUBMITTED, INSTEAD OF AVERAGES OR MEDIANS SO THAT YOU CAN COMPARE TO THE ACTUAL LEVELS OF SEBAGO. WE WOULD LIKE OUR REPRESENTATIVES TO REPRESENT THE STATE WITH FERC INSTEAD OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND DEPARTMENT OF CONSERVATION SAYING THEY REPRESENT THE INTERESTS OF THE STATE. THEIR INTERESTS ARE ONLY FOR THE STATE PARK BEACH, NOT THE PEOPLE WHO LIVE, WORK, FISH, AND BOAT ON SEBAGO LAKE.

THINGS TO THINK ABOUT:

THE DECADE OF THE 80'S HAD THE LEAST AMOUNT OF SNOW. NO SNOW, NO FLOW.

S.D. WARREN HAS FEWER PAPER MACHINES THAN IN THE PAST AND THOSE MACHINES REQUIRE LESS WATER.

S.D. WARREN HAS A BIOMASS PLANT AND DOES NOT DEPEND ON THE ELECTRICITY GENERATED BY HYDRO POWER.

MINIMUM FLOW PRIOR TO 1986 WAS 10,000 CFM. THE DEP REQUIRED S.D. WARREN TO GO TO A CHART THAT HAD THE FLOW AT 23,000 CFM THIS YEAR.

NO DATA EXIST TO SUPPORT LONG TERM PROGRADATION OF SAND ON STATE PARK BEACHES AT ANY WATER LEVEL.

STATE PARK DOCUMENTS EXIST THAT EROSION HAS BEEN A PROBLEM ON THE SONGO BEACH FOR OVER TWENTY YEARS.

BEACH EROSION IS NOT UNIQUE TO SEBAGO LAKE.

SEBAGO LAKE IS THE FOURTH CLEAREST LAKE IN MAINE OUT OF 2500!

ONLY 10 LAKES IN MAINE ARE OVER 10,000 ACRES. SEBAGO IS 28,000 ACRES.

SEBAGO LAKE IS THE ONLY LAKE IN SOUTHERN MAINE THAT BOATS OF 25 FT. OR LONGER CAN NAVIGATE SAFELY (OR USE TO) SWIMMING AND SUNBATHING CAN OCCUR ON ALMOST ALL OTHER 2500 MAINE LAKES.

A FULL SEBAGO LAKE IS THE ONLY WAY TO ENSURE THAT THE PRESUMPSCOTT WILL GET AS MUCH WATER AS POSSIBLE TO DILUTE POLLUTION AND NOT IMPACT THE ECOLOGY OR ECONOMY OF THE SEBAGO LAKE REGION, AND THE SONGO RIVER.

THE SONGO RIVER IS AN IMPORTANT FACTOR IN THE ECONOMY OF THE NAPLES AND LONG LAKE REGION. BOATING PREDATES USE OF THE LAKE FOR PAPER OR POWER MAKING.

PROPERTIES THAT HAVE BEACHES AND POOR SEPTIC SYSTEMS ARE THE ONLY ONES TO BENEFIT FROM LOW WATER. ALL OTHER PROPERTIES ON THE LAKE LOSE VALUE AS THE LAKE LOWERS.

ORGANIZATIONS/ASSOCIATIONS:

- * SEBAGO AREA MARINAS ASSOCIATION
CHARLES M. FRECHETTE
BOX 199
EAST SEBAGO, ME. 04029 PHONE 787-2444
 - * SEBAGO BOATING CLUB
DAVID CARR
BOX 253
SEBAGO LAKE, ME. 04075 PHONE 282-3919
 - * SEBAGO LAKE ANGLERS ASSOCIATION
GEORGE MANNETT
BOX 398
SEBAGO LAKE, ME. 04075 PHONE 797-6914
 - * SEBAGO LAKE LANDOWNERS AND USERS COALITION
STEVEN NICOLI
BOX 520
RAYMOND, ME. 04071 PHONE 655-7033
-

SEPTEMBER 26, 1995

PURPOSE: SEBAGO LAKE WATER LEVELS. WHAT ACTIONS CAN WE TAKE TO GET BACK THE WATER THAT HAS BEEN TAKEN, HARMING THE ECOLOGY AND ECONOMICS OF THE LAKE.

INTRODUCTION OF GUESTS:
LEGISLATORS:

SENATOR JEFF BUTLAND
BOX 431
CUMBERLAND, ME. 04021 PHONE 629-5357

SENATOR DANA HANLEY
17 MAIN STREET
SOUTH PARIS, ME. 04281 PHONE 743-0743

* SENATOR DONALD ESTY
22 UNION STREET
WESTBROOK, ME. 04092 PHONE 854-2790

REPRESENTATIVE ERNIE GREENLAW
BOX 331
SEBAGO LAKE, ME. 04075 PHONE 642-4862

REPRESENTATIVE CAROL KONTOS
BOX 1785
WINDHAM, ME. 04062 PHONE 898-3474

* REPRESENTATIVE RICH THOMPSON
BOX 711
NAPLES, ME. 04055 PHONE 693-3088

REPRESENTATIVE THOMAS TYLER
9 DEERFIELD DRIVE
WINDHAM, ME. 04062 PHONE 892-9760

* REPRESENTATIVE JOHN UNDERWOOD
BOX 459
OXFORD, ME. 04270 PHONE 533-4355

* Representative
Paul Waterhouse
21 Green St.
Bridgton, Me. 04009
Phone 647-5686

3. Are the slopes too steep?

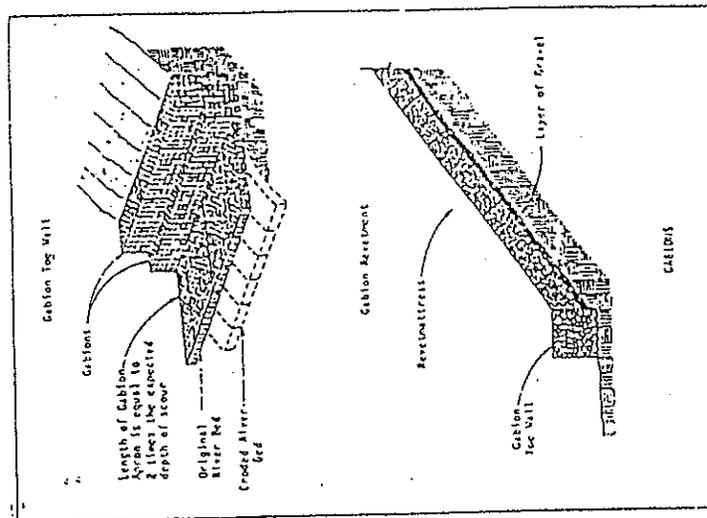
Naturally occurring stable banks are usually about 2H:1V (two feet horizontal for every one foot of vertical rise). This angle varies with different soils. Soils do not permanently stand at a vertical face but form an angled slope that varies with the soil and groundwater conditions. Banks will erode until they reach their natural angle of repose.

Slopes less than 2:1

- REGRADE AND REVEGETATE

Slopes greater than 2:1

- INSTALL A COMBINATION OF VEGETATION AND RIPRAP PROTECTION
- INSTALL A COMBINATION OF VEGETATION AND GABIONS



1. Is wave action a factor?

Wave action usually occurs on lakes, ponds and sheltered ocean coves or tidal regions. The waves can be caused by wind, tidal currents, and in some cases by boat traffic. Waves generally undercut the toe of the slope causing it to slump.

- REINFORCE THE TOE OF THE SLOPE WITH RIPRAP AND VEGETATE.
- REINFORCE THE TOE OF THE SLOPE WITH GABIONS AND VEGETATE.
- LIMIT BOAT SPEEDS.

2. Is concentrated stormwater runoff a factor?

During rainstorms, does a lot of rainwater runoff from roofs, driveways and lawns, concentrate in a low spot and then channelize down a slope? Is a gully forming on the slope because of it? Sometimes you can resolve erosion problems by installing gutters and downspouts and directing runoff to another stable area. Alternately, you can reinforce the slope with stone at the point where the water is channelizing.

- INSTALL GUTTERS AT THE ROOF EDGE.
- DIVERT RAIN WATER AWAY FROM THE SLOPE TO A STABLE AREA (FLAT AND WELL VEGETATED).
- TRANSPORT WATER DOWN THE SLOPE IN A REINFORCED CHANNEL.

Note: Depending on the complexity of the water drainage problem, a professional engineer may be needed to solve these problems. If a lot of water from off-site is crossing your property, you should probably seek professional assistance.

EROSION ON SHOREFRONT PROPERTY

IDENTIFYING THE CAUSES OF CHRONIC EROSION PROBLEMS

POND AND LAKE FRONT PROPERTY
STREAMBANK PROPERTY
SHELTERED COASTAL PROPERTY

Produced by:

Cumberland County SWCD
1A Karen Drive
Westbrook, Maine 04092
(207) 871-8651

And

Portland Water District
225 Douglass Street
PO Box 3553
Portland, Maine 04104-3553
Standish: (207) 892-5680

4. Is seepage in the slope causing bank failure?

This is common when a coarse layer of sand overlies a less permeable soil such as clay. Water tends to move rapidly and freely in the sand. Once it reaches the less permeable clay layer, it tends to flow along the clay's surface and exits the slope face.

Note: This problem is beyond the scope of this fact sheet. A registered professional engineer should be consulted. In a limited number of cases, planting water-loving vegetation at the seep line (shrub willows) may help stabilize the slope. Refer to fascine rolls in "vegetative streambank stabilization".

5. Are there problems with the vegetation holding the slope?

Thick, healthy vegetation contributes greatly to slope stability by holding the soil together with its root structure. Carefully examine the quality of the vegetation on the slope.

Is it mostly bare soil covered with pine needles or leaves (usually the case where tree growth is dominant)?

Has slash been disposed of on the banks (which kills vegetation by smothering it)?

Is the bank overly shaded for shrub growth?

- REMOVE ALL SLASH.
- SELECT THE APPROPRIATE VEGETATION, PLANT IT, PROTECT IT, AND FOSTER ITS GROWTH
- INSTALL A COMBINATION OF VEGETATION AND RIPRAP PROTECTION.
- INSTALL A COMBINATION OF VEGETATION AND GABIONS.

6. Is most of the damage caused during spring runoff or big rainstorms?

This is commonly the case on brooks and streams. Water velocities are often too high for bare soil or vegetation to withstand.

- PLANT BANKS WITH SPECIAL STREAM-BANK STABILIZATION PLANTS.
- INSTALL A COMBINATION OF VEGETATION AND RIPRAP PROTECTION.
- INSTALL A COMBINATION OF VEGETATION AND GABIONS.

Note: If much of the water crossing your land is from off-site, you should hire a registered professional engineer to design bank reinforcement.

7. Is foot traffic or vehicular traffic a problem? (Sebago Lake State Park?)

Are pedestrians threatening bank stability by trampling vegetation to get to the water? Are cars parking too close to the water, compacting the soil so that no vegetation can grow? Are ATVs tearing up the place?

- PROVIDE STABLE FOOT PATHS WITH CLEARLY DEFINED BORDERS.
- PROVIDE AN ACCEPTABLE, CLEARLY MARKED PARKING AREA AWAY FROM THE ERODING SLOPES.
- PHYSICALLY LIMIT ACCESS TO ERODING AREAS AND SLOPES BY INSTALLING BARRIERS AND PLANTING PRICKLY VEGETATION.

It is District policy that no person shall be subjected to discrimination on the grounds of race, color, sex, handicap, age or national origin.

8. Is ice damage a problem?

Winter ice build-up along shorelines can cause tremendous damage with freezing and thawing cycles, as well as the spring thaw.

- INSTALL A COMBINATION OF VEGETATION AND RIPRAP PROTECTION.
- INSTALL A COMBINATION OF VEGETATION AND GABIONS.

9. Are fluctuating water levels a problem?

If the water level varies greatly over the course of the year, vegetation may have difficulty getting established.

- PLANT VEGETATION THAT CAN ADJUST TO FLUCTUATING WATER LEVELS.
- INSTALL A COMBINATION OF VEGETATION AND RIPRAP PROTECTION.
- INSTALL A COMBINATION OF VEGETATION AND GABIONS.

Note: If whole sections of the slopes are collapsing during the period of drawdown, the rate of drawdown may be too rapid.

10. Is a combination of these problems causing the erosion?

This is the rule rather than the exception! Usually your property is subject to a combination of forces. A great deal of your success depends on identifying them. Take the time to examine your shoreline carefully and determine what combinations of factors are causing the total erosion problem.

REPORT ON
**S. D. WARREN COMPANY'S
LEVEL MANAGEMENT PLAN
FOR SEBAGO LAKE**

SUBMITTED TO
FEDERAL ENERGY REGULATORY COMMISSION
APRIL 1995

SUBMITTED BY
S. D. WARREN COMPANY

VOLUME I OF IV

the Final Proposed Level Management Plan for Sebago Lake that the November 1 level be raised to 262.5 ft. msl due primarily to this concern. We will also recommend that an evaluation of the wetlands be conducted to determine if there are problems with either going higher or lower than the 262.5 ft. msl elevation.

S. D. Warren Company rejects FOSL's claim that a Memorial Day level of 266 ft. msl and a October 15 level of 262.0 ft. msl will protect and enhance the wetlands. The Normandeau Report implies that for wetlands to have their maximum effect, they must fill and be lowered on a consistent basis, which the FOSL proposal will accomplish. [The flaw, we feel, is with the using of the median as the target levels. This will create a long-term median that will be significantly lower than the existing median, and this will move the wetlands from their present location to a position closer to the center of the lake.] We feel this movement of the wetlands will have a negative quality effect on the wetlands and will not protect and enhance them as FOSL claims. ←

FOSL claims on Page 6 of their Support Document that "...lake levels... would never go as low as the levels which were reached as much as 50% of the time from 1910-1986". FOSL provides no support for the claim. S. D. Warren rejects this claim for the following reason: S. D. Warren Company has very good control over the high side of the curve as gates can be opened and the actual lake level can be drawn down. For this reason, we feel that either the draft or the final plan can be attained during normal and moderately wet years. Unfortunately, S. D. Warren Company does not have the same amount of control on the low side of any particular curve. The only low side control we have is to reduce outflows, because we have no upstream reservoirs to supply water to hold the level of the lake up. Only precipitation can bring the water up or hold the water from falling. [S. D. Warren Company actually has less control on the low side today than it had in the past when the below-50-percentile data was generated.] This loss of control is due to increased minimum flows required to preserve water quality in the Presumpscot River. In the past, we have been able to reduce outflows to the 10,000 cfm range during the summer months, and the current requirements will not allow this level of reduction in summer outflows. This, in our opinion, will make the levels below the 50 percentile more likely to happen than in the past. FOSL also fails to recognize that the lower data points of levels are created by droughts or low precipitation years that, contrary to FOSL's claim, S. D. Warren Company has no control over. S. D. Warren can, without reservation, state that there will be low precipitation and drought years in the future.

S. D. Warren Company must also point out that to focus solely on the 25/75 percentile range for the years 1910-1986 does not recognize that the uses of Sebago Lake have changed drastically from 1910 to 1995. These changes must be recognized and considered when balancing the uses. [To blindly use a range that includes years when the uses were different than the current situation does not adequately consider the new or changed uses or plan for the future.]

STATE OF MAINE**COMMENTS**

April 22, 1996

Lois D. Cashell, Secretary
Federal Energy Regulatory Commission
Hydropower Licensing Office
Room 1A
888 First Street, N.E.
Washington, DC 20426

**RE: DRAFT ENVIRONMENTAL IMPACT STATEMENT
EEL WEIR HYDROELECTRIC PROJECT
FERC No. 2984-025**

Dear Secretary Cashell:

The Maine Departments of Conservation, Environmental Protection, and Inland Fisheries and Wildlife offer this consolidated response on behalf of the State of Maine to FERC's Draft Environmental Impact Statement (FERC/DEIS-106 dated March 1996) on S.D. Warren Company's proposed water level management plan for Sebago Lake of the Eel Weir Hydro Project (FERC No. 2984).

In the DEIS, FERC evaluates the resource impacts of six different lake level management alternatives, including: S.D. Warren's proposed plan; a high lake level alternative; a low lake alternative; the State of Maine's July 7, 1995 recommended water level management plan; an alternative developed by the FERC staff; and a no-action alternative.

The DEIS concludes that the FERC staff alternative is the preferred lake level management plan, providing lake level elevations conducive for recreation during the active recreation season while minimizing shoreline erosion potential. The FERC alternative is the same as the July 7, 1995 State plan except for having lower target levels from September 10 until the October 22-November 30 period.

In response to the DEIS, the State has consulted with various interested parties and has developed a compromise water level plan. Under this plan, the lake would be managed to meet the following target level goals:

- A water level of 266.65 feet (spillway crest) is reached whenever possible between May 1 and the second week in June, within a target range of plus or minus 6 inches.
- The lake level is maintained at or above spillway crest no longer than three weeks.
- The lake is managed to achieve a drawdown to a target level of 265.17 ft (~1.5 feet below spillway crest) on August 1. Water levels above a line drawn from spillway crest on June 15 to the August 1 target level will trigger increases flows to move the lake back toward the August 1 target.
- The drawdown of the lake continues after August 1 to reach a target level on November 1 of 262.5 ft, plus or minus 6 inches, whenever possible. After August 1, water levels may remain at or below the August 1 target so long as the lake is managed to reach the November 1 target range.
- After November 1, lake levels are managed as appropriate by S.D. Warren to reach the spillway crest target level between May 1 and the second week of June of the following year.

This plan is based on the five priorities we have established to strike an appropriate balance among the competing uses of Sebago Lake. First, the time that the lake is at or above spillway crest level should be limited to minimize shoreline erosion and water quality impacts from high water. Second, the lake should reach a critical minimum level in the fall, to allow for sand accretion at beaches and other shoreline areas as the lake rises in the winter and spring. Third, water levels should be managed prior to ice-out in the spring to limit the erosional effects of ice scouring of the shoreline. Fourth, water levels should be managed to maintain some useable beach areas during the summer and to maintain some water for recreational boating during the fall. And fifth, water quality should be maintained and protected in the lake and the downstream Presumpscot River.

This plan is designed to restore the lake to the 1967-1986 median levels while insuring that appropriate operating responses are made to high and low water conditions throughout the year and especially during the critical summer and fall recreational seasons.

Attached is a complete description and graph of the compromise plan, along with a set of proposed operating parameters explaining how flows are to be adjusted upward and downward in response to water levels within and outside of the established target ranges.

As of today, this compromise plan has been accepted by the following parties:

- State of Maine
- S.D. Warren Company
- Sebago Lake Anglers Association
- Sebago Lake Boating Club
- Sebago Lake Landowners and Users Coalition
- Sebago Area Marinas Association
- Maine Marine Trades Association
- Maine State Bass Federation
- Frye Island Corporation

We have asked these parties to communicate their support for the compromise plan directly to you. We are continuing to consult with other parties to gain their support for the compromise plan.

We recommend that FERC adopt the new compromise State water level plan as the preferred management plan for Sebago Lake. We believe strongly that this plan, more than the FERC staff alternative, is best adapted to the comprehensive use and development of Sebago Lake and therefore best fulfills the licensing requirements of the Federal Power Act. We also believe that FERC's approval of the compromise plan, which now has more support than any other plan currently under consideration, will avoid continued debate and possible litigation on this contentious subject and will best serve the interests of the people of Maine.

We believe that the State's compromise plan represents the best balance between the competing interests of maintaining water quality, fish and wildlife resources, wetlands, beaches and beach use, recreational boating, shoreline integrity, and power production. We also believe, as does S.D. Warren, that this plan is workable and will result in actual median lake levels that closely match our target elevations.

We do not agree with the DEIS that the benefits exceed the adverse impacts of lower water levels during the fall season. While we agree with the analysis presented in the DEIS (pages 4-1 to 4-5) that wave energies are highest under open water conditions during the months of September, October and November on the east, south, and west portions of the lake, we are not persuaded that reducing the target water level by another six inches during this period will materially reduce erosion around the lake. And while we agree that recreational boating will continue to decline in September, regardless of lake elevations (see DEIS, page 4-26), there is significant recreational boating activity on Sebago Lake through the end of the open-water fishing season (currently September 30 for regular season fishing). In addition, there is growing interest in and use of Sebago Lake and the Songo River/Long Lake system for recreational boating during fall foliage season. Finally, sufficient water levels are needed to allow larger boats to remain in the lake and be removed safely, often from relatively shallow-water marinas and private access ramps, at the end of the fall recreational season.

We further recommend that a revised minimum flow release curve being developed by DEP be implemented to meet water quality standards in the lower Presumpscot River.

In the DEIS, FERC assumed that each of the alternative lake level plans analyzed would comply with the DEP's minimum flow requirements for the Presumpscot River, as included in the State's July 7, 1995 plan and revised January 2, 1996 by DEP. We appreciate FERC's consideration of the State's concerns and DEP's expertise on water quality issues, and recommend that FERC continue to give deference in any final lake level plan to maintaining the minimum flow needed to meet downstream water quality standards.

However, after additional evaluation of lake level conditions and water quality data from last summer, DEP has concluded that it should re-visit its recommended minimum flow release curve to reduce the impact of outflows on lake levels. This review was prompted by the many concerns expressed to us by lake users and public officials that during the dry summer of 1995, water quality in the Presumpscot River was maintained at the expense of the lake.

The DEP's recommended flows were based on modeling done to predict compliance with state dissolved oxygen (DO) standards. During the summer of 1995, the consequence of releasing the flows needed to meet DO standards was that flows as high as 383 cfs were released at a time when the lake was far below its target levels.

Furthermore, additional monitoring by the DEP has revealed that the lower Presumpscot River is not currently meeting state water quality standards for dissolved oxygen, temperature, or aquatic life. This non-attainment of standards is a direct result of waste water discharges from S.D. Warren's Westbook pulp and paper mill.

In response to these considerations, DEP is working with S.D. Warren to determine the amount of reductions in mill discharges (specifically, biochemical oxygen demand and total suspended solids) that are technically and financially achievable. DEP will then recalculate the minimum flow release curve based on the new discharge limits to reduce the flows needed to meet dissolved oxygen standards. Finally, DEP will establish a minimum flow cap to limit flow releases from the lake under emergency low lake level conditions, such as occurred in 1995.

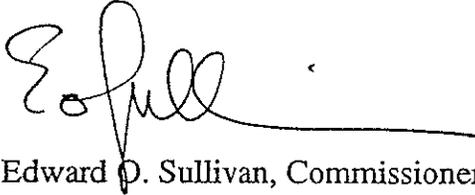
Reducing the required minimum flows needed from the lake will reduce the impact of these flow releases on lake levels, and will allow S.D. Warren more flexibility in meeting target lake levels during the critical summer and fall recreational seasons. Establishing a minimum flow cap under emergency low lake level conditions will achieve a better balance between impacts to the lake and the river in drought years.

Additional detail on Presumpscot River water quality issues and DEP's action plan to develop a revised minimum flow release curve are included in the attached correspondence from DEP to State Representatives Richard H. Thompson, Thomas M. Tyler, and Carol A. Kontos. Because development of a revised curve is some time away, we recommend that any lake level management plan approved by FERC for Sebago Lake be made subject to such minimum flow releases as are determined necessary by DEP to maintain water quality in the Presumpscot River. DEP will keep FERC staff apprised of its progress in developing a revised minimum flow curve.

Finally, we join S.D. Warren in recommending that additional monitoring by Warren be deferred until relicensing. The Eel Weir Project license is currently set to expire on March 31, 2004. Under FERC's regulations, Warren's application for a new license must be filed with FERC no later than March 31, 2002, prior to which Warren must complete the required three stage consultation process, which normally takes 3-5 years. As this process will therefore start shortly and will require a significant commitment of time and resources on the part of Warren, various state agencies, and other interested parties, we believe it is prudent to defer any monitoring requirements until all relevant resource issues and information needs can be comprehensively reviewed and analyzed in the context of project relicensing.

Thank you for this opportunity to comment. Please direct any questions you have regarding these comments to Dana Murch of the DEP at 207-287-3901 or Bob Marvinney of the Maine Geological Survey at 207-287-2801.

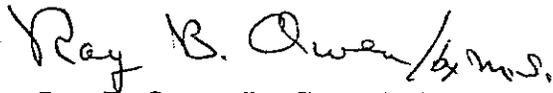
Sincerely,



Edward D. Sullivan, Commissioner
Department of Environmental Protection



Ronald B. Lovaglio, Commissioner
Department of Conservation



Ray B. Owen, Jr., Commissioner
Department of Inland Fisheries & Wildlife

c:\sebdeis
Attachment

cc: FERC Review Coordinating Committee
Service List

COMPROMISE STATE WATER LEVEL PLAN
FOR SEBAGO LAKE

April 19, 1996

- * Whenever possible, the lake shall be managed during spring fill-up to reach a target level of 266.65 ft (spillway crest) no sooner than May 1 and no later than the second week in June. The allowable target range within this period is plus or minus 6 inches (267.15 ft - 266.05 ft).
- * Lake levels shall be maintained at or above spillway crest for no longer than three weeks during any year.
- * After spring fill-up, the lake shall be managed to achieve a target level of 265.17 ft (~1.5 feet below spillway crest) on August 1.
- * Water levels above a line drawn from 266.65 ft on June 15 to 265.17 ft on August 1 shall trigger increased flows according to the State's proposed operating parameters to move the lake back within the target range.
- * After August 1, water levels shall be managed to reach a target level on November 1 of 262.5 feet, plus or minus 6 inches, whenever possible. After August 1, water levels may remain at or below 265.17 ft so long as the lake is managed to reach the November 1 target range.
- * Lake levels below the target range between May 1 and November 1 shall trigger minimum flow according to the State's proposed operating parameters to move the lake back within the target range.
- * During the mid-October to mid-November salmon spawning season, normal operating flows will be passed unless the lake level is above the November 1 target level range and is rising.
- * Between November 1 and the following May 1, lake levels shall be managed as appropriate by S.D. Warren based on precipitation, snow pack, energy needs and other considerations, with the goal of reaching the spillway crest target level no sooner than May 1 and no later than the second week in June.

PROPOSED OPERATING PARAMETERS
FOR SEBAGO LAKE LEVEL MANAGEMENT PLAN

NORMAL FLOWS: When lake levels are within the target range between May 1 and November 1.

Flows may vary between 20,000 CFM (333 CFS) and 50,000 CFM (833 CFS) and shall be adjusted to move the lake level toward the appropriate target level at all times.

ABNORMAL FLOWS: When the lake levels are outside the target range between May 1 and November 1.

STAGE 1 FLOWS: Flows shall be at the minimum (20,000 CFM) or maximum (50,000 CFM) and the lake level shall be outside the target range prior to adjusting to Stage 1 flows, except that flows shall be increased as necessary to prevent water levels from reaching elevation 267.15 FT MSL (6 inches above spillway crest) or being above spillway crest (266.65 FT MSL) for more than three weeks during any year.

Minimum Flow: The flow required to maintain mandatory water quality standards in the lower Presumpscot River, as determined by DEP.

Maximum Flow: Up to 100,000 CFM (1667 CFS).

STAGE 2 FLOWS: Stage 1 flows must be maintained for two weeks and the lake level is not moving toward the target range prior to adjusting to Stage 2 flows.

Minimum Flow: Same as Stage 1 flows.

Maximum Flow: Up to 150,000 CFM (2500 CFS).

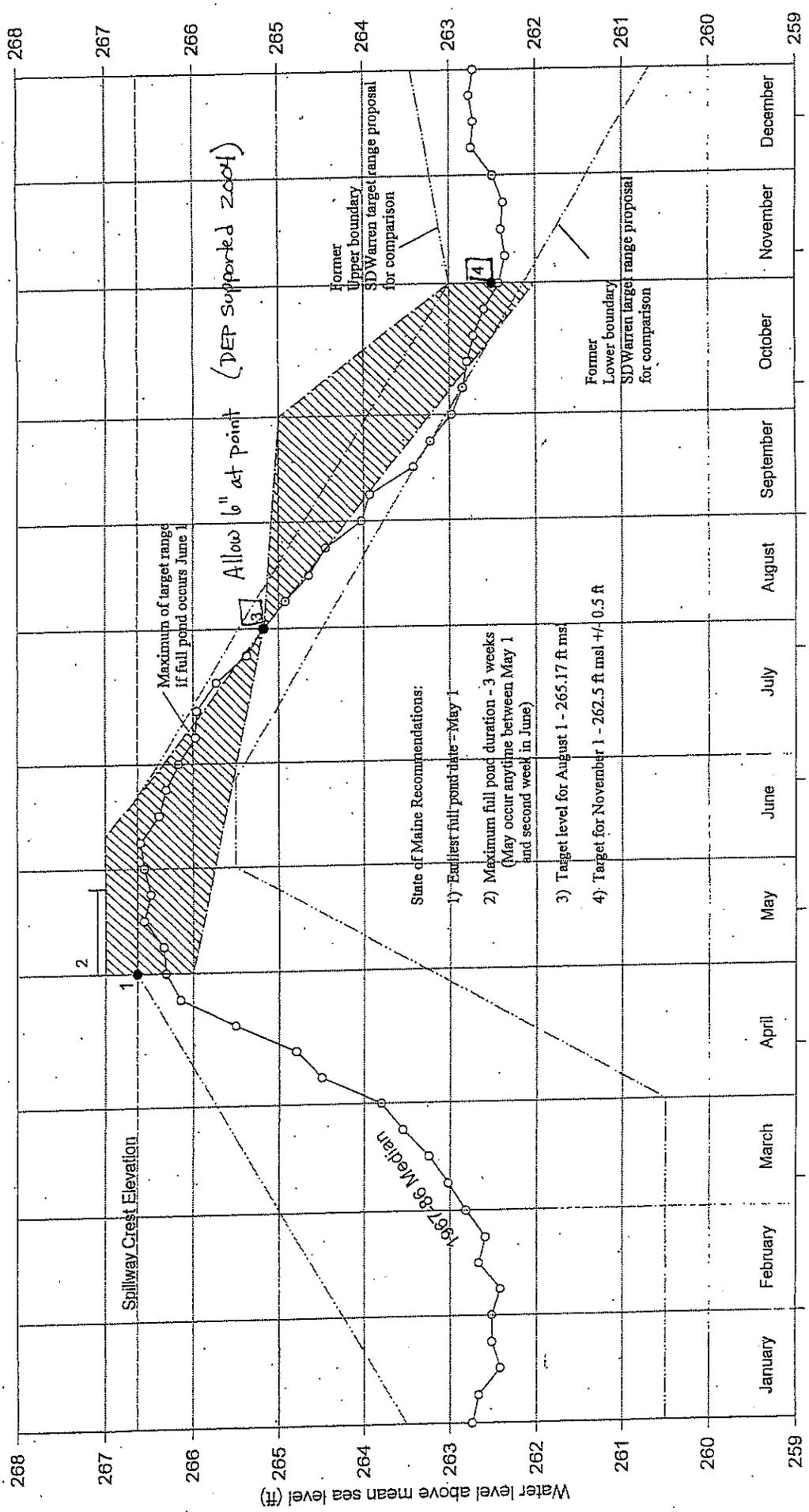
STAGE 3 FLOWS: Stage 2 flows must be maintained for two weeks and the lake level is not moving toward the target range prior to adjusting to Stage 3 flows.

Minimum Flow: Same as Stage 1 flows.

Maximum Flow: Up to 210,000 CFM (3500 CFS).

The flows stated in Stage 1 or 2 or 3 may be adjusted at any time that the lake level is moving toward the target range, but the lake level must continue to move toward the target range.

State of Maine Compromise Sebago Lake Plan
 April 19, 1996



#4 Move target to 263.5 to reduce impacts to turtle Cove and all Sebago wetlands with 1 foot range

Sebago Lake State Park Beach Dynamics

A Report on Results of Beach Profiling

Stephen M. Dickson
Robert A. Johnston
Maine Geological Survey
State House Station 22
Augusta, Maine 04333

ABSTRACT

Sebago Lake State Park, located along the northern shore of Maine's second largest lake, is the site of this shoreline change study. To determine the extent of shoreline erosion and accretion at the state park, a beach profile network was established in late 1990. Beach profile data were collected at 10 stations set up in the state park and at two locations outside the park. Profiles were collected during all seasons for three years and were repeated more than 20 times at each park site. Eighteen profiles were analyzed at the two stations outside the park in Jordan Bay. Analysis of the data shows that: (1) winter ice pushes sand up the profile and leaves a ridge of sand at most locations in early spring; (2) spring high-water levels smooth over the ice-created ridge, and during rising lake levels, waves push sand up the beach; and (3) through summer and fall, during a period of falling lake levels, waves cause a temporary adjustment to the profile with accretion just above the water line and erosion below it.

The most notable and consistent erosion of almost all beaches occurred in the fall of 1992. Some condition (presumably storm waves) created two wave-cut scarps, or notches, in most beach profiles. Each notch was probably formed during a different stage in lake level in the month of September. This erosional feature was filled by the summer of 1993 and had no apparent lasting effect on the profile geometry. A similar behavior was not found in fall 1991 and there were insufficient data at the time of this report to evaluate fall 1993.

The greatest variability in profiles at any one location occurred on the spit at Songo Beach. Both erosion and accretion of as much as 10 feet (3 meters) horizontally occurred rapidly (in a period of a month or two) and then took almost a year to return to its prior condition. Vertical changes in the height of the spit were also recorded. During high water in 1992, the eastern part of the spit built upward several inches (centimeters) while the western part remained unchanged. In subsequent months the eastern part remained stable while the western part lowered several inches (centimeters). By summer 1993 conditions at both sites had returned close to those of early 1992.

The study period covers almost three years during which time the profiles indicate a generally stable position of the upper beach. While erosion and accretion were noted at all profile stations, no permanent shifts were seen in the position of the beaches. The greatest lasting change may be in the lowering of the offshore portion of a few profiles, although with only two years of underwater profiling it is difficult to be conclusive about offshore losses. The time for recovery from a short, but volumetrically significant, erosion period may take many months and can approach a year.

INTRODUCTION

Purpose

Sebago Lake is located approximately 20 miles (30 kilometers) northwest of Portland, Maine (Fig. 1). It is located along

the boundary between the coastal lowland and the central highlands of New England (Denny, 1982). The lake covers 47.5 square miles (123 square kilometers) and is 316 feet (97 meters) deep. It is the deepest lake in Maine.

Winnipeg
Beach boundaries
in summer 345r

waves and deposited onto the top of the spit when it became submerged. This upbuilding increased the height of the spit by about 6 inches (15 cm) during high water in 1992 (Fig. 27). The largest accretion during this study period was found in this area. The sand could have come from Songo Beach although net loss from Songo Beach was not pronounced. Alternatively, the sand could have come ashore from deeper portions of the profile or from the Songo River delta just offshore (Fig. 3a).

Through summer and fall lake levels drop without any permanent impact on the profile positions. The greatest erosion during the study period occurred in September 1992 (Figs. 18, 19, 23, 25, 26, 34, 36). This was most likely due to wind-generated waves although no wave data exists. Erosion lowered portions of many profiles, but did not affect the subaerial beach. By the following year erosion infilled at all locations and no significant long-term loss was measured.

Falling lake levels cause an adjustment to what appears to be a short-term equilibrium beach profile. The normal profile is sigmoidal in shape. A downward shift in water level (and consequently offshore) results in 1 to 4 feet (0.3 to 1.2 meters) of horizontal accretion above the water line and about 2 to 4 feet (0.6 to 1.2 meters) of horizontal erosion below the water line (e.g., Fig. 31). This pattern of change is probably due to wave deposition in the upper wash zone and erosion just below the lake level. In the area where the profile slope flattens underwater the sand level may lower 4 inches (10 centimeters) in response to this shift. Consequently, lowering water levels have two impacts on dry beaches: (1) accretion extends the dry beach out into the lake a few feet (a meter) and (2) lower level creates a wider beach because of greater subaerial exposure of the beach. In general, slopes are about 1:7 to 1:17 so lowering the lake level one foot (meter) results in exposure of about 7 to 17 feet (meters) of beach above the water line. There doesn't seem to be any net loss of beach sand associated with falling levels during the study period.

CONCLUSIONS

Significant erosion occurred to almost all beaches in the fall of 1992. Some condition (presumably storm waves) created two wave-cut scarps, or notches, in most beach profiles. Each notch was probably formed by more than one wave event during falling lake levels in the month of September. This erosion was infilled by the summer of 1993 and had no apparent lasting effect on the profile geometry. A similar behavior was not found in fall 1991 and there are insufficient data at the time of this report to evaluate fall 1993.

The greatest variability in profiles at any one location was found at the Songo Beach spit. Both erosion and accretion of as much as 10 feet (3 meters) horizontally can occur rapidly (in a period of a month or two) and then take almost a year to return to its prior condition. Vertical changes in the height of the spit were also recorded. During high water in 1992, the eastern part of the spit built upward 5 inches (13 centimeters) while the

western part did not change. In subsequent months the eastern part remained stable while the western part lowered about 5 inches (13 centimeters). By 1993 conditions at both sites had returned close to those of early 1992.

A high lake level in the late spring did not cause a vertical lowering or horizontal erosion of the beach in the time period studied. This finding is contrary to the long-term trend of erosion around the base of trees that have exposed roots. The long-term sand loss could be from a process not identified in this study. For example there could be longshore transport of sand from Songo Beach to the spit at times of high lake level. Sand from the spit may be washed over and deposited in the wetland on the north side of the spit.

The study period covers almost three years. The profiles indicate a generally stable position of the upper beach. While erosion and accretion were noted at all profile stations, no permanent shifts were seen in the position of the beaches. The greatest lasting change may be in the lowering of the offshore portion of a few profiles, although with only two years of underwater profiling it is difficult to be conclusive about offshore losses. The time for recovery from a short but volumetrically significant erosion period may take many months and can approach a year.

RECOMMENDATIONS

Several recommendations can be made from the results gathered so far. First, we recommend continuing the process of beach profiling. The interannual variability is high and three years of data have allowed analysis of rates of beach recovery following only one period of significant erosion. Furthermore, profiles are now being measured at other locations around the lake by other groups including lake associations. By continuing the profiles at the state park it will be possible to better define the role of constructive and destructive processes on shoreline erosion. A complete data archive should be assembled combining park data with data from other lake shorelines and made available for analysis by all contributors.

Second, we recommend that fall lake levels be kept below the annual maximum elevation, as they have been in the last few years. Large waves in the fall could be damaging to the upper beach and swash zone. By keeping levels low when waves are large, erosion is limited to the low- to middle-profile positions. Results have shown that erosion at this middle elevation is infilled during rising lake levels in the following spring and summer. Further analysis of seasonality in wave height should be considered. Wave heights could be hindcast from wind data and compared to profiles and lake levels. Field measurements of waves and currents could be made and correlated with wind data to better define the strength of Stokes Drift. If the shoreward transport is found to be important, then lowering the lake levels further could be beneficial to the beach.

Third, we recommend that March lake levels be kept as low as practical before rising in spring. During the rise, wave action

transports sand to the upper portion of the beach profiles. Rising levels can result in beach accretion. If lake levels were lowered (deepening wave base) below those in the study period it is possible that, with proper wave conditions, more sand might be transported shoreward from the deeper water by Stokes Drift. Extremely low lake levels, during droughts for example, may result in sand loss to the outer beach and delta surface, or perhaps off the delta into the deeper lake. Sand loss offshore during such times could be permanent. A combination of sediment samples and a grid of ground penetrating radar surveys over the delta when the lake is frozen could determine if sand is abundant offshore and might support this recommendation further.

Fourth, we recommend that the Songo Beach spit and adjacent wetland be studied as a possible sand sink. The dynamic changes measured on the spit suggest that this area may have the greatest sand exchange between offshore, alongshore, and perhaps over the spit into the wetland adjacent to the Songo River. Both wind and waves may modify the spit and could lead to shoreline adjustments. The wetland may act as a sand sink during times of landward transport. If sand reached the wetland it would be unlikely to be returned to the spit or beach by natural processes acting over a period of a few years. Only the more dramatic process of a new inlet forming across the spit could excavate sand in the wetland and carry it lakeward in river currents. Although the process of sand deposition in the wetland has not been documented nor the wetland investigated, it remains an area for further study. Investigation should include an analysis of the spit geometry in historical air photographs to help answer questions related to spit dynamics. Ground penetrating radar surveys of the spit and river delta complex could identify deposits of sand and provide information on sources and sinks of beach sand. This geologic information should be integrated with depth and elevation data in a geographic information system. Various lake levels should be analyzed and displayed as a 3-D map of the beach and delta to better understand the role of extreme high and low lake levels on sediment loss to wetlands and offshore.

ACKNOWLEDGMENTS

We gratefully acknowledge the diligent work of Steven Barden and G. Robert Webb, employees of the Bureau of Parks

and Recreation at Sebago Lake State Park, who have regularly profiled and photographed beaches at Sebago Lake since late 1990. Cindy Basteley of the Augusta Parks and Recreation office compiled and updated the beach profile data files. We thank W. Dana Perkins, Jr. of the Portland Water District for providing water level and meteorological data. This report benefited from insightful reviews by Daniel F. Belknap, Donald E. Guy, Jr., Harold D. Nilsson, and Irwin D. Novak.

REFERENCES CITED

- Barnes, F. A., and King, C. A. M., 1955, Beach changes in Lincolnshire since the 1953 storm surge: *East Midland Geog.*, v. 4, p. 18-28.
- Barnes, P. W., McCormick, M., and Guy, D. E., Jr., 1993, Quantity and fate of sediment in Lake Erie coastal ice in Ohio: *Geol. Soc. Amer., Bull., Abstr.*, v. 25, no. 6, p. A66-67.
- Bloom, A. L., 1959, The geology of Sebago Lake State Park: *Maine Geological Survey, Bull.* 11, 24 p., 11 figs, 3 pl.
- Bolduc, A. M., Thompson, W. B., and Meglioli, A., 1994, Surficial geology of the North Windham quadrangle, Maine: *Maine Geological Survey, Open-File Map 94-2*, scale 1:24,000.
- Denny, C. S., 1982, *Geomorphology of New England*: U. S. Geological Survey, Professional Paper 1208, 18p.
- Dionne, J. C., 1993, Sediment load of shore ice and ice rafting potential, upper St. Lawrence Estuary, Quebec, Canada: *Jour. Coastal Research*, v. 9, p. 628-646.
- Emery, K. O., 1961, A simple method of measuring beach profiles: *Limnology and Oceanography*, v. 6, p. 90-93.
- Komar, P. D., 1976, *Beach processes and sedimentation*: Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 429 p.
- Lorang, M. S., Komar, P. D., and Standford, J. A., 1993, Lake level regulation and shoreline erosion of Flathead Lake, Montana: A response to the redistribution of annual wave energy: *Jour. Coastal Research*, v. 9, p. 494-508.
- Osberg, P. H., Hussey II, A. M., and Boone, G. M. (eds.), 1985, *Bedrock geologic map of Maine*: Maine Geological Survey, scale 1:500,000.
- Thompson, W. B., 1976, *Surficial geology of the Gray quadrangle, Maine*: Maine Geological Survey, Open-File Map 76-45, scale 1:62,500.
- Thompson, W. B., and Boms, H. W., Jr. (eds.), 1985, *Surficial geologic map of Maine*: Maine Geological Survey, scale 1:500,000.
- Thompson, W. B., and Smith, G. W., 1977, *Surficial geology of the Sebago Lake quadrangle*: Maine Geological Survey, Open-File Map 77-45, scale 1:62,500.
- U.S. Army Corps of Engineers, 1984, *Shore Protection Manual*: U.S. Army Corps of Engineers, Waterways Experiment Station, Coastal Engineering Research Center, Vicksburg, MS, 4th edition.

1985 lake low all summer no evidence of sand -
lake in winter already historically low during
study period.



DEPARTMENT OF ENVIRONMENTAL PROTECTION

ANGUS S. KING, JR.
GOVERNOR

EDWARD O. SULLIVAN
COMMISSIONER

March 29, 1996

Representative Richard H. Thompson
P.O. Box 711
Naples, ME 04055

Representative Thomas M. Tyler
P.O. Box 237
Windham, ME 04062

Representative Carol A. Kontos
P.O. Box 1785
Windham, ME 04062

Dear Representatives Thompson, Tyler and Kontos:

Thank you for meeting last month with me and my staff and representatives from the Department of Inland Fisheries & Wildlife and the Maine Geological Survey to discuss your concerns about the state's recommended water level plan for Sebago Lake and the management of lakes levels and flow releases during 1995. I appreciate the time and interest you have taken in this matter. I know we all agree that Sebago Lake is an important economic and environmental resource that must be protected for our use and enjoyment now and in the future.

At the meeting, you relayed to me the concerns expressed by your constituents that during the dry summer of 1995, water quality in the Presumpscot River was maintained at the expense of the lake. I agreed that the Department would re-visit its minimum flow release curve to address low lake level conditions.

I am writing to update you on the status of our review of minimum flow requirements and to present an action plan for completing this review.

First, let me provide some background on this issue. State law requires that the Presumpscot River and its tidal estuary meet established minimum standards for dissolved oxygen (DO). DO levels are affected by, among other things, water temperature, river flows, and the discharge of organic pollutants into a waterway. The major source of pollutants in the Presumpscot River is the discharge from the S.D. Warren pulp and paper mill in Westbrook. In-stream sampling has shown that the river during the summer months often violates the state DO standard; this is true even though the Westbrook mill is routinely operating far below its allowable discharge limits. Modeling by the Department's technical staff has predicted that minimum flows in the river would have to be increased as a function of river temperature in order to bring the river into compliance with the DO standard.

Serving Maine People & Protecting Their Environment

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7686 FAX: (207) 287-7826
OFFICE LOCATED AT: RAY BUILDING, HOSPITAL STREET

PORTLAND
312 CANCO ROAD
PORTLAND, ME 04103
(207) 822-6300 FAX: (207) 822-6303

BANGOR
106 HOGAN ROAD
BANGOR, ME 04401
(207) 941-4570 FAX: (207) 941-4584

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, ME 04769
(207) 764-0477 FAX: (207) 764-1507

Warren implemented the Department's new minimum flow curve during the summer of 1995 which, as you know, was hot and very dry. At times, minimum flows from Sebago Lake as high as 383 cubic feet per second (cfs) were required to meet DO standards below the mill discharge; this is twice as much flow as was released during the last drought in 1985 (and as a result, the lower river probably violated DO standards for most of that summer). Because of low spring run-off during 1995, the lake never reach its target level. As the summer continued hot and dry, lake levels began to drop faster than the current target level curve. As a result, the Department worked with Warren to reduce flows to save as much water as possible in the lake while still meeting DO standards in the river. The lake bottomed out on October 18 at a level about 1 1/2 feet below the target and at a minimum flow of 233 cfs.

In the meantime, Warren's Westbrook mill is pending for renewal of its state waste discharge license. Monitoring by the Department has revealed that, as a direct result of Warren's discharge, the lower river is not currently meeting state standards for DO, temperature, or aquatic life. The Department staff met recently with Warren to discuss the water quality situation. Warren understands that it will have to further reduce its pollutant loading to the river in order to help meet standards.

In the end, the Department will define the reduced pollutant loading limits that Warren can meet at its mill. Based on these limits, the Department can then re-calculate the minimum flow release curve and reduce the flow needed to meet DO standards.

To address the concern about excessive flow releases from the lake under drought conditions, I believe that, after the minimum flow curve has been re-calculated, an emergency protocol should be established that caps flow releases from the lake under "emergency" low lake level conditions.

The Department has developed the following action plan to address the Sebago Lake flow release issue:

1. DEP will check accuracy of modeled "worst-case" water quality predictions against actual water quality and flow conditions during 1995, and will adjust model as required.

Target date for completion: April 1.

2. S.D. Warren will work with the United States Geological Survey to verify the accuracy of the minimum flow measurements at the lake.

Target date for completion: April 15.

3. DEP will work with S.D. Warren's water quality consultant (Woodard & Curran) to run water quality projections for various pollutant loading and minimum flow scenarios.

Target date for completion: April 30.

March 29, 1996

Page 3

4. DEP will work with S.D. Warren to determine the reduced pollutant loading limits that the mill can meet in a state waste discharge license renewal.

Target date for completion: Approximately September 1.

5. DEP will re-calculate the minimum flow release curve based on the reduced pollutant loading.

Target date for completion: Approximately October 1.

6. DEP will work with S.D. Warren and other interested parties to establish a minimum flow cap under emergency low lake level conditions, and to develop a plan to meet water quality standards under these conditions.

Target date for completion: Approximately November 1.

The goal is to have a new minimum flow curve in place and a waste discharge license for the Warren mill issued by the end of this calendar year.

Again, thank you for your continued interest in this important matter.

Sincerely,



Edward O. Sullivan

cc: Charles Frechette

STATE OF MAINE

COMMENTS

April 26, 2004

Maglie R. Salas, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

RE: SEBAGO LAKE WATER LEVELS
EEL WEIR HYDROELECTRIC PROJECT
FERC No. 2984-042

Dear Secretary Salas:

The State of Maine, represented by its Commissioners of Conservation, Environmental Protection, and Inland Fisheries and Wildlife, is pleased to offer the attached Proposed Sebago Lake Level Management Plan for your consideration.

As you know, S.D. Warren Company currently manages Sebago Lake in accordance with a compromise lake level management plan. This plan was originally agreed to by the State, S.D. Warren, and all interested stakeholders in 1996, and was subsequently approved by FERC as an amendment to the federal license for the Eel Weir Hydroelectric Project.

As you also know, FERC is currently reviewing S.D. Warren's application for a ~~new 30-to-50-year license for the Eel Weir Project~~. In its application, S.D. Warren has proposed to continue to manage lake levels in accordance with the current plan. FERC is currently analyzing the impacts of Warren's proposal, as well as various alternative lake level management plans, in preparation of an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA).

Many stakeholders have recently expressed concerns about how lake levels will be managed under the terms of a new FERC license, and have advocated for changes in the current management plan.

In order to hear the concerns of all stakeholders, we held a listening session in December of 2003. Many stakeholders expressed their views on the lake level issue orally at the listening session and in subsequent written correspondence.

We have reviewed the management of Sebago Lake under the current compromise lake level management plan and have carefully considered the concerns expressed about the current plan by various stakeholders. On the basis of this review, the State of Maine proposes that the Sebago Lake Level Management Plan be revised to better ensure that suitable water levels are achieved to appropriately balance the competing uses of the lake.

In summary, our recommended changes will:

- ~~Increase winter water levels to improve the likelihood that the lake will hit the May 1 full pond target level;~~
- Eliminate the target range above full pond to reduce damage to beaches and shoreline;
- ~~Expand the target range to allow higher water levels from July to November;~~
- Maintain the current periodic low water level in the fall (with a few adjustments) to promote accretion of sand to beaches; and
- ~~Reduce summer minimum flows to better maintain lake levels without threatening downstream water quality attainment.~~

These changes should more appropriately balance the competing uses of the lake, should be more workable, and should improve S.D. Warren's ability to meet the target levels established in the plan.

Enclosed is a detailed explanation of the State of Maine's proposed revisions to the current plan, along with an add-and-strike revision of the management plan and operating parameters. Also enclosed is a "clean" copy of the proposed plan as revised, along with a graph depicting the revised plan.

We recommend that FERC adopt the proposed plan in the EA currently under preparation as the preferred alternative for the future management of Sebago Lake.

increasing flows to the detriment of salmon spawning during the mid-October to mid-November period.

Finally, the current plan does not specifically address how lake levels are to be managed after the periodic low water target level is reached.

The State does not propose to change the periodic low water target level. Achieving low lake levels at least periodically is the only management strategy that will promote accretion of sand on the lake's beaches. Consequently, the current low target level should stay in effect until sufficient time has passed to determine whether this management strategy is in fact resulting in sand being restored to beaches.

The State does propose that the plan be revised to achieve a target level of 261.0 ft on or about December 1 in two out of every nine years. The State further proposes that, after achieving the periodic low water target level, the lake level be managed to stay within 6 inches of the December 1 target level until January 1.

Minimum Flows

Concerns have been expressed that, under the current plan, more water must be released from Sebago Lake than is needed to meet water quality standards in the Presumpscot River and that, as a consequence, summer lake levels are lower than necessary.

The State acknowledges that, in light of the shutdown of the S.D. Warren pulp mill and the removal of the Smelt Hill Dam, less water is now needed to meet water quality standards in the river. Because of this, the DEP has informally allowed flow reductions during the past several summer seasons. As the DEP is still in the process of collecting the in-stream data needed to re-calibrate its water quality model, a final answer to the flow issue cannot be given at this time. However, experience has shown that summer flows can be reduced to better maintain lake levels without threatening the water quality attainment of the river.

Therefore, the State proposes that the plan be revised to eliminate the requirement that S.D. Warren provide in accordance with the DEP's Final Temperature Based Flow Regulation Curve for Presumpscot River. The State further proposes that the plan be revised to require that, between May 1 and November 1, flows will be reduced to 15,000 cfm (250 cfs) and held at this flow whenever lake levels are below the target range.

Conclusion

As a result of the revisions proposed here, the Sebago Lake Level Management Plan should more appropriately balance the competing uses of the lake, should be more workable, and should improve S.D. Warren's ability to meet the target levels established in the plan.

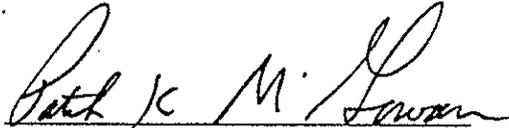
Sebago plan explanation

Letter to Magalie R. Salas
FERC No. 2984-042
April 26, 2004
Page 3

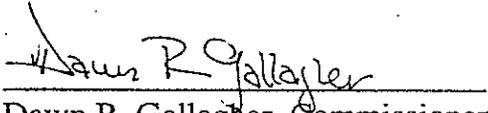
355

We thank you for this opportunity to comment and for your consideration. Please direct any questions regarding these comments to Dana Murch of the DEP at 207-287-7784 or Robert Marvinney of the Maine Geological Survey at 207-287-2801.

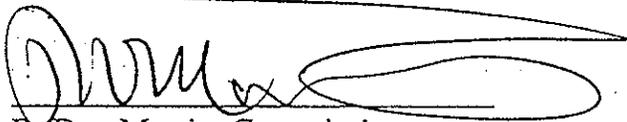
Sincerely,



Patrick McGowan, Commissioner
Department of Conservation



Dawn R. Gallagher, Commissioner
Department of Environmental Protection



R. Dan Martin, Commissioner
Department of Inland Fisheries & Wildlife

Enclosures

/FERC Comments April 2004

cc: Allan Creamer, FERC
Interested Stakeholders (see attached list)
Area Legislators (see attached list)
FERC Review Coordinating Committee (see attached list)

SEBAGO LAKE WATER LEVELS

Interested Stakeholders

Tom Howard, S.D. Warren
Maureen Winters, Devine Tarbell & Associates
Nancy Skancke, GKRSE
Phillippe Boissonneault, Portland Water District
Wayne Fournier, Town of Frye Island
Charlie Frechette, Sebago Lake Marinas Association
Roger Wheeler, Friends of Sebago Lake
Stephen Kasprzak, Friends of Sebago Lake
Stephen McCusker, Sebago Lake Boating Club
Robert Hennick, Sebago Pines Property Owners Association
Steve Nicoli, Sebago Lake Landowners & Users Coalition
Robert Calileo, Sebago Harbor Shores Association
Tim Caverly, Public Employees for Environmental Responsibility
Don Toms, Point Sebago Resort

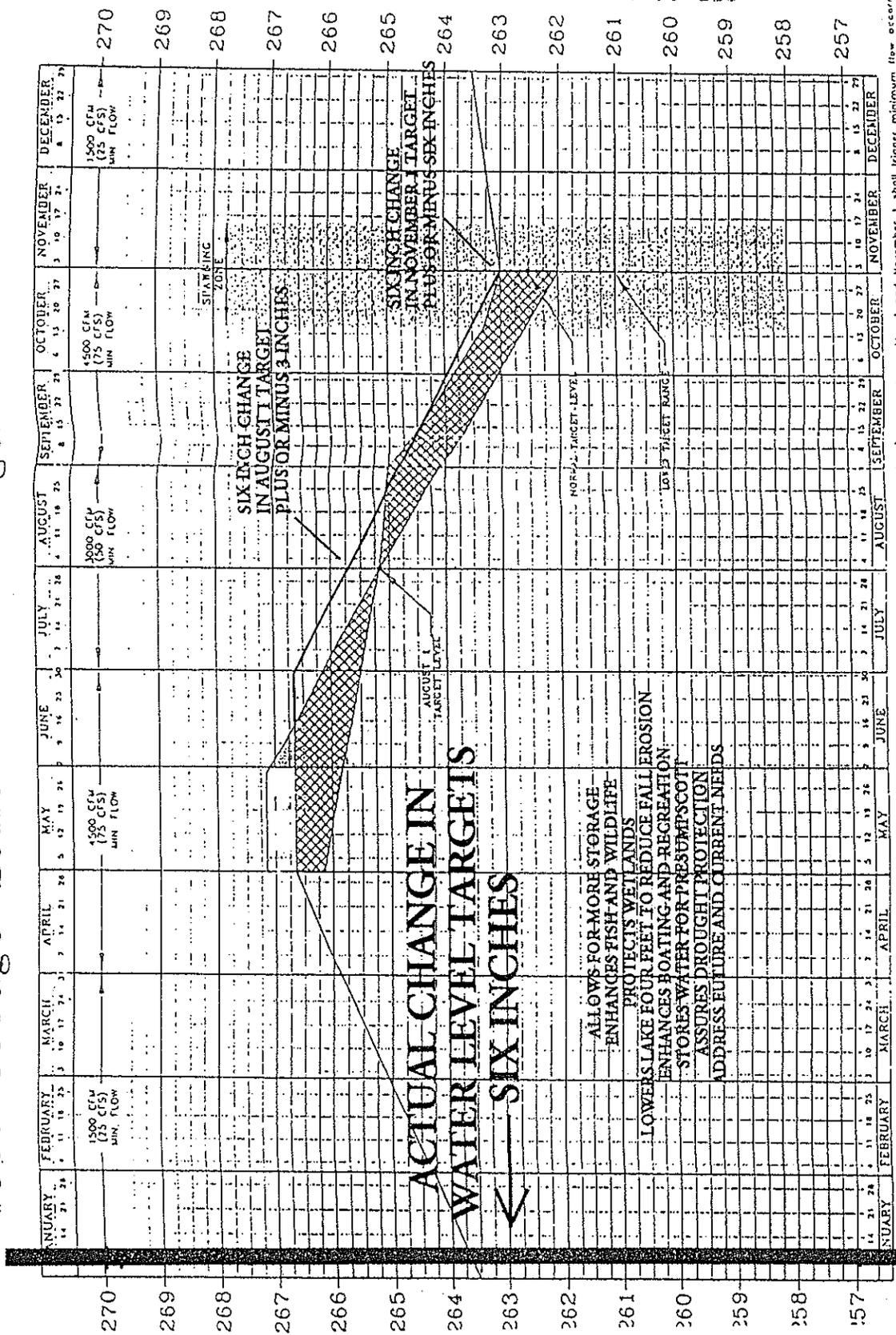
Area Legislators

Senator Richard Bennett (Senate District 25)
Senator Karl Turner (Senate District 26)
Senator Carolyn Gilman (Senate District 29)
Representative Joseph Bruno (House District 38)
Representative David Tobin (House District 39)
Representative Gary Moore (House District 43)
Representative Phillip Cressey (House District 47)

FERC Review Coordinating Committee

Betsy Elder, SPO
Dana Murch, DEP
Steve Timpano, DIF&W
John Boland, DIF&W
Francis Brautigam, DIF&W-Region A
Kathy Eickenberg, DOC-BP&L
Robert Marvinney, DOC-MGS
Norm Dube, ASC
Gail Wippelhauser, DMR
Art Spiess, MHPC

2000 Sebago Lake Level Management Plan



6. Lake levels below the target range between May 1 and November 1 shall trigger minimum flow occur whenever possible, the lake shall be managed during spring fill-up to reach a target level of 266.65 ft.

**SEBAGO LAKE
WATER LEVEL
QUOTES**

(ITALICIZED WORDS ARE OUR COMMENTS)

S.D. WARREN REPORT TO FERC APRIL 1995

"FOSL (*FRIENDS OF SEBAGO LAKE*) HAS, IN THE PAST, TAKEN MUCH LIBERTY WITH QUOTING STATEMENTS OUT OF CONTEXT AND IMPLYING THAT THE MEANING IS TOTALLY OPPOSITE OF THE INTENDED MEANING. THEY HAVE, IN OUR OPINION, CONTINUED THIS PRACTICE IN THEIR SUPPORT DOCUMENT. S.D. WARREN WILL POINT OUT SEVERAL OF THESE INSTANCES ONLY TO SHOW THAT STATEMENTS MADE BY FOSL SHOULD BE RESEARCHED THOROUGHLY BEFORE BEING CONSIDERED FACT."

"FOSL DOES MAKE SOME SWEEPING CONCLUSIONS FROM SOME VERY MINOR INFORMATION AND FROM INFORMATION THAT FOSL KNOWS IS UNTRUE."

"AGAIN FOSL HAS THESE DOCUMENTS BUT CHOOSES TO IGNORE THEM IN AN ATTEMPT TO MISLEAD THE READER."

"TO ADDRESS MR. THOMPSON'S (*FOSL DIRECTOR*) SECOND POINT OF THE DRAFT PLAN LEVELS BEING ABOVE THE LONG-TERM MEDIAN LEVELS, S.D. WARREN MUST POINT OUT THAT TO USE THE LONG TERM MEDIAN AS TARGET VALUES WILL ENSURE THAT NEW LONG-TERM MEDIAN VALUES THAT ARE LOWER WILL BE CREATED."

"MR. THOMPSON MAKES SEVERAL STATEMENTS THAT COULD EASILY BE TAKEN AS THREATS AND ARE CERTAINLY STATEMENTS THAT ARE INTENDED TO PRESSURE THE FERC OR ADDRESS DIFFERENT AGENDA'S THAN SHOULD BE ADDRESSED HERE. WE WOULD LIKE TO ASK MR. THOMPSON, THROUGH THIS RESPONSE TO REFRAIN FROM USING SIMILIAR TACTICS IN THE FUTURE." (*WHEN ALL ELSE FAILS, MANIPULATE THE DATA. WILL THE COMMISSIONERS OF FERC BELIEVE THE LIES OF FOSL AS THE STAFF HAS, AND LOWER SEBAGO LAKE? MR. THOMPSON AND MR. KASPRZAK HAVE USED UNETHICAL PRACTICES TO DUPE THE HONEST MEMBERS OF FOSL AND FERC STAFF TO BELIEVE THAT WATER LEVELS ABOVE MEDIAN HAS CAUSED WATER QUALITY PROBLEMS ON SEBAGO LAKE. PORTLAND WATER DISTRICT HAS SCIENTIFICALLY PROVEN THAT TO NOT BE TRUE. SEBAGO LAKE IS THE FOURTH CLEAREST AND CLEANEST LAKE IN MAINE AND IS CONTINUING TO GET CLEANER.*)

IN THE PAST, WE HAVE BEEN ABLE TO REDUCE OUTFLOWS TO THE 10,000 CFM RANGE DURING THE SUMMER MONTHS, AND THE CURRENT REQUIREMENTS (*22,000+ CFM*) WILL NOT ALLOW THIS LEVEL OF REDUCTION IN SUMMER OUTFLOWS. THIS, IN OUR OPINION, WILL MAKE LEVELS BELOW THE 50 PERCENTILE MORE LIKELY TO HAPPEN THAN IN THE PAST. (*THE FERC STAFF PLAN OF 1996 STATES THAT THE LEVEL OF THE LAKE WILL BE AT THE TARGET LINE 90% OF THE TIME. WILL THE OTHER 10% BE BELOW THE MEDIAN? NOTE: THE FERC STAFF PLAN OF 1996 IS BELOW THE LONG TERM MEDIAN FOR OCTOBER AND NOVEMBER*)

FERC ORDER ON COMPLAINTS AUGUST 1994

"IN FEBRUARY 1992, MAINE DEP SPONSORED A PUBLIC MEETING TO REVIEW THE 1991 LAKE LEVEL PLAN AND DETERMINE WHETHER CHANGES TO THE PLAN FOR 1992 WERE WARRANTED.....THE AGENCY (*INLAND FISHERIES AND WILDLIFE*) THEREFORE RECOMMENDED THAT DRAWDOWNS DURING OCTOBER BE GRADUAL, AVOIDING HEAVY CURRENTS, SO AS NOT TO DISTURB THE LANDLOCKED SALMON'S SPAWNING SEASON."

"IN ADDITION, MAINE FISHERIES STATED THAT WATER LEVELS BELOW 264 MSL, (THE FERC STAFF PLAN RECOMMENDS 264 MSL IN THE LAST WEEK OF AUGUST) WHICH OCCUR IN LATE AUTUMN, COULD RESULT IN ADVERSE IMPACTS TO A NUMBER OF WETLAND AREAS AND THEIR FISH AND WILDLIFE RESOURCES." (IS THIS BEING IGNORED IN THE FERC STAFF PLAN OF 1996?)

"THE EBASCO REPORT CONCLUDED THAT LOWERED LAKE LEVELS IN AUTUMN WOULD REDUCE BUT NOT TOTALLY ELIMINATE THE POTENTIAL FOR SHORELINE EROSION. IT RECOMMENDED THAT WARREN BEGIN LOWERING LAKE LEVELS IN OCTOBER, AND SUGGESTED THAT SEBAGO LAKE BE MANAGED TO REACH A TARGET LEVEL OF 264 FEET MSL BY THE END OF SEPTEMBER, AND THEN BE LOWERED TO A TARGET OF 262 FEET MSL BY THE END OF DECEMBER, WHEN WATER-CAUSED EROSION WOULD STOP BECAUSE OF FREEZE OVER.

BY LETTER DATED SEPTEMBER 5, 1990 COMMISSION STAFF CIRCULATED THE EBASCO REPORT FOR COMMENT AND NOTED THAT STAFF GENERALLY CONCURRED WITH THE CONCLUSIONS IN THE REPORT." (WHAT HAS CHANGED?)

"THE CHANGES INSTITUTED BY WARREN IN 1987 WERE MINOR OPERATIONAL CHANGES IN RESPONSE TO HIGHER WINTER RATES AND TO CONCERNS RAISED BY COMMERCIAL BOATING INTERESTS. THESE CHANGES AND THE SUBSEQUENT REVISIONS, HAVE ALL BEEN WITHIN THE HISTORICAL LAKE LEVEL LIMITS FOR THE PROJECT." (WERE MINOR, WHY IS FERC STAFF NOW WANTING TO MAKE MAJOR CHANGES TO THE LEVELS OF SEBAGO LAKE? RISKING CHANGES TO THE ECOLOGY OF OUR LAKE. THE LAKE ECOLOGY IS DYNAMIC. CHANGING THE WATER LEVEL WILL CHANGE THE ECOLOGY OF THE ENTIRE LAKE.)

MAINE BUREAU OF CONSERVATION
BUREAU OF PARKS & RECREATION OCTOBER 1995

"APPROXIMATE TOTAL SAND BEACH FRONTAGE IS OVER 1.5 MILES." (SEBAGO LAKE HAS OVER 105 MILES OF SHORELINE AND 600 ACRES OF WETLANDS. SHOULD THE FERC STAFF LOWER THE LAKE AND TAKE THE WATER AWAY FROM THE REST OF THE SHORELINE AND WETLANDS. AGAIN THE MAJORITY IS NOT REPRESENTED IN FERC STAFF 1996 PROPOSAL.)

"DAY USE 96,712 VISITS (EST. 10% BOAT USE)"
(87,000 VISITS TO 1.5 MILES OF SHORELINE IN 90 DAYS. THE STATE BEACHES DO NOT HAVE RESTRICTED ACCESS TO THE BEACHES. THE UPLAND/BEACH INTERFACE IS VOID OF MOST SMALL VEGETATION THAT HOLDS THE SAND AT FULL POND. THE STATE HAS PRACTICED THE OPPOSITE OF BMPS FOR SHORELAND PROTECTION FOR FIFTY YEARS.)

"THE MAINE GEOLOGICAL SURVEY (MGS REPORT, P. 8), THE CUMBERLAND COUNTY USDA SOIL CONSERVATION SERVICE (BPR, 1994 MONITORING REPORT, EXHIBIT V II-A, P. 72) AND NORMANDEAU ASSOCIATES (NORMANDEAU REPORT, P. 20) HAVE ALL ACKNOWLEDGED SIGNIFICANT LONG TERM EROSION AND LOSS OF SHORELAND ON SONGO BEACH. BPR BELIEVES THAT MORE BEACH WAS EXPOSED IN THE PAST BECAUSE BEACH EXISTED AT OR ABOVE THESE ELEVATIONS. THESE FORMER BEACH AREAS HAVE BEEN LOST BECAUSE EROSIONAL FORCES HAVE BEEN DIRECTED AT INCREASINGLY HIGHER ELEVATIONS OVER TIME."

"-A SPRING WATER LEVEL WHICH REMAINS AT THE UPPER BEACH FOR AS SHORT A TIME AS POSSIBLE SO THAT DESTRUCTIVE SPRING WAVES DO NOT CONTINUE TO CAUSE DAMAGE;" (THE STATE PARKS (LIKE FERC) BLAMES WATER LEVELS FOR THE EROSION. ALL THE EVIDENCE POINTS TO THE OPPOSITE. BPR LIKES TO READ BETWEEN THE LINES.)

MGS REPORT, P. 8 "DURING HIGH WATER IN 1992, THE EASTERN PART OF THE SPIT BUILT UPWARD 5 INCHES (13 CM) WHILE THE WESTERN PART DID NOT CHANGE."

MGS REPORT, P. 8 "A HIGH LAKE LEVEL IN THE LATE SPRING DID NOT CAUSE A VERTICAL LOWERING OR HORIZONTAL EROSION OF THE BEACH IN THE TIME PERIOD STUDIED. THIS FINDING IS CONTRARY TO THE LONG-TERM TREND OF EROSION AROUND THE BASE OF TREES THAT HAVE EXPOSED ROOTS. THE LONG-TERM SAND LOSS COULD BE FROM A PROCESS NOT IDENTIFIED IN THIS STUDY."

NORMANDEAU REPORT, P. 20 "IT HAS BEEN ALLEGED BY SOME THAT RECENT (POST 1987) EROSION HAS REMOVED EXTENSIVE AMOUNT OF SAND FROM SOME OF SEBAGO'S BEACHES, PARTICULARLY IN THE "GREAT BAY AREA" AND AT THE SEBAGO LAKE STATE PARK BEACH. FROM THE EVIDENCE PRESENTED TO DATE, IT SEEMS CLEAR THAT SUBSTANTIAL BEACH LOSS HAS OCCURRED, BUT IT IS NOT CLEAR OVER WHAT TIME FRAME THE LOSS OCCURRED AND IT IS EVEN LESS CLEAR WHAT THE UNDERLYING CAUSE FOR THE LOSS IS." (LIKE FOSL WHO BPR SUPPORTS, THEY IGNORE THE FACTS AND TAKE THINGS OUT OF CONTEXT TO MISLEAD THE READER, ITS MEMBERS, ITS COMMISSIONERS, ITS GOVERNOR, THE PRESS, AND FERC STAFF!)

CUMBERLAND COUNTY SOIL AND WATER CONSERVATION REPORT P. 72 "IN ORDER TO PREVENT ADDITIONAL LOSS OF THE STATE PARK SHORELAND AT THE NORTH END OF SONGO BEACH, I SUGGEST THE FOLLOWING: (PAGE 73) DESIGN AND INSTALLATION OF SHORELAND PROTECTION SYSTEM ALONG THE SEVERE SHORELAND EROSION AND LAKE INTER FACE." (THIS WAS ALSO PROPOSED, DESIGNED, BUT NOT BUILT OR FUNDED IN 1978 BY PARKS AND RECREATION. THEY DID NOT RECOMMEND THE LOWERING OF THE LAKE. THIS IS ALSO CONSISTENT WITH THE RECOMMENDATIONS OF THE GREAT LAKES WATER LEVEL REPORT WHICH STATED THAT WATER LEVEL CHANGES WOULD NOT CHANGE THE LONG TERM EROSION RATES, THEREFORE SITE SPECIFIC SOLUTIONS TO SITE SPECIFIC EROSION AREAS SHOULD BE DONE NOT LOWERING OF THE LAKE.)

"MGS HAS INDICATED THAT THERE HAS BEEN NO CHANGE IN THE POSITION OF THE OVERALL BEACH PROFILE FOR THE 1991-1993 STUDY PERIOD, THAT IS NO NET GAIN OF BEACH AREA." (THE FALL LEVELS DURING THIS TIME PERIOD WERE CONSISTENTLY ABOVE 263.0 MSL FOR SEPTEMBER THRU DECEMBER. MGS ALSO NOTED ON P. 8 OF ITS REPORT THAT NOT NET LOSS OF SAND OCCURRED. WHY DOES FERC STAFF NOW WANT TO LOWER THE LAKE TO 262 MSL, 90% OF THE TIME IN THE FALL?)

MGS REPORT P. 8 "WE RECOMMEND THAT FALL LAKE LEVELS BE KEPT BELOW THE ANNUAL MAXIMUM ELEVATION, AS THEY HAVE IN THE LAST FEW YEARS." (THE ANNUAL MAXIMUM ELEVATION IS 267.16 MSL. STEPHEN DICKSON WHO CO-AUTHORED THE REPORT CLEARLY INDICATED IN A PHONE CALL OF MARCH 1996 THAT THE INTENT WAS TO KEEP IT BELOW FULL POND AND NOT AT 262 MSL AS FERC STAFF IS NOW RECOMMENDING.)

BUREAU OF PARKS AND RECREATION PURCHASE AND SALE AGREEMENT OF HALL PROPERTY (TASSLE TOP BEACH)

"9.4 WITHOUT LIMITATIONS TO THE FOREGOING THE RIGHT TO INSPECT THE PREMISES AT LEAST FIVE DAYS PRIOR TO THE CLOSING DATE IN ORDER TO DETERMINE WHETHER THE LEVEL OF SEBAGO LAKE IS SATISFACTORY TO THE PURCHASER, AND IN THE EVENT THAT THE LEVEL OF SEBAGO LAKE IS NOT SATISFACTORY, FOR ANY REASON, THEN THE PURCHASER MAY TERMINATE THIS CONTRACT." (THE CLOSING WAS IN JULY OF 1991, SINCE 1975 ONLY THREE YEARS WERE LOWER DURING JULY. IT WAS A LOW YEAR, AND NOW BPR WANTS TO KEEP THE LAKE BELOW 265.17 IN EARLY JULY TO HAVE BEACH AT TASSLE TOP, NOT PREVENT EROSION AT SONGO BEACH.)

CLINTON E FOSTER, FORESTER LIC.3314 REPORT OF CONDITION OF ROOT SYSTEMS AND

LOWER BOLE PORTIONS OF TREES NEAR THE SWIMMING BEACH AND GROUP AREA AT SEBAGO LAKE STATE PARK. (1992)

"IT IS EVIDENT, COMPARING THESE TWO AREAS, THAT PEOPLE ARE CONTRIBUTING TO THE EROSION OF THE SHORE, AS VEGETATION SUCH AS GRASSES AND BLUEBERRIES, WHICH WOULD NORMALLY BE FOUND, ARE ABSENT AS MUCH AS 30-40 FEET BACK IN SOME PLACES, FROM THE HIGH WATER MARK." (WHEN WILL THE STATE ADMIT TO THE REAL PROBLEMS AT THE BEACHES AND WHEN WILL FERC STOP MAKING WATER QUALITY AN ISSUE TO SOLVE THE STATE AND FOSL'S AGING AND LONG-TERM EROSION PROBLEMS.)

SOUTHERN MAINE FORESTRY SERVICES, INC.
OCTOBER 1992

"ON THURSDAY, SEPTEMBER 24, 1992 I AGAIN EXAMINED THE BEACH AT THE DAY USE AREA OF THE PARK. I SAW NOTHING TO CHANGE THE CONCLUSIONS EXPRESSED IN MY REPORT OF FEBRUARY 1992. IF ANYTHING THE EVIDENCE FURTHER SUPPORTS THE CONCLUSIONS.

OBSERVED WERE MANY ROOTS WHICH WERE UNEARTHED BY RECENT EROSION. THERE WAS LACK OF OXIDATION AND DISCOLORATION OF THE BARK ON THESE NEWLY EXPOSED ROOTS AND THE VERY FINE ROOTS REMAIN ATTACHED ON NUMEROUS ROOTS. THIS IS EVIDENCE THAT THESE ROOTS HAVE BEEN EXPOSED DURING THIS PAST SUMMER AND SOME FOR ONLY A MATTER OF WEEKS. THESE CONDITIONS WERE FOUND FROM THE BEACH-UPLAND INTERFACE ZONE WELL UP ONTO THE UPLAND WHERE THE PICNIC TABLES AND CONCESSION STAND ARE LOCATED. THE EVIDENCE POINTS THAT THIS EROSION OCCURRED DURING HIGH USE PERIODS AT THE PARK.

THE ANECDOTAL EVIDENCE POINTS TO THE EROSION BEING CAUSED BY HIGH LEVELS OF HUMAN TRAFFIC PHYSICALLY WEARING AWAY THE SOIL AND LEAVING IT EXPOSED AND SUSCEPTIBLE TO EROSION BY WIND AND PRECIPITATION." LOWERING SEBAGO LAKE WILL NOT MITIGATE THE LONG TERM ABUSE AND EROSION AT THE SONGO BEACH. THE STATE WILL NOT CHANGE IF THE FERC COMMISSIONERS ALLOW A SHORT TERM SOLUTION TO A LONG TERM PROBLEMS.)

FOSL JANUARY 1995 TO S.D. WARREN

"REVISE THE FALL TARGET ELEVATION TO 262.0 MSL ON OCTOBER 15." (THIS IS THE EXACT LEVEL THAT THE FERC STAFF OF 1996 IS PROPOSING. HOW CAN THEY LOWER THIS LAKE TO APPEASE THIS SMALL GROUP OF PEOPLE WHO HAVE BEEN BROUGHT INTO THE FOLD BY MISLEADING STATEMENTS AND LIES?)

S.D. WARREN MEAN MONTHLY FLOW DATA

"A REVIEW OF A 35 YEAR PERIOD OF RECORD WAS DONE FOR THE USGS GAGE #01064000, PRESUMPSCOTT RIVER AT EEL WEIR DAM TO DETERMINE THE ACTUAL RELATIONSHIP BETWEEN THE INFLOWS AND OBSERVED OUTFLOWS FROM THE SYSTEM." "THE MEAN MONTHLY INFLOWS VARY FROM THE PEAK INFLOWS OF 2000 CFS DURING THE SPRING RUNOFF TO VALUES OF LESS THAT 200 CFS, INDICATING THAT THE MAJORITY OF THE OUTFLOW IS BEING TAKEN FROM STORAGE." "THE SUM OF EVAPORATION LEAKAGE AND OTHER MINOR LOSSES ACTUALLY EXCEEDS THE INFLOW. THE 220 CFS RELEASE FLOW REQUESTED BY USFWS IS ALSO PLOTTED. IT CAN BE SEEN THAT THE LONG TERM AVERAGE FOR THE THREE LOW FLOW MONTHS OF JULY, AUGUST, AND SEPTEMBER IS BELOW THIS VALUE. IN THE ACTUAL MEAN MONTHLY PLOTS OF THE DATA, THE MAJORITY OF THE VALUES FALL BELOW THE 220 CFS LINE." THE 220 CFS CANNOT BE SUPPLIED WITHOUT DRAWING ON THE STORAGE VOLUME OF THE LAKE RESULTING IN A SUBSTANTIAL LOWERING OF THE LAKE LEVEL. FURTHER, THERE ARE SEVERAL YEARS WHEN THE NET INFLOW IS A NEGATIVE VALUE." (THE MINIMUM FLOW REQUIREMENTS ARE NOW AT 320 CFS IN JULY. FOSL, THE STATE PARKS AND THE FERC STAFF KNOW THAT THE TARGETS

THEY PROPOSE AT MEDIAN OR BELOW WILL RESULT IN THE LOWER WATER LEVELS THAT THEY WANT. WE KNOW IT TO. WE KNOW THE LAKE WILL SUFFER. THEY DO NOT CARE.)

SEBAGO TECHNICS, INC. JULY 1983

"ON BEHALF OF STEPHEN KASPRZAK, I AM PLEASED TO SUBMIT THIS APPLICATION FOR A GREAT PONDS PERMIT TO REPLACE A DETERIORATING STONE AND MORTAR RETAINING WALL ON SEBAGO LAKE IN STANDISH.

IN OUR JUDGMENT, FAILURE TO PERFORM SUBSTANTIAL REPAIR WORK TO THE WALL WILL RESULT IN THE EVENTUAL EROSION OF THE LAND BETWEEN THE LAKE AND EXISTING CAMP, WITH THE CAMP FINALLY BEING DESTROYED." (AS WITH THE STATE PARK, THE BENEFITS OF LOWERING THE LAKE ARE OBVIOUS. THE PRESIDENT OF FOSL WHO SAID THE HIGH WATER OF 1987 TO 1990 CAUSED EROSION AT HIS PROPERTY KNEW THAT HIS PROPERTY WAS AND IS ERODING EVEN AT THE PRE-1987 LEVELS THAT HE AND HIS SMALL GROUP CLAIM TO SUPPORT. HOW MANY MORE TIMES MUST FERC BE LIED TO BEFORE IT SAYS NO? HOW COULD THE FERC STAFF HONOR THESE PEOPLE WHO HAVE LIED TO ALL OF US AT THE EXPENSE OF THE LAKE? WILL THE COMMISSIONERS DO THE SAME? WILL A COURT OF LAW FAVOR THOSE WHO HAVE MISLED EVERYONE? AS WITH TASSLE TOP BEACH AND BPR, LOWER LAKE LEVELS ARE NOT TIED TO WATER QUALITY, ONLY DECIPT FOR PERSONAL GAIN.)

IMPACTS OF WATER LEVEL REGULATION ON WETLANDS OF THE GREAT LAKES DOUGLAS A. WILCOX U.S. FISH AND WILDLIFE SERVICE NOVEMBER 1992

"THE LACK OF HIGH LAKE LEVELS HAS ALLOWED FLOATING CATTAIL MATS TO FORM, PURPLE LOOSESTRIFE AND OTHER EXOTICS TO THRIVE , AND SHRUB AND OLD FIELD COMMUNITIES TO TAKE OVER HIGHER ELEVATIONS. IF NO ACTIONS ARE TAKEN TO CHANGE THE MANNER IN WHICH LAKE ONTARIO LEVELS ARE REGULATED, THE SPECIES RICHNESS OF THE WETLANDS WILL LIKELY DECLINE." (LOOK AT THE FERC STAFF PLAN. IT IS A LOWERING OF THE LAKE THAT WILL DECLINE THE RICHNESS OF OVER 600 ACRES OF WETLANDS. IS THIS ACCEPTABLE TO ANY AGENCY WHOSE MANDATE IT IS TO PROTECT AND ENHANCE THE ENVIRONMENT?)

"SHMEO 50 SUFFERS FROM THE SAME MAJOR PROBLEM AS THE OTHER REGULATION SCENARIOS-IT LACKS A LONG-TERM CYCLIC PATTERN OF PEAK SUMMERTIME HIGH LAKE LEVELS WITH INTERMITTENT LOW SUMMERTIME HIGHS. SHORT TERM VARIABILITY UNDER THIS SCENARIO RESULTS IN CHANGES IN VEGETATION, BUT THOSE CHANGES DO NOT HAVE THE DESIRED EFFECT." THIS SCENARIO IS ALSO UNACCEPTABLE FROM THE STANDPOINT OF WETLANDS PROTECTION."

UNDER ANY REGULATION SCENARIO THAT DOES NOT ALLOW NATURAL WATER LEVEL CYCLES TO OCCUR, WETLAND AND AQUATIC PLANT COMMUNITIES WOULD BE ALTERED FROM THE NATURAL CONDITION. AQUATIC INVERTEBRATES THAT USE PLANTS FOR FOOD AND COVER WOULD EITHER LOSE HABITAT DIRECTLY OR LOSE DIVERSITY OF HABITAT (KRAFT 1988, WILCOX AND MEEKER 1992). NESTING, REARING, AND FEEDING HABITAT FOR A NUMBER OF BIRD SPECIES WOULD BE ALTERED IF PLANT COMMUNITIES WERE SHIFTED TO DENSE STANDS OF EMERGENT VEGETATION OR IF WATER-LEVELS CHANGED AT THE WRONG TIME OF YEAR (RISER 1988). LARGE FLUCTUATIONS IN WATER LEVELS COULD ALSO AFFECT MAMMALS, SUCH AS MUSKRATS (THURBER ET AL. 1991, WILCOX AND MEEKER 1992). FISH POPULATIONS COULD BE MOST AFFECTED BY ALTERATION OF WETLANDS. EFFECTS COULD RANGE FROM LACK OF ACCESS TO SPAWNING AREAS TO LOSS OF NURSERY HABITAT TO LOSS OF ADULT FEEDING HABITAT TO LOS OF INVERTEBRATE PREY (KALLEMEYN 1987 A, WILLCOX AND MEEKER 1992). (THE FERC STAFF PLAN IS THE WORST PLAN THAT COULD BE ADOPTED FOR THE WETLANDS AND FISH OF SEBAGO LAKE. THEY ADMIT THAT THEY WILL BE AT THE MEDIAN 90% OF THE TIME. THE OTHER 10% OF THE TIME WILL NO DOUBT BE LOWER. TO LOWER THIS LAKE AND ELIMINATE THE TYPICAL LEVELS

ABOVE MEDIAN IS AGAINST ALL ENVIRONMENTAL LOGIC. HOW CAN THEY IGNORE A 6 MILLION DOLLAR STUDY OF WETLANDS THAT HAVE THE SAME SPECIES OF FISH AND VEGETATION AS OURS. THIS IS A BLATANT IGNORING OF FACT BY THE FERC STAFF SO THAT THEY CAN APPEASE THE LESS THAN TRUTHFUL, SO CALLED FRIENDS OF SEBAGO LAKE.)

DEPARTMENT OF INLAND FISHERIES AND WILDLIFE
STATE OF MAINE REPORT JANUARY 1992

"FALL DRAW DOWNS WOULD IMPACT WINTER DENNING OF AQUATIC MAMMALS IN PORTIONS OF STICKY RIVER, THE WETLAND/BACKWATER AREA NORTH WESTERLY OF HARMON'S BEACH, AND THE UPPER END OF SEBAGO COVE." "ALL FISH SPECIES WOULD BE SEVERELY IMPACTED IN THE WETLAND/BACKWATER AREA NORTHWESTERLY OF HARMONS BEACH AT WATER LEVELS LESS THAN 264 MSL." "IT WOULD BE NECESSARY TO HOLD WATER LEVELS AT 264.0 FT MSL OR HIGHER TO AVOID IMPACTS AND DISPLACEMENT OF FISH AND WILDLIFE SPECIES FROM THE AREA NORTHWESTERLY OF SMITH ROAD IN STICKY RIVER COVE, THE WETLAND/BACKWATER AREA NOTHWESTERLY OF HARMON'S BEACH AND THE UPPER END OF SEBAGO COVE, AND THE THOROUGHFARES AROUND THE ISLAND AT THE MOUTH OF TURTLE COVE." (THESE AREAS REPRESENT OVER 200 ACRES OF PRISTINE WETLANDS. HOW CAN THE FERC STAFF CAUSE ADVERSE IMPACTS ON WETLANDS THAT SONNY PIERCE SAID AT THE 1992 DEP MEETING WOULD BE MORE PRODUCTIVE IF THE LAKE DID NOT DROP AS MUCH AS IT DID IN THE PAST. NOW FERC STAFF IN 1996, AGAINST ALL SCIENCE, LOWERS THE LAKE TO THE MEDIAN 90% OF THE TIME. ELIMINATING THE REJUVENATING WATERS THAT HAVE HISTORICALLY OCCURRED ABOVE MEDIAN.)

DEPARTMENT OF INLAND FISHERIES AND WILDLIFE
LETTER JANUARY 18, 1995

"TURTLE COVE BECOMES SEALED OFF FROM THE MAIN LAKE AT APPROXIMATELY 262 MSL AND OXYGEN LEVELS IN THE COVE DETERIORATE RAPIDLY."

"OCCASIONALLY LAKE LEVELS ARE LOW ENOUGH DURING NOVEMBER TO ALLOW PASSAGE OF STOCKED LANDLOCKED SALMON INTO LONG LAKE, WHERE THEY ARE VULNERABLE TO HARVEST DURING THE WINTER. I'M NOT SURE AT WHAT LEVEL THIS OCCURS, BUT I'M AFRAID THAT THE EARLIER DRAWDOWN DATE (NOV. 1) MIGHT ALLOW THIS TO HAPPEN WITH MORE REGULARITY. I WOULD RECOMMEND A MORE GRADUAL RELEASE OF WATER EXTENDING UNTIL DECEMBER 1." (LEVELS REFERRED TO WERE THE 1995 WARREN PLAN WHICH PUT THE LEVEL AT 262.0 MSL ON NOVEMBER 1. THE FERC STAFF NOW HAS 262.0 MSL ON OCTOBER 15, TWO WEEKS EARLIER AND TOTALLY AGAINST THE RECOMMENDATION OF THE SEBAGO REGION MAINE FISHERIES BIOLOGIST, WHY?

ASSESSING THE POTENTIAL EFFECTS OF REGULATING GREAT LAKES WATER LEVELS ON FISH REPRODUCTION PROTT, MACLOED AND GANNON 1992

| "WATER LEVEL CONDITION | EFFECT |
|------------------------|---|
| HIGH AND STABLE | MOST BENEFICIAL: GENERALLY ACCEPTED AS PROVIDING THE MOST BENEFICIAL EFFECTS. |
| CONSTANT | DEPENDS UPON RELATIVE PROPOSED LEVEL. GENERALLY, A HIGH CONSTANT LEVEL IS CONSIDERED MOST DESIRABLE AND A LOW CONSTANT LEVEL LEAST DESIRABLE. |

HIGH AND UNSTABLE

PROVIDES BOTH NEGATIVE AND BENEFICIAL EFFECTS, WHICH MAY OFFSET EACH OTHER.

LOW AND UNSTABLE

LEAST DESIRABLE FROM AN ECOLOGICAL STANDPOINT.

5. BASED ON THE ABOVE GENERALIZATIONS THE FOLLOWING CONSTRAINTS OR CRITERIA WOULD FORM A REASONABLE BASIS FOR EVALUATING THE VARIOUS REGULATION PLANS IN TERMS OF THEIR RELATIVE DESIRABILITY FROM THE STANDPOINT OF THE FISH STOCKS.

1. RAPID, SHORT-TERM FLUCTUATIONS SHOULD BE AVOIDED.

(LEVELS UNDER THE STATE AND FERC PLAN COULD DROP 5 INCHES A WEEK IN JULY.)

2. MAINTAIN LEVELS IN THE HIGHEST RANGE FOR THE LONGEST TIME.

(THE FERC PLAN ELIMINATES LEVELS OF THE HIGHEST RANGE.)

3. MAINTAIN MINIMUM FLOWS IN TRIBUTARY STREAMS AND CONNECTING CHANNELS SUFFICIENTLY HIGH TO KEEP POLLUTANT AND CONCENTRATIONS WITHIN TOLERABLE LIMITS.

4. INCREASE LAKE LEVELS AND MAINTAIN STABLE CONDITIONS IN TRIBUTARY STREAMS AND CONNECTING CHANNELS ABOVE BASIS OF COMPARISON LEVELS DURING APRIL THROUGH JUNE AND AUGUST THROUGH OCTOBER TO THE MAXIMUM EXTENT POSSIBLE. *(THE FERC STAFF PLAN ELIMINATES THESE LEVELS. THE STATE OF MAINE AND FERC STAFF ARE MANDATED TO NOT ONLY PROTECT SALMON AND LAKE TROUT, BUT ALL SPECIES OF FISH AND WILDLIFE IN SEBAGO LAKE.. THEIR PLANS WILL, AND THE CURRENT STATE PLAN OF THE LAST FIVE YEARS HAVE, HAD SIGNIFICANT NEGATIVE IMPACTS ON OUR FISHERIES. WITH OUT FULL POND IN THE SPRING AND LEVELS CONSISTENTLY ABOVE 262.5 MSL AS THEY HAVE BEEN SINCE 1975 WE BELIEVE THE FISHERIES WILL CONTINUE TO DECLINE.)*

"THREE POSSIBLE IMPACTS OF REDUCED WATER LEVELS WERE EXAMINED:

1. REDUCTION OR CHANGE IN SHALLOW WATER HABITATS USED BY FISH DURING CRITICAL STAGES IN THEIR LIFE CYCLES:

2. REDUCTION IN TOTAL HYPOLIMNION OXYGEN RESOURCES AND VOLUME; AND

3. CHANGES IN SEASONAL WATER LEVELS OR RATE OF CHANGE IN WATER LEVELS, ESPECIALLY DURING THE SPAWNING SEASON.

"THE DATA WHICH ARE AVAILABLE SUGGEST THAT DECREASES IN WATER LEVELS WOULD PROBABLY ALTER THE SHALLOW AREAS OF THE GREAT LAKES IN A WAY WHICH WOULD HAVE A NEGATIVE IMPACT ON FISHERY RESOURCES.

"THE DIRECT IMPACTS OF LAKE LEVEL FLUCTUATIONS ON PHYSICAL HABITAT CHARACTERISTICS ARE LIKELY TO BE GREATEST IN SHALLOW-WATER HABITATS, BUT CHANGES IN THE PHYSICAL AND /OR BIOLOGICAL CHARACTERISTICS OF SHALLOW-WATER HABITATS CAN RESULT IN CHANGES IN THE FISH COMMUNITIES THROUGHOUT THE GREAT LAKES." *(THIS ONE STATEMENT IS ENOUGH FOR THOSE OF US WHO ARE AT THE LAKE DAILY IN ALL SEASONS (UN-LIKE MR. THOMPSON AND MR. KASPRAZAK AND MR. HILDENBERG (FOSL) WHO ARE HERE ONLY IN THE SUMMERS) WHO SEE OUR WETLANDS DEAD, AND THE FISHING DECLINE BECAUSE OF LOW WATER, NOT THE OVERPOPULATION OF LAKE TROUT. DO NOT LOWER THIS LAKE. IT IS AGAINST ALL DOCUMENTED SCIENCE.)*

THE MAJORITY OF GREAT LAKES FISH SPECIES UTILIZE SHALLOW-WATER HABITATS AT SOME POINT DURING THEIR LIVES. MANY OF THE 116 GREAT LAKES SPECIES WHICH WERE

EXAMINED BY GOODYEAR ET AL (1982) SPAWN EXCLUSIVELY AT DEPTHS OF LESS THAN 5 METERS."

"HABITAT PARTITIONING AMONG AND WITHIN SPECIES IS EFFECTED BY TEMPERATURE, AND THE AREA OF HABITAT AVAILABLE AT DIFFERENT TEMPERATURES HAS A PROFOUND INFLUENCE ON FISH COMMUNITY COMPOSITION."

"FOR SPECIES WHICH ARE NEAR THE NORTHERN LIMIT OF THEIR RANGE, SUCH AS LARGEMOUTH BASS, THE AVAILABILITY OF SHELTERED SHALLOW HABITATS WHICH WARM EARLY IN THE SPRING IS PROBABLY ESSENTIAL FOR SURVIVAL. FOR OTHER SPECIES, SUCH AS LAKE TROUT, THE AVAILABILITY OF THESE AREAS EFFECTIVELY INCREASES THE GROWING SEASON AND MAY SIGNIFICANTLY INCREASE PRODUCTION." (THE BLACK CRAPPIE AND LARGEMOUTH BASS OF SEBAGO NEED THE LAKE TO COME TO AS CLOSE TO FULL POND AS POSSIBLE WITH THE 6 OUT OF 10 YEAR FREQUENCY OF THE PAST. LOWERING OF THE LAKE AT ANY TIME OF THE YEAR WILL HAVE A NEGATIVE IMPACT ON ALL IT'S FISHERIES)

"LIGHT IS A PRIMARY FACTOR INFLUENCING THE DEPTH DISTRIBUTION OF AQUATIC MACROPHYTES (CHAMBERS AND KALLF, 1985)." (THE LOW WATER OF THE LAST FIVE YEARS (APPROX. 265.4 MSL AT THE FIRST OF JULY) HAS SIGNIFICANTLY INCREASED THE WEEDS ON THE BOTTOM OF SEBAGO. NOT LOCALIZED SEPTIC FLUSHING AS FERC STAFF SUGGESTS. THE NORMANDEAU STUDY TESTED THE WATER OFF SUSPECTED AREAS AROUND THE LAKE AND FOUND NO SIGNIFICANT ELEVATED LEVELS OF PHOSPHORUS INTO THE LAKE. PETER LOWELL OF LAKES ENVIRONMENTAL ASSOCIATION AT A SEBAGO LAKE ASSOCIATION MEETING LAST YEAR TOLD THE BOARD OF DIRECTORS THAT ALL OF THE LAKES THEY MONITOR IN OUR AREA HAVE SEEN AN INCREASE IN WEEDS IN THE LAST FEW YEARS. IT IS NOT ONLY SEBAGO, IT IS NOT SEPTIC SYSTEMS, OUR CHLOROPHYLL A CONTINUES TO GO DOWN, OUR TOTAL PHOSPHORUS CONTINUES TO GO DOWN, AND OUR SECCHI DISC READINGS CONTINUE TO INCREASE. WE ARE NOW CLOSE TO 45 FEET. COULD THIS INCREASE THE WEEDS COULD THIS BE IF PHOSPHORUS WERE ENTERING OUR LAKE FROM EROSION AND SEPTIC? FERC STAFF NOW PROPOSE TO SIGNIFICANTLY CHANGE THE HISTORIC WATER LEVELS THAT HAVE CREATED THIS GREAT LAKE.)

"THE POTENTIAL CONSEQUENCES OF CHANGES IN THE NEAR-SHORE AREAS OF THE GREAT LAKES IS ENORMOUS. THESE AREAS ARE UTILIZED BY NEARLY ALL OF THE FISH SPECIES PRESENT DURING SOME PERIOD OF THEIR LIVES, AND CHANGES IN HABITAT CONDITIONS WILL THEREFORE EFFECT THE DEEP WATER COMMUNITIES AS WELL AS THOSE COMMONLY THOUGHT OF AS INHABITING THE NEARSHORE."

"WE CAN PREDICT THAT THE FISH COMMUNITY WILL RESPOND, THAT THE RESPONSE WILL VARY BETWEEN SPECIES AND BETWEEN LOCATIONS FOR THE SAME SPECIES, AND, GIVEN THAT SOME RELATIONSHIPS BETWEEN FISH REPRODUCTIVE SUCCESS AND WATER LEVEL ARE EXPONENTIAL, THAT THERE IS THE POTENTIAL FOR LARGE CHANGES IN THE FISH COMMUNITIES TO OCCUR AS A RESULT OF RELATIVELY SMALL CHANGES IN THE WATER LEVEL." (PLEASE LOOK AT THE CHANGE IN WATER LEVELS THAT FERC STAFF PROPOSES FOR SEBAGO LAKE. 90% OF THE TIME THEY SAY WARREN WILL BE ON TARGET. THE OTHER 10% OF THE TIME THEY WILL BE LOWER (PHONE CONVERSATION WITH T.J. LUVOLLO 4/15/96 OF FERC). WE WILL NOT ACCEPT A LOWERING OF THIS LAKE AND NEGATIVELY IMPACT THE FISHERIES OF THE LAKE. THERE IS NOT ONE REASON TOO. AGAIN WE ARE THE FOURTH CLEAREST LAKE IN MAINE. ALMOST STERILE IN LAKE BIOLOGICAL TERMS.

ENVIRONMENTAL IMPACTS OF FLUCTUATING WATER LEVEL IN LAKES WITH PARTICULAR REFERENCE TO POTENTIAL IMPACTS IN SEBAGO LAKE, MAINE NORMANDEAU ASSOCIATES MAY 1994

"ON THE GREAT LAKES, RESEARCHERS HAVE CONCLUDED THAT IN THE LONG TERM, BLUFF EROSION IS INDEPENDENT OF WATER LEVELS." (WHY DOES FERC CHOOSE TO IGNORE THIS AND LOWER THE LAKE IN THE FALL TO MEDIAN OR BELOW? ALL IT WILL DO IS HARM OUR WETLANDS, FISHERIES, AND BOATING. IT WILL NOT CHANGE THE EROSION OR OUR LOW PHOSPHORUS LEVELS.)

"THE RELATIONSHIP OF SAND MOVEMENT IN LAKES TO FACTORS SUCH AS STORMS AND WATER LEVELS IS POORLY UNDERSTOOD AT BEST. MOST OF OUR KNOWLEDGE ABOUT SAND BEACHES COMES FROM THE OCEAN SCIENCES, BUT THE WAVE CLIMATE OF THE OCEAN IS VASTLY DIFFERENT FROM THAT OF LAKES. IN THE OCEAN, STORM WAVES ARE GENERALLY EROSIIVE WHILE THE LONGER-WAVELENGTH OCEAN SWELLS TEND TO BE BEACH BUILDERS. IN LAKES, STORM WAVES ARE ALSO EROSIIVE, BUT THERE ARE NO LAKE WAVES ANALOGOUS TO OCEAN SWELLS."

"WHERE SAND IS ABUNDANT AND THERE ARE NO PHYSICAL CONSTRAINTS EITHER LANDWARD OR LAKEWARD, ACTUAL WATER LEVELS ARE OF LITTLE CONSEQUENCE SINCE THE BEACH/NEARSHORE PROFILE WILL BE QUICKLY ESTABLISHED EITHER LANDWARD OR LAKEWARD OF ITS ORIGINAL POSITION."

"LOWER WATER LEVELS CAN ALSO RESULT IN BEACH LOSS DEPENDING ON NEARSHORE BATHYMETRY. WHERE SHORELANDS ARE ERODIBLE, MOST LAKES DEVELOP LITTORAL SHELF STRUCTURES WITHIN THE ZONE OF WAVE INFLUENCE. WATER DEPTH INCREASES QUITE GRADUALLY ON THE SHELF AND THEN QUITE RAPIDLY AT THE EDGE OF THE SHELF AS DEPTH EXCEEDS THE DEPTH OF WAVE INFLUENCE. AS WATER LEVELS DROP, SAND WILL BE TRANSPORTED LAKEWARD TO MAINTAIN AN EQUILIBRIUM PROFILE. IF WATER LEVELS DROP LOW ENOUGH TO CAUSE SAND TO BE TRANSPORTED BEYOND THE SHELF, THIS SAND MAY BE LOST TO THE DEEPER WATERS OF THE LAKE. THE SAND CANNOT BE "RECOVERED" WITH RISING WATER LEVELS AND IF ADDITIONAL SOURCES OF SAND ARE NOT PRESENT THE BEACH MAY BE LOST." (LOOK AT THE FERC STAFF PLAN COMPARED TO THE ACTUAL WATER LEVELS OF 1975 TO 1991. THE OCTOBER 15 TH TO DECEMBER 1 LEVELS (262.0 MSL) IS BELOW ALMOST EVERY YEAR AT THE MOST, ACCORDING TO FERC STAFF, EROSIIVE TIME OF THE YEAR. INSTEAD OF HELPING THE BEACHES THEY WILL CAUSE MORE, NOT LESS LOSS OF SAND.)

"ALTHOUGH ONE CAN ENVISION NUMEROUS POTENTIAL WATER QUALITY IMPACTS FROM CHANGING WATER LEVEL MANAGEMENT SCHEMES, THE LACK OF QUANTITATIVE RESEARCH IN THIS AREA IS A STRONG INDICATOR THAT THESE IMPACTS ARE PERCEIVED AS MINOR." (AGAIN, WHY MUST FERC STAFF CHANGE THE WAY THIS LAKE HAS BEEN MANAGED IF IT COULD ADVERSELY IMPACT THE WETLANDS, FISHERIES AND ECONOMY, AND WILL NOT CHANGE THE WATER QUALITY? AGAIN WE DO NOT UNDERSTAND EVEN THE BASICS OF THEIR LOGIC. CAN ANYONE?)

"IT IS NOT EXPECTED THAT THE RELATIVELY SMALL INCREASES IN FALL WATER LEVELS SEEN ON SEBAGO SINCE 1987 WOULD BE PLAYING MAJOR ROLES IN ACCELERATING EROSION OF CERTAIN SEBAGO SHORELANDS, PARTICULARLY

SINCE THESE FALL LEVELS, WHILE ELEVATED, ARE STILL WELL BELOW NORMAL HIGH WATER." (THIS WAS THE SAME CONCLUSION AS EBASCO IN JUNE 1990, WHY DOES THE FERC STAFF OF 1996 DISAGREE WITH THEM, THE GREAT LAKES REPORT, AND NORMANDEU ASSOCIATES, AND THE OVERWHELMING MAJORITY OF PEOPLE ON SEBAGO LAKE?

"FINALLY, INCREASED NUTRIENT LOADING FROM INCREASED EROSION HAS BEEN CITED BY SOME (INCLUDING THE FERC STAFF OF 1996) AS A SIGNIFICANT CONCERN FOR SEBAGO WATER QUALITY. IT IS TRUE THAT THERE ARE AREAS AROUND SEBAGO THAT ARE ACTIVELY ERODING. IT IS ALSO TRUE THAT ERODED MATERIALS, PARTICULARLY CLAYS AND TOPSOIL, CONTAIN SIGNIFICANT AMOUNTS OF PHOSPHORUS. HOWEVER, IT IS NOT CLEAR THAT EROSION OF SEBAGO SHORELINES HAS INCREASED IN RECENT YEARS OVER HISTORIC LEVELS NOR IS IT CLEAR THAT THE ERODED MATERIALS ARE ACTUALLY INCREASING AVAILABLE PHOSPHORUS IN SEBAGO WATERS, EITHER ON A LAKEWIDE BASIS OR LOCALLY. THE PORTLAND WATER DISTRICT HAS BEEN ACTIVELY MONITORING PHOSPHORUS LEVELS AT THEIR INTAKES AND ELSEWHERE IN THE LAKE FOR DECADES AND HAVE SEEN NO INCREASE IN PHOSPHORUS CONCENTRATIONS. FURTHERMORE, THEY HAVE PRELIMINARILY TESTED AVAILABLE PHOSPHORUS LEVELS IN WATER/CLAY SUSPENSIONS DERIVED FROM ACTIVELY ERODING CLAY DEPOSITS AND FOUND NO INCREASE WHATSOEVER." (AGAIN FERC STAFF ATTEMPTS TO PROTECT US FROM A PROBLEM THAT DOES NOT EXIST, AND COULD JEOPARDIZE THE ENTIRE ECOLOGY OF THE LAKE.)

"IT IS ALSO WIDELY ASSUMED (THOUGH NOT DEFINITELY ESTABLISHED) THAT AT LEAST SOME OF THE PHOSPHORUS HELD BY SOIL PARTICLES MAY EVENTUALLY BECOME AVAILABLE TO SUPPORT ALGAL GROWTH. FOR THESE REASONS, IT IS PROBABLY ADVISABLE TO BETTER QUANTIFY EROSION AND EROSION RATES OF SEBAGO SHORELANDS AND PERHAPS, TO STABILIZE THOSE AREAS THAT HAVE THE GREATEST POTENTIAL IMPACT TO SEBAGO USERS." (DO NOT LOWER THE LAKE, DEAL WITH SITE SPECIFIC PROBLEMS WITH SITE SPECIFIC GEOTECHNICAL SOLUTIONS. FERC STAFF AGAIN GOES AGAINST SCIENCE AND LOGIC TO APPEASE THE FOSL GROUP WHO HAVE MISLED PEOPLE ON THIS LAKE WITH THEIR DISTORTED FACTS AND MANIPULATED DATA. WE WILL NOT ALLOW IT. WILL YOU?)

Figure 5.3 - Long Term Drop in Lake Level

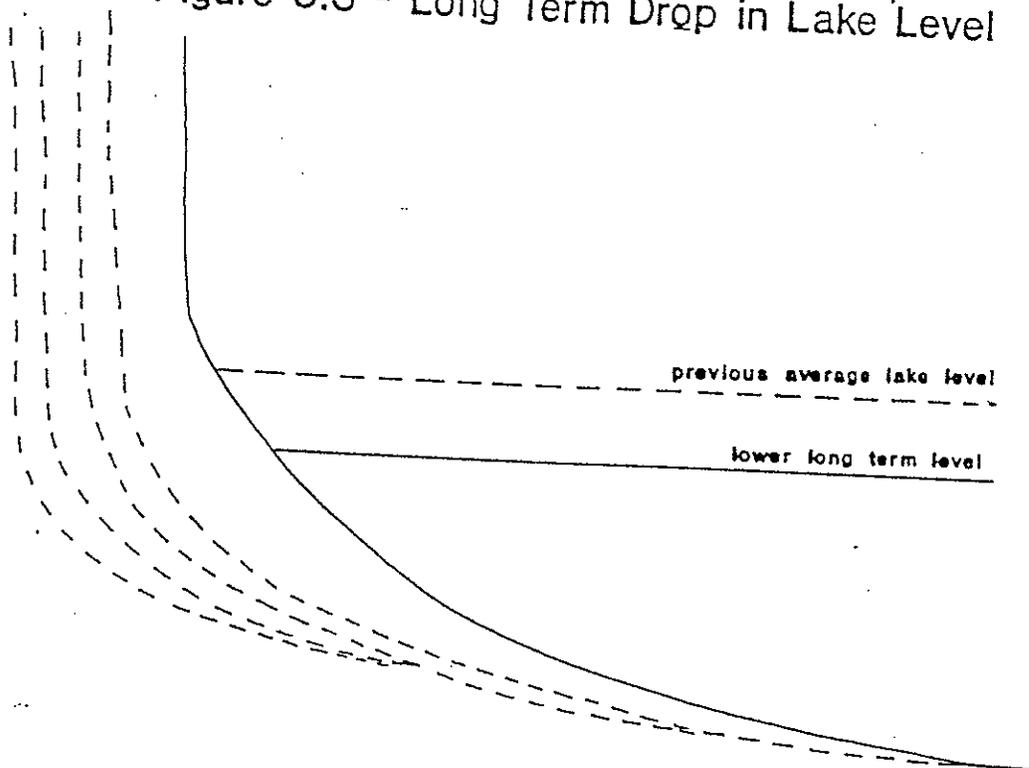
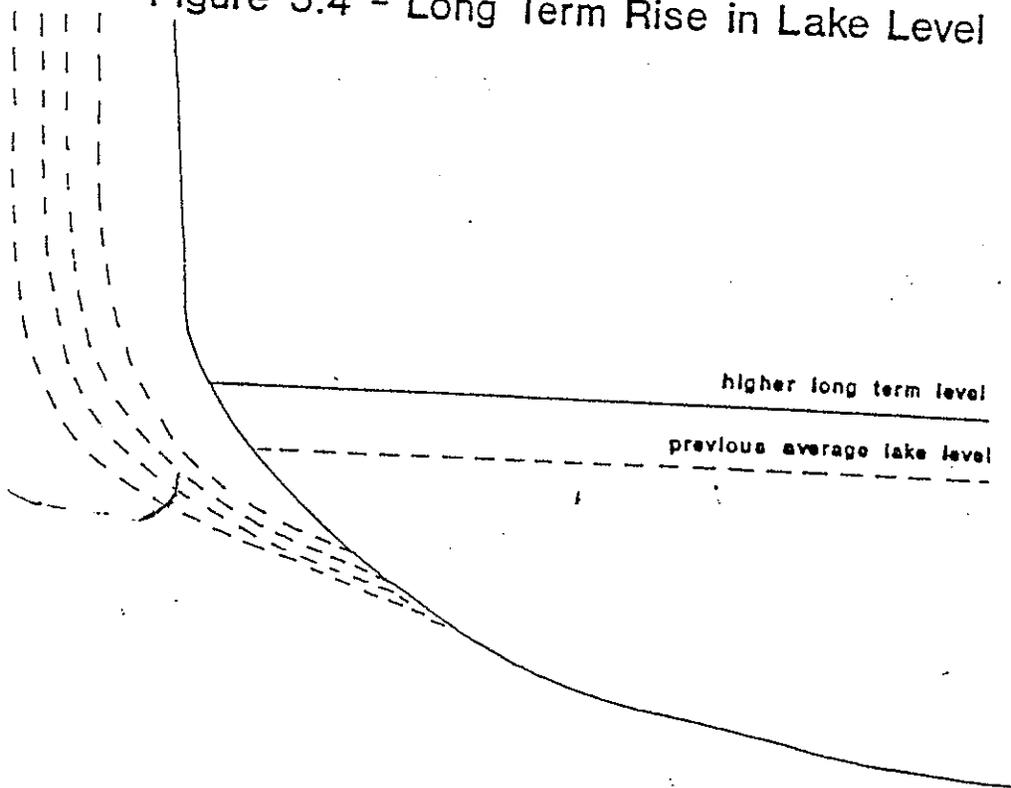


Figure 5.4 - Long Term Rise in Lake Level



ON FISH REPRODUCTION

C.B. Portt¹, W.D. MacLeod², and J.E. Gannon³

- 1. C. Portt and Associates, 56 Waterloo Ave., Guelph, Ontario, N1H 3H5
- 2. Fisheries and Oceans Canada, 867 Lakeshore Road, Burlington, Ontario, L7R 4A6
- 3. U.S. Fish and Wildlife Service, 1451 Green Road, Ann Arbor, Michigan, 48105.

4. The following table ... summarizes the interactions of high and low levels and their duration on fish stocks.

| <u>Water level condition</u> | <u>Effects</u> |
|-----------------------------------|--|
| <u>High and stable</u> | Most <u>beneficial</u> . Generally accepted as providing the most beneficial effects. |
| Constant | Depends upon relative proposed level. Generally, a <u>high constant level is considered most desirable</u> and a <u>low constant level least desirable</u> . |
| High and unstable | Provides both negative and beneficial effects, which may offset each other. |
| <u>Low and stable or unstable</u> | <u>Least desirable from ecological standpoint.</u> |

We need deviation
NOT Devastation!

5. Based on the above generalizations, the following constraints or criteria would form a reasonable basis for evaluating the various regulation plans in terms of their relative desirability from the standpoint of the fish stocks.

- (1) Rapid, short-term fluctuations should be avoided.
- (2) Maintain levels in the highest range for the longest time.
- (3) Maintain minimum flows in tributary streams and connecting channels sufficiently high to keep pollutant concentrations within tolerable limits.
- (4) Increase lake levels and maintain stable conditions in tributary streams and connecting channels above basis-of-comparison levels during April through June, and August through October to the maximum extent possible.

PPH
8/20/95
→

But the most revealing characteristic of the marsh is less obvious to the casual observer. By measuring and analyzing water pumped from the experimental wetland from Des Plaines and water leaving it at the outlet, researchers have found that the 5.7-acre marsh can handle the annual runoff from a North Illinois watershed of 410 acres; reduce pollutants in the water by to 99 percent.

From Page 5:6 of Great Lakes Report

NOTE: Moosehead and Winnipegosis Dec 18 " June 1 To Lake N

37 IMPACTS OF WATER LEVEL REGULATION
ON WETLANDS OF THE GREAT LAKES

By:

International Joint Commission
Levels Reference Study
Working Committee 2
Natural Resources Task Group

Douglas A. Wilcox
U.S. Fish and Wildlife Service
National Fisheries Research Center-Great L
Ann Arbor, Michigan

James E. Meeker and Joan Elias
University of Wisconsin
Madison, Wisconsin

November, 1992

Conclusions -- Lake Ontario Scenarios. The Basis of Comparison, Basis of Comparison Wet/Dry, 1958d mod, 1977a mod2, and 5-Lake Optimized scenarios extend the moderation of fluctuations that has existed since the mid-1970s. The lack of high lake levels has allowed floating cattail mats to form, purple loosestrife and other exotics to thrive, and shrub and old field communities to take over higher elevations. If no actions are taken to change the manner in which Lake Ontario levels are regulated, the species richness of the wetlands will likely decline as competitive dominants eliminate more and more species and are themselves unchecked by environmental conditions. The lack of multi-year fluctuations in these regulation scenarios makes them unacceptable from the standpoint of wetlands protection. In addition, the 5-Lake Optimized scenario was developed assuming pre-knowledge of all future supplies; this scenario cannot be achieved in the real world.

SMHEO 50 suffers from the same major problem as the other regulation scenarios--it lacks a long-term cyclic pattern of peak summertime high lake levels with intermittent low summertime highs. Short-term variability under this scenario results in changes in vegetation, but those changes do not have the desired effect. The diverse communities of transect 3 increase, but the diverse communities of transect 2 decrease and there is no desired decrease in the stable submersed aquatic vegetation of transect 5. This scenario is also unacceptable from the standpoint of wetlands protection.

Under any regulation scenario that does not allow natural water-level cycles to occur, wetland and aquatic plant communities would be altered from the natural condition. Aquatic invertebrates that use plants for food and cover would either lose habitat directly or lose diversity of habitat (Kraft 1988, Wilcox and Meeker 1992): Nesting, rearing, and feeding habitat for a number of bird species would be altered if plant communities were shifted to dense stands of emergent vegetation or if water-levels changed at the wrong time of year (Reiser 1988). Large fluctuations in water levels could also affect mammals, such as muskrats (Thurber et al. 1991, Wilcox and Meeker 1992). Fish populations could be most affected by alteration of wetlands. Effects could range from lack of access to spawning areas to loss of nursery habitat to loss of adult feeding habitat to loss of invertebrate prey (Kallemeyn 1987a, 1987b, Wilcox and Meeker 1992).

Say No To Low Water

Could only be caused
by Low Summer Levels

Reference from Conclusions section of report titled above

P. 2

adequate protections. No permitting program by Warren under its New License is needed or appropriate.

As explained in prior Warren filings, the State of Maine implements a program under the Natural Resources Protection Act (Title 38, Chapter 3, §§ 480-A to 480-Z; "NRPA") to protect coastal wetlands and sand dunes; freshwater wetlands; great ponds; rivers, streams and brooks; fragile mountain areas, and significant wildlife habitat. Permits are required for certain activities that occur in, on, or over any protected natural resource area or on land adjacent to any great pond, river, stream or brook, coastal wetland and some freshwater wetlands. Activities requiring a permit include:

- dredging, bulldozing, removing, or displacing soil, sand, vegetation, or other materials;
- draining or otherwise dewatering;
- filling, including adding sand or other material to a beach or sand dune;
- constructing, repairing or altering any permanent structure (a permanent structure is one placed or constructed in a fixed location for a period exceeding 7 months of the year).

The requirements for a NRPA permit are extensive and permit holders are precluded from certain activities including:

- unreasonably interfere with existing scenic, aesthetic, recreational, or navigational uses;
- cause unreasonable erosion of soil or sediment, or prevent naturally occurring erosion;
- unreasonably harm any significant wildlife, fisheries or aquatic habitat;
- unreasonably interfere with the natural flow of any surface or subsurface waters;
- lower water quality;
- cause or increase flooding;
- unreasonably interfere with supply or movement of sand to sand dune areas; and

Table E.1.5-3. Annual Visitation at Sebago Lake State Park, 1986 to 1999¹

| Year | Day Use | Overnight | Total |
|------|---------|-----------|---------|
| 1986 | 104,145 | 63,867 | 168,012 |
| 1987 | 112,738 | 64,212 | 176,950 |
| 1988 | 124,535 | 63,430 | 187,965 |
| 1989 | 98,576 | 63,546 | 162,122 |
| 1990 | 99,801 | 84,405 | 184,206 |
| 1991 | 95,874 | 83,817 | 179,691 |
| 1992 | 82,957 | 81,195 | 164,152 |
| 1993 | 96,712 | 78,867 | 175,579 |
| 1994 | 78,451 | 77,111 | 155,562 |
| 1995 | 122,252 | 82,463 | 204,715 |
| 1996 | 59,520 | 71,295 | 130,815 |
| 1997 | 69,407 | 77,681 | 147,088 |
| 1998 | 113,211 | 84,354 | 197,565 |
| 1999 | 186,275 | 92,273 | 278,548 |
| 2000 | 136,463 | 89,403 | 225,866 |

¹Source: DE&S, 2002b

But we all know that
Foot Traffic at the beach is NOT
a problem !!!

get real

MAXIMUM ELEVATION 379

SPILLWAY CREST ELEVATION

266.0

Current Maximum
265.0

264.0

263.0

This is
average of
the past

All these low whacky data
points lower the average & median
used by FOSL; Sappi, and State

Data Points

1907-1986

created by use of

Papermill without
regard for inflow

without use of water to
make paper, lake can
be managed to not go

Now more important
than paper to state

below 264 MSL All year
Protecting boating & wildlife

380

MAXIMUM ELEVATION

SPILLWAY CREST ELEVATION

These Levels will occur Again
No Snow
No Rain

266.0
CURRENT MAXIMUM
265.0

This week Running 10,000 To stay @ Median - New proposal 24,500 cfm - New Proposal Lower

Min Flow is increased

264.0
263.0

262.0

Sappi Allowed To BE AT THIS Level w/o going To Min Flow

Data Points

260.0

1907-1986

created by use of Paper mill without regard for inflow

259.0

CURRENT Min flow AT 20,000 cfm - in CLMP

258.0

Proposed at 24,500 cfm PRE-1986 AT 10,000 cfm

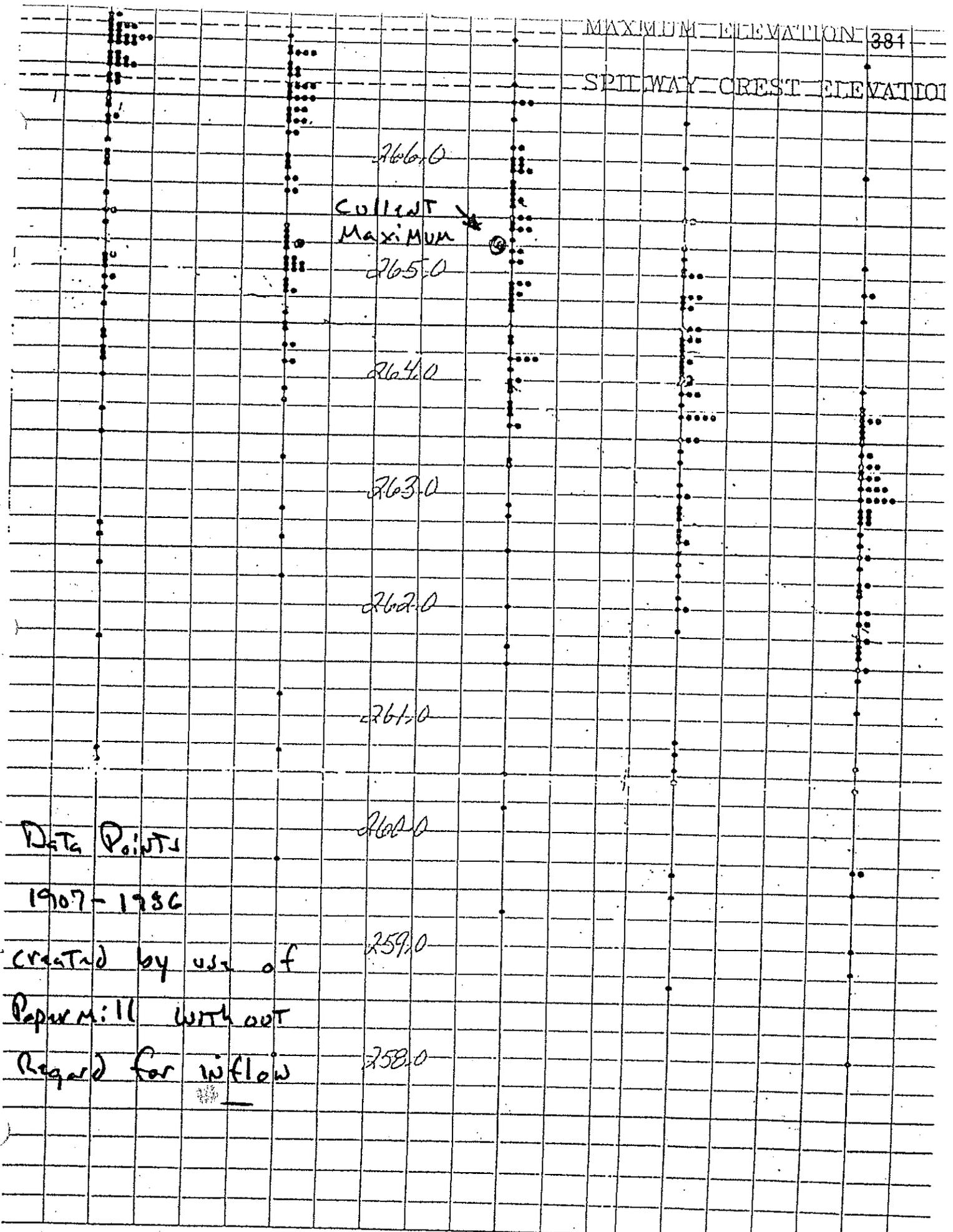
4.Y

JUNE

JULY

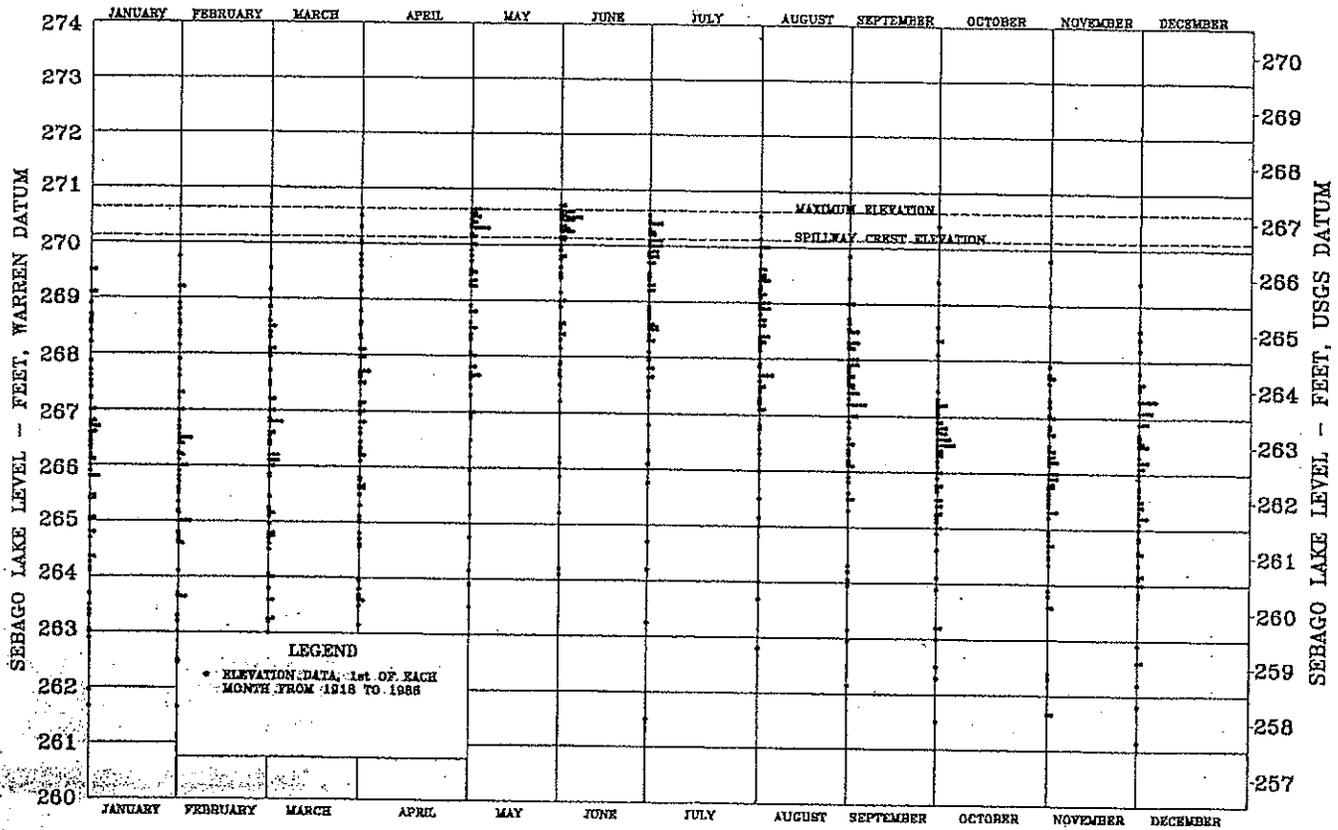
AUGUST

SEPTEMBER



A.Y. JUNE JULY AUGUST SEPTEMBER OCTOBER

SEBAGO LAKE ELEVATIONS



LAKE LEVEL SCATTERGRAM
(1918-1988)

SEBAGO LAKE LEVELS FOR 1975-1991

