

# DETAILED OPERATING PLAN FOR COLUMBIA RIVER TREATY STORAGE

1 AUGUST 1999  
THROUGH 31 JULY 2000



COLUMBIA RIVER TREATY OPERATING COMMITTEE

JUNE 1999

**COLUMBIA RIVER TREATY ENTITY AGREEMENT ON THE  
DETAILED OPERATING PLAN  
FOR COLUMBIA RIVER TREATY STORAGE  
1 AUGUST 1999 THROUGH 31 JULY 2000**

Article XIV 2.(k) of the Columbia River Treaty between Canada and the United States of America (Treaty) provides that the Entities develop a Detailed Operating Plan for each year's actual operation.

The Entities agree, with the exception of the Libby project operation, that Treaty storage will be operated and electric power delivered in accordance with the attached "Detailed Operating Plan for Columbia River Treaty Storage - 1 August 1999 through 31 July 2000" (1999-00 Detailed Operating Plan), dated August 1999. The Detailed Operating Plan was prepared in accordance with the document "Principles and Procedures for the Preparation and Use of Hydroelectric Operating Plans," dated December 1991. The Entities agree the referenced Principles and Procedures will guide the Entities in implementing the 1999-00 Detailed Operating Plan.

The Entities have agreed to use Libby Critical Rule Curves from the 1999-00 Assured Operating Plan in the 1999-00 Detailed Operating Plan to determine the Canadian Treaty Storage operation. The Canadian Entity considers the Rule Curves previously agreed to by the Entities are also the appropriate rule curves to be used in the determination of the expected Libby project operation. The U.S. Entity does not consider that it is obligated to use these rule curves to determine Libby project operation. The expected Libby project operation provided by the U.S. Entity in Section VIII of the 1999-00 Detailed Operating Plan is how the U.S. Entity plans to operate the Libby project. The Canadian Entity has not agreed, and does not agree, that these operating requirements are appropriate to use to determine the Libby project operation. The Entities agree that showing the Rule Curves and the Section VIII operating requirements does not constitute a waiver of either Entity's position with respect to the operation of the Libby project for the period 1 August 1999 through 31 July 2000.

In witness thereof, the Entities have cause this agreement to be executed.

Executed for the Canadian Entity this 18<sup>th</sup> day of JUNE, 1999.

By Brian R.D. Smith  
Brian R.D. Smith  
Chair

Executed for the United States Entity this 24 day of June, 1999.

By Judith A. Johansen  
Judith A. Johansen  
Chairman

By Robert H. Griffin  
Brigadier General Robert H. Griffin  
Member

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**DETAILED OPERATING PLAN  
FOR COLUMBIA RIVER TREATY STORAGE  
1 AUGUST 1999 THROUGH 31 JULY 2000**

**I. REFERENCES AND INTERPRETATION**

In this document:

- A. "Principles and Procedures" (POP) means the document "Principles and Procedures for the Preparation and Use of Hydroelectric Operating Plans," dated December 1991.
- B. "Assured Operating Plan" (AOP) means the document "Columbia River Treaty Hydroelectric Operating Plan-Assured Operating Plan for Operating Year 1999-2000," dated November 1994."
- C. "Flood Control Plan" means the document "Columbia River Treaty Flood Control Operating Plan," October 1972. The flood control allocation for this Operating Year will be 2.56 cubic kilometers ( $\text{km}^3$ ) (2.08 million acre-feet (Maf)) at Mica and 6.29  $\text{km}^3$  (5.1 Maf) at Arrow as indicated respectively by Chart 5 and Chart 7 of the Flood Control Plan.
- D. "Operating Year" means the period from 1 August 1999 through 31 July 2000.
- E. "Operating Committee" means the Columbia River Treaty Operating Committee.
- F. "Detailed Operating Plan" (DOP) means a detailed operating plan prepared for the Operating Year by the Operating Committee pursuant to the guidelines provided in the Principles and Procedures and consisting of the contents of this document.
- G. "Runoff Volume Forecast Program for Canadian Columbia River Treaty Reservoirs" means the document of that title dated 1 January 1992, with subsequent modifications as agreed by the Operating Committee.
- H. "Treaty Storage Regulation" (TSR) means the Coordinated System hydroregulation study performed for the Operating Committee by Bonneville Power Administration (BPA) staff that implements the DOP operating criteria using actual and forecasted stream flow conditions.
- I. "Refill Regulations" means multi-water-year hydro regulations that determine the Power Discharge Requirements used in the calculation of the Assured Refill Curves and the Variable Refill Curves. The Corps of Engineers' staff performs these regulations for the Operating Committee.
- J. "Weekly Treaty Storage Operation Agreement" means the note electronically transferred (e-mail, faxed or teletype) each Friday from the U.S. Section to the Canadian Section of the Operating Committee to confirm the verbal agreement by the Operating Committee for the weekly Treaty storage changes and outflows that implement this DOP.
- K. "Delivery of the Canadian Entitlement" means the Entity Agreement on Aspects of the delivery of the Canadian Entitlement for 1 April 1998 through 15 September 2024 between the Canadian Entity and the United States Entity, dated 29 March, 1999, together with its Attachment B - Scheduling Guidelines as they may be subsequently modified or amended by the Operating Committee.

## **II. PREPARATION AND SCOPE**

This Detailed Operating Plan (DOP) has been developed from the operating criteria contained in the 1999-00 Assured Operating Plan (AOP) and its supporting hydroregulation studies. The system loads, resources, and nonpower requirements used are those agreed to by the Entities for the 1999-00 AOP, because the Entities could not agree to the major changes in U.S. nonpower requirements. This DOP will use the 1999-00 AOP four year critical period study and operating criteria for both Canadian and U.S. projects to define the Canadian Treaty storage operation. This DOP is the third to incorporate the use of Standard International (SI, or metric) measurements; for operational purposes, reliance should be placed on measurements in the English system.

The usable Canadian storage space available for power purposes during the Operating Year is 19.12 km<sup>3</sup> (15.5 Maf) in Canada distributed as follows:

### Duncan Reservoir

1.73 km<sup>3</sup> (1.4 Maf) [1,726.81 hm<sup>3</sup> (705.8 thousand second-foot-days (ksfd))] between elevations 576.68 meters (m) (1892.0 feet) and 546.87 m (1794.2 feet) measured at Duncan forebay. (Based on British Columbia Hydro and Power Authority (BC Hydro) table dated 21 February 1973.)

### Arrow Reservoir

8.76 km<sup>3</sup> (7.1 Maf) [8,757.85 hm<sup>3</sup> (3579.6 ksfd)] between elevations 440.13 m (1444.0 feet) and 419.98 m (1377.9 feet) measured at Fauquier, B.C. (Based on BC Hydro table dated 28 February 1974.)

### Kinbasket Reservoir (Mica)

8.63 km<sup>3</sup> (7.0 Maf) [8,634.54 hm<sup>3</sup> (3529.2 ksfd)] measured at Mica forebay. (Based on BC Hydro table dated 25 March 1974.)

Pertinent data is also provided on Lake Koocanusa (Libby) in the United States. The available storage at this Treaty project between elevation 749.50 m (2459.0 feet) and 697.08 m (2287.0 feet) measured at Libby forebay is 6.14 km<sup>3</sup> (4.9795 Maf) [6,142.19 hm<sup>3</sup> (2510.5 ksfd)].

The usable Canadian storage available for normal flood control purposes for the Operating Year is 1.57 km<sup>3</sup> (1.27 Maf) in Duncan Reservoir below elevation 576.68 m (1892.0 feet); 6.29 km<sup>3</sup> (5.1 Maf) in Arrow Reservoir below elevation 440.13 m (1444.0 feet); and 2.57 km<sup>3</sup> (2.08 Maf) in Kinbasket Lake (Mica Reservoir) except that additional storage may also be operated for flood control purposes under special circumstances, as described in the Flood Control Plan. Prior to 31 December 1999, the Canadian Entity may request, and with the approval of the Operating Committee, flood control space may be transferred between Mica and Arrow.

## **III. POWER DELIVERIES**

### **A. Entitlement Purchase Agreement Compensation**

The Entity agreement on the Determination of Downstream Power Benefits (DDPB) for Operating Year 1999-00 indicated that the U.S. Entity is entitled to receive 0.4 aMW of energy and no dependable capacity from BC Hydro during the period 1 August 1999 through 31 March 2000, in accordance with Sections 7 and 10 of the Canadian Entitlement Purchase Agreement dated 13 August 1964. Suitable arrangements for delivery of the August through

March energy will be made between the Bonneville Power Administration (BPA) and BC Hydro.

**B. Delivery of the Canadian Entitlement**

Under Section 2.(1)(a) of the Canadian Entitlement Purchase Agreement (CEPA), the sale of the Canadian Entitlement attributable to Duncan Lake storage terminated on 31 March 1998, and the sale attributable to Arrow Lakes storage terminated on 31 March 1999. Under Section 2(3) of CEPA, the percentage of the downstream power benefits attributable to each Canadian storage project is the percentage of that storage as set out in Article II of the Treaty to the total Canadian storage. The storage volume at Duncan lake is 1.73 km<sup>3</sup> (1.4 Maf), at Arrow Lakes is 8.76 km<sup>3</sup> (7.1 Maf), and the whole Canadian storage is 19.12 km<sup>3</sup> (15.5 Maf), therefore the ratio are 1.4/15.5 and 8.5/15.5, respectively. The obligation of the United States to return Canadian Entitlement to Canada for operating year 1999-00 beginning the period 1 August 1999 through 31 July 2000 is computed to be:

1. Energy Entitlement

$$\text{Average Annual Energy} = 559.5 \text{ aMW} * (8.5/15.5) = 306.8 \text{ aMW}$$

2. Capacity Entitlement

$$\begin{aligned} \text{Dependable Capacity (Draft for Power interpretation)} \\ = 1461.9 \text{ MW} * (8.5/15.5) = 801.7 \text{ MW} \end{aligned}$$

Arrangement for the delivery of this Canadian entitlement power, including the point of delivery, transmission losses, and scheduling guidelines are defined by the Entity Agreement on Aspects of the Delivery of Canadian Entitlement dated 29 March 1999, and Articles V and VIII of the Columbia River Treaty. Section 11 of Attachment B to the Entity Agreement delegates to the Operating Committee the responsibility for modifying or amending Attachment B - Scheduling Guidelines, as needed from time to time.

**IV. STORAGE OPERATION**

**A. Operation Authority**

The operation of Treaty storage by the Columbia River Treaty Operating Committee during the period 1 August 1999 through 31 July 2000 shall be in accordance with Sections I through VIII of this DOP and any operational agreements signed by the Entities during the operating year. Consistent with the operating principles in this section, the Operating Committee may from time-to-time agree to mutually beneficial changes in the operating procedures contained in this document. These changes will be documented and reported to the Entities.

**B. Storage Operation to TSR Level**

Except as allowed in subsection C below, the weekly Treaty Storage Operation Agreements shall be based on operating Canadian Treaty projects to the end-of-month elevations contained in the current TSR. The TSR shall be based on the operating criteria described in this document.

**C. Storage Operation Above and Below TSR Levels**

Consistent with flood control, operating limits, and the principles and limitations defined below, the Operating Committee may agree to mutually beneficial arrangements for storage above and below the TSR levels to meet power and nonpower objectives.

**1. Power Objectives:**

Power objectives include minimizing spill and optimizing energy production, power marketing, and purchase decisions. Operations for power objectives may be combined with nonpower objectives. When appropriate, the Operating Committee will make suitable arrangements for delivery of power relating to sharing of power benefits from operational agreements.

**2. Nonpower Objectives:**

Operation(s) designed to help meet nonpower objectives does not imply that either Entity acknowledges any obligation, domestic or international, to meet those objectives. The Entities agree that operation(s) for nonpower objectives does not set a precedent concerning any current or future dispute over Treaty rights and obligations, nor do they set a precedent for non-power objectives or flow objectives and contents.

Canadian nonpower objectives contemplated include, but are not limited to, whitefish and trout spawning downstream of Keenleyside, dust storm avoidance upstream of Keenleyside, and recreation needs. U.S. nonpower objectives include, but are not limited to, storage up to 1.23 km<sup>3</sup> (1 MAF) for anadromous fish flow augmentation, minimum flows at Vernita Bar for fish spawning, and recreation needs. Nonpower objectives considered in this section do not include flood control and operating limits in Section VII.

Recognizing that it may not be possible to meet all nonpower objectives, the Operating Committee shall in general attempt to share equally the risk and amount of failure. The parties shall make reasonable efforts to use available flexibility at their projects prior to requesting changes to Treaty storage operation.

**V. SCHEDULING STORAGE REGULATION**

**A. Operating Data**

The Operating Committee will exchange all current operating data necessary for the regulation of Canadian storage projects as soon as available, including the beginning and end of the flood control season.

**B. Volume Runoff Forecasts**

Seasonal runoff volume forecasts for Canadian Treaty Projects shall be made available by the Canadian Section no later than the seventh of each month, as required. The Operating Committee may request forecasts of seasonal runoff volume at periods other than those representing month-end conditions if hydrologic conditions warrant. Preliminary seasonal runoff volume forecasts for the Columbia River at The Dalles, Oregon, shall be made available by the U.S. Section on the second working day of each month as required.

**C. Treaty Storage Regulation Study**

The TSR study is performed at least twice each month (within the first ten days and the last ten

days of each month). It is based on the loads, thermal and other resources, critical rule curves, non-power constraints, and other plant and operating data contained in the 1999-00 AOP, except for the following significant changes:

1. Brownlee storage operation is simulated by using CRC's and ECC's instead of the fixed operation from Idaho Power Company. The Base ECC was the CRC1 except May and July when it was the URC. The VECC's were the same as 50\_yr average for January, May and June, and the same as CRC1 for February through April. The CRC's were the 1929 through 1932 operation.
2. The Kootenay Lake IJC five step mode of operation for Duncan and Libby as agreed to for the 2001-02 AOP studies.
3. Updated flood control rule curves.
4. Updated forecast errors and distribution factors for Canadian projects.
5. Based on the 50\_yr average of the hydro-independent data used in the 1999-00 AOP.

The actual and forecasted unregulated stream flows, variable energy content curves, the flood control storage evacuation requirements, and the variable flood control refill curves determined by the U.S. Army Corps of Engineers will be updated for each TSR study as agreed by the Operating Committee. During the operating year, the Operating Committee may agree to other changes from the AOP data. Additional weekly studies will be performed at the request of either section of the Operating Committee to reflect the most current forecast unregulated stream flows, variable energy content curves, flood control space storage evacuation requirements, and flood control refill curves for determining the Canadian Treaty Storage releases.

During the Flood Control Storage Evacuation Period and the Flood Control Refill period, the projects Upper Rule Curves will be determined through 31 July by the North Pacific Region, Northwestern Division, U.S. Army Corps of Engineers, in accordance with the Flood Control Plan and the Principles and Procedures as referenced in Section I. These curves will be computed consistent with the timing of the TSR Schedule.

#### **D. Scheduling Agreements**

Unless otherwise agreed, requests by the U.S. Section of the Operating Committee for the regulation of the Canadian storage content will be made to the Canadian Section on a regular basis in accordance with the following procedures:

1. Weekly Agreement for Storage Regulation during the Storage Drawdown Season
  - a) Timing: A preliminary request will be made not later than noon each Thursday, followed by a final agreement by noon Friday, if necessary.
  - b) Confirmation: Confirmation of the Treaty Storage Operation Agreement will be transmitted via electronic mail or fax on Friday in accordance with the following format unless otherwise agreed:

This message confirms our verbal agreement on \_\_\_\_\_ (day, month [spell-out], year) that the \_\_\_\_\_ (storing/drafting) of an estimated \_\_\_\_\_ ksfd \_\_\_\_\_ (in/from)

the whole of Canadian Treaty Storage for the Period \_\_\_\_\_ through \_\_\_\_\_ is consistent with the Detailed Operating Plan.

This agreement is based on an estimated average inflow during the above mentioned period of \_\_\_\_\_ kcfs to Duncan Reservoir,

\_\_\_\_\_ kcfs to Libby Reservoir,

\_\_\_\_\_ kcfs to Mica Reservoir, and

Estimated average regulated inflow of

\_\_\_\_\_ kcfs to Arrow Reservoir, and an

Estimated regulated outflow of

\_\_\_\_\_ kcfs from the Libby Project,

That will result in average weekly Treaty discharges of

\_\_\_\_\_ kcfs from the Duncan Project,

\_\_\_\_\_ kcfs from the Mica Project, and

\_\_\_\_\_ kcfs from the Arrow Project.

This operation of the whole of Canadian Treaty storage is based on the DOP TSR expected end-of-\_\_\_\_\_ (*month, except split April & August*) storage level for the whole of Canadian Treaty Storage of \_\_\_\_\_ ksfd.

This operation includes expected \_\_\_\_\_ (*storage above/draft below*) the end-of-month (except April & August) DOP TSR level for the whole of Canadian Treaty Storage of \_\_\_\_\_ ksfd.

- c) **Period Covered by Weekly Treaty Storage Operation Agreement:** The period covered by the agreement shall be from 0800 hours on the Saturday following the date of weekly request to 0800 hours on the Saturday a week later. Changes from the previous week's agreement shall commence at 0800 hours on Saturday, or as soon thereafter as permitted by the limits of VII(B)7.
- d) **Release Determination:** The amount of water released or stored during the period of the Weekly Treaty Operation Storage Agreement will be determined by the changes in reservoir contents based on the recorded reservoir elevation and storage capacity tables for Duncan (Exhibit 13), Arrow (Exhibit 14), and Mica (Exhibit 15). The change in Arrow storage content will be determined using the recorded reservoir elevation at the gauge near Fauquier, B.C.
- e) **Delivery:** Storage releases will be made effective at the Canadian-United States border. The Weekly Treaty Storage Operation Agreement will be deemed to have been fulfilled if the total amount of storage water agreed to is released from Duncan, Arrow, and Mica reservoirs, provided an amount equal to or greater than the storage water release from Duncan reservoir is concurrently discharged from Kootenay Lake.
- f) **Modification:** If any modification to a written Weekly Treaty Storage Operation Agreement is agreed by the Operating Committee, a further written Storage Agreement superseding the original will be dispatched immediately by the U.S. Section of the Operating Committee to the Canadian Section of the Operating Committee.
- g) **Non-routine Operation:** Any special operation that is agreed to by the Operating Committee will be suitably documented.

2. Daily Agreement for Storage Regulation during Flood Control Season

- a) **Forecasts.** Day-to-day stream flow forecasts will be accomplished by use of computer simulation by the National Weather Service River Forecasting Center. The regulation center required by the Flood Control Plan for the flood regulation will be located in the North Pacific Region, Northwestern Division, U.S. Army Corps of Engineers offices in Portland, Oregon.
  - b) **Daily Requests for Project Outflows.** Pursuant to the operating rules in the Flood Control Plan, the outflows from individual Canadian storage projects are specified on a day-to-day basis. Requests will be coordinated by telephone daily or on an as needed basis, by conference calls between members of the Operating Committee or their representatives. The requests will normally prescribe the requested outflows as a mean daily discharge in cubic feet per second, for the 24-hour period from noon to noon of each day. Daily requests for project outflows will be determined by methods as agreed upon, and documented with a confirmation agreement by a message transmitted via the hydromet reporting network or fax from the Corps of Engineers, in Portland, Oregon. The Canadian Section of the Operating Committee or their representative will make acknowledgment of this agreement via the hydromet reporting network or fax. Any modification of the documented daily request shall be agreed by the Operating Committee before being put into effect, and shall be documented immediately using the procedure described above.
3. **Regulation during Winter Floods.** Daily requests for project outflows from Canadian projects are normally implemented in the flood control refill period. During the occurrence of winter floods (periods of high winter flows) in the Lower Columbia River, if a special regulation of Arrow storage becomes necessary to preserve the natural flood control storage effect, then the outflows from Arrow will be regulated on a day-to-day basis by agreement of the Operating Committee in accordance with the requests of the U.S. Section of the Operating Committee. Insofar as possible the outflows from Arrow will not exceed the calculated natural lake outflows until the space obligated for this purpose as shown on Chart 5 of the Flood Control Operating Plan is filled. The requests for such regulation will be in accordance with procedures described above. If as a result of operation for winter flood control a reservoir ends up above its upper rule curve, then an appropriate outflow schedule for that reservoir will be determined to ensure that the reservoir will be drafted to its upper rule curve as soon as feasible.

## VI. OPERATING GUIDES

### A. **Operating Rule Curve**

The Operating Rule Curve for the whole of Canadian Storage shall be the sum of the Operating Rule Curves for each of Duncan, Arrow, and Mica. The Operating Rule Curve for each of the Duncan, Arrow, and Mica Reservoirs during the period 1 August 1999 through 31 July 2000 is determined in accordance with the reference documents of Section 1, and is defined as follows:

1. During the period 1 August 1999 through 31 December 1999, it is the higher of the First Critical Rule Curve or the Assured Refill Curve.
2. During the period 1 January 2000 through 31 July 2000, it is the higher of the First Critical Rule Curve or the Assured Refill Curve, unless the Variable Refill Curve is

below the higher of the above two curves; then it is defined by the Variable Refill Curve.

3. During the period 1 January 2000 through 15 April 2000, it will not be lower than a Limiting Rule Curve designed to protect firm loads with recurrence of 1936-37 hydro conditions unless a lower reservoir elevation is required for flood control (Exhibit 6).
4. During any period in the 1999-00 Operating Year, it will not be higher than the Upper Rule Curve, defined as the maximum elevation of each reservoir established by flood control requirements and may be modified on mutual agreement for construction and other contingency requirements.
5. Operation of Mica will be in accordance with the monthly average outflows tabulated with specified qualifications under Operating Limits. The obligation to operate Mica to produce optimum benefits in Canada and downstream in the United States will be deemed to have been fulfilled by operating to these criteria.
6. The Variable Refill Curves for Arrow, Duncan, and Mica shall be constructed based on the power discharge requirement specified in Exhibit 7.
7. The Variable Refill Curves for Arrow may be constructed as specified in a) below, if agreed by the Operating Committee, otherwise b) will apply.
  - a) If the projected live Mica storage content at the end of the current month using most likely Mica inflow and target outflows (expected live Mica storage content) is less than that computed for the Variable Refill Curve for Mica, the Variable Refill Curve for Arrow will be calculated using the Arrow Local Inflow Method as follows:
    - (i) The forecast volume of inflow for Arrow will exclude the volume of inflow above the Mica project (Arrow local inflow). This volume will be reduced by a forecast error such that there is a 95 percent probability that the reduced forecast is equaled or exceeded.
    - (ii) The total Mica target outflow as specified in VII(c) will be added to the forecast volume described in a(i) above.
    - (iii) In computing water available for refill of Arrow Reservoir the power discharge requirements for Arrow as specified in Exhibit 7 will be deducted from the volume calculated in a(ii).
    - (iv) For the purpose of calculating the rule curve for the whole of Canadian storage, the Variable Refill Curve for Mica will be set equal to the expected live Mica Treaty storage content.
  - (b) If the expected live Mica storage content is greater than that computed for the Variable Refill Curve for Mica, the Variable Refill Curve for Arrow will be computed using the Arrow Total Inflow Method, i.e., the forecast volume of inflow above the Mica project will be included. The space in Mica to be deducted from the Arrow total inflow will be equal to the amount of storage draft determined by the Operating Rule Curve for Mica as defined in paragraphs VI(A)2 and I(A)3.

The Operating Rule Curve for Libby Reservoir used in the TSR study is defined in a manner similar to that for Canadian storage.

**B. Rule Curves and Operating Data**

Rule Curves and Operating data are shown in both English and SI (Metric) units. SI values are displayed with either one or two decimal places to assure consistency with English units and does not imply that level of precision.

1. Assured Refill Curve for Duncan, Arrow, and Mica. Exhibit 1
2. First Critical Rule Curve for Duncan, Arrow, Mica, and the whole of Canadian storage. Exhibit 2
3. Second Critical Rule Curve for Duncan, Arrow, Mica, and the whole of Canadian storage. Exhibit 3
4. Third Critical Rule Curve for Duncan, Arrow, Mica, and the whole of Canadian storage. Exhibit 4
5. Fourth Critical Rule Curve for Duncan, Arrow, Mica, and the whole of Canadian storage. Exhibit 5
6. Lower Limit for Operating Rule Curve based on 1936-37 Hydro Conditions. Exhibit 6
7. Variable Refill Curve Procedures. Exhibit 7
8. The First, Second, Third, and Fourth Critical Rule Curves and Assured Refill Curve for Libby. Exhibit 8
9. Coordinated System Loads and Resources Exhibit 9

**C. Rule Curves for Future Operating Years**

The following tables, including adjustments, have been agreed to by the Entities:

1. Second Critical Rule Curves for Duncan, Arrow, Mica, and the whole of Canadian storage for Operating Year 2000-01. Exhibit 10
2. Third Critical Rule Curves for Duncan, Arrow, Mica, and the whole of Canadian storage for Operating Year 2001-02. Exhibit 11
3. Fourth Critical Rule Curves for Duncan, Arrow, Mica, and the whole Canadian storage for Operating Year 2002-03. Exhibit 12

**D. Reservoir Capacity Tables**

The following tables shall be considered to be the official storage for the projects:

1. Duncan Reservoir Capacity Table (based on BC Hydro table dated 21 February 1973). Exhibit 13

2. Arrow Reservoir Capacity Table (based on BC Hydro Combined Storage Table dated 28 February 1974). Exhibit 14
3. Mica Reservoir Capacity Table (based on BC Hydro table dated 25 March 1974). Exhibit 15
4. Libby Storage above elevation 697.08 m (2287 feet). Exhibit 16

## **VII. OPERATING LIMITS**

### **A. Duncan Project**

1. Maximum outflow is 566.34 cubic meters per second ( $m^3/s$ ) (20,000 cubic feet per second (cfs)) through outlets with the limit of 283.17  $m^3/s$  (10,000 cfs) each period in the TSR model.
2. Minimum average weekly outflow is 2.83  $m^3/s$  (100 cfs).
3. Maximum rate of change in outflow is normally 113.27  $m^3/s$  (4,000 cfs) per day unless a larger change is necessary to accomplish the objectives of the Flood Control Plan.
4. Normal full pool elevation is 576.68 m (1,892.0 feet).
5. Normal minimum pool elevation is 546.87 m (1,794.2 feet).
6. Normal maximum reservoir draft in elevation during any month is limited to the equivalent of 0.30 m (1 foot) per day.

### **B. Arrow Project**

1. Maximum outflow is physical limits only.
2. Minimum average weekly outflow is 141.58  $m^3/s$  (5,000 cfs).
3. Maximum rate of change in outflow is normally 424.75  $m^3/s$  (15,000 cfs) per day unless a larger change is necessary to accomplish the objectives of the Flood Control Plan.
4. Normal full pool elevation is 440.13 m (1,444.0 feet).
5. Normal minimum pool elevation is 419.98 m (1,377.9 feet).
6. Normal maximum reservoir monthly draft in elevation limited to the equivalent of 0.30 m (1 foot) per day

7. Advance notice for changes in outflow for:

- a) Drop in downstream level of
  - 0.15 m ( $\frac{1}{2}$  foot) - None,
  - 0.30 m (1 foot) - 1 hour,
  - 0.61 m (2 feet) - 2 hours,
  - 0.91 m (3 feet) - 24 hours, and
- b) Rise in downstream level of
  - 0.15 m ( $\frac{1}{2}$  foot) - None,
  - 0.30 m (1 foot) - 1 hour,
  - 0.61 m (2 feet) - 2 hours,
  - 0.91 m (3 feet) - 7 hours, only if notice is received before 10:00 a.m. that day, otherwise 24-hour notice is required.

**C. Mica Project**

The Mica Project Treaty storage will be operated according to the Mica Project Operating Criteria shown in the following table except as qualified in subsections VII(C)1 through VII(C)9.

1. Variable Refill Curves (VRC) shall be constructed based on a power discharge requirement as indicated in Exhibit 7 with 31 July Treaty storage content of 8,634.54 hm<sup>3</sup> (3,529.2 ksfd). However, the Operating Committee may agree to set Mica's VRC July refill target equal to the Mica End of Period Storage Content of 8455.94 hm<sup>3</sup> (3456.2 ksfd) indicated on the following "Mica Project Operating Criteria" table.
2. Mica project operation will be determined by the End of Previous Period Arrow Storage Content as shown in the following table, except for the limitations or changes required by subsections VII(C)3 through VII(C)9. The End of Previous Period Arrow Storage Content will be determined from the current TSR. Mica's operation will be defined either by a Target End of Period Storage Content or a Target Period Average Outflow.
3. Mica operation to the Target End-of-Period Treaty Storage Contents shall be limited by the Minimum Outflows shown in the table above, and a maximum outflow of 962.77 m<sup>3</sup>/s (34,000 cfs) except as modified in Note 1/ when the Target End-of-Period Storage Content is below 8,634.54 hm<sup>3</sup> (3529.2 ksfd) unless needed to accomplish the objectives of the Flood Control Plan.
4. Mica operation to the Target Period Average Outflow shall be limited by the Minimum Target Treaty Content shown in the table above. Mica outflows shall be reduced as required down to a lower limit of the Minimum Outflow shown in the table above, to prevent draft below the Minimum Target Treaty Storage Content. Minimum Outflows may cause the reservoir to draft below the Minimum Target Treaty Content.
5. During July, the Mica operation to the Target Period Average Outflow shall not be less than the outflow necessary to meet the Target End-of-Period Storage Content of 8455.94 hm<sup>3</sup> (3456.2 ksfd).
6. Mica outflows will be increased during the months October through June as required to avoid violation of the Upper Rule Curve.

7. During the period January through July, if in any month an alternate method to the Arrow Total Inflow Method is used to compute the Variable Refill Curve as defined in Subsection VI(A)7(b), only the Variable Refill Curves based on the Arrow Total Inflow Method continuously from January on will be used to determine if the Arrow contents are within the limits shown above.
8. Each month, within two working days of determination of the final TSR, normally available within the first ten days of the month, one correction to the adjusted Mica outflow may be made, consistent with subsection VII(C)3 above.
9. Storage releases from Mica in excess of 8.63 km<sup>3</sup> (7 Maf) that result from operating Mica under the criteria described in VII(C)2 through VII(C)8 above will be retained in the Arrow reservoir, subject to flood control criteria at Arrow, and Mica will be reduced to Minimum Outflow as required to minimize releases in excess of 8.63 km<sup>3</sup> (7 Maf). The total combined storage draft from Mica and Arrow will not exceed 17.39 km<sup>3</sup> (14.1 Maf) unless flood control criteria will not permit the additional Mica storage releases for minimum flow purposes to be retained at Arrow.

**MICA PROJECT OPERATING CRITERIA (English)**

Month	End of Previous Month Arrow Storage Content (KSFD)	Target Operation		Minimum Target Treaty Content at Mica 2/ (KSFD)	Minimum Outflow (CFS)
		Month Average Outflow (CFS)	End-of-Month Storage Content 1/ (KSFD)		
August 1-15	1,300 - FULL 0 - 1,300	- 27,000	3,456.2	0.0	10,000
August 16-31	3,400 - FULL 1,100 - 3,400 0 - 1,100	- 24,000 27,000	3,529.2	0.0	10,000
September	3,340 - FULL 900 - 3,340 0 - 900	- 22,000 28,000	3,529.2	0.0	10,000
October	3,295 - FULL 500 - 3,295 0 - 500	- 25,000 29,000	3,428.2	0.0	10,000
November	3,270 - FULL 2,340 - 3,270 0 - 2,340	- 28,000 30,000	3,176.2	0.0	13,000
December	3,390 - FULL 2,500 - 3,390 0 - 2,500	24,000 28,000 30,000		0.0	21,000
January	2,720 - FULL 2,100 - 2,720 0 - 2,100	25,000 28,000 30,000		356.2	15,000
February	1,284 - FULL 1,090 - 1,284 0 - 1,090	22,000 26,000 28,000		106.2	15,000
March	1,210 - FULL 100 - 1,210 0 - 100	21,000 26,000 27,000		0.0	15,000
April 1-15	0 - FULL	-	156.2	0.0	10,000
April 16-30	1,050 - FULL 0 - 1,050	- -	106.2 0.0	0.0	10,000
May	190 - FULL 0 - 190	10,000 21,000		0.0	10,000
June	310 - FULL 240 - 310 0 - 240	10,000 - 26,000	966.2	0.0	10,000
July	2,000 - FULL 1,160 - 2,000 0 - 1,160	- 19,000 25,000	3,456.2	0.0	10,000

## Notes:

1/ A maximum outflow of 34 000 cfs will apply if the target end-of-period storage content is less than 3529.2 ksfd in every month except April, May, and June. For these periods, the maximum outflow is 31 000 cfs in April 1-15, 28 000 cfs in April 16-30, 30 000 cfs in May and 33 000 cfs in June.

2/ Mica outflows will be reduced to minimum to maintain the reservoir above the minimum Treaty storage content. This will override any target flow.

**MICA PROJECT OPERATING CRITERIA (SI)**

Month	End of Previous Month Arrow Storage Content (hm <sup>3</sup> )	Target Operation		Minimum Target Treaty Content at Mica 2/ (hm <sup>3</sup> )	Minimum Outflow (m <sup>3</sup> /s)
		Month Average Outflow (m <sup>3</sup> /s)	End-of-Month Storage Content 1/ (hm <sup>3</sup> )		
August 1-15	3180.6 - FULL 0.0 - 3180.6	- 764.55	8455.9	0.0	283.17
August 16-31	2691.3 - FULL 2691.3 - 8318.4 0.0 - 2691.3	- 679.60 764.55	8634.5	0.0	283.17
September	8171.6 - FULL 2201.9 - 8171.6 0.0 - 2201.9	- 622.97 792.87	8634.5	0.0	283.17
October	8061.5 - FULL 1223.3 - 8061.5 0.0 - 1223.3	- 707.92 821.19	8387.4	0.0	283.17
November	8000.4 - FULL 5725.0 - 8000.4 0.0 - 5725.0	- 792.87 849.50	7770.9	0.0	368.12
December	8294.0 - FULL 6116.5 - 8294.0 0.0 - 6116.5	679.60 792.87 849.50		0.0	594.65
January	6654.8 - FULL 5137.9 - 6654.8 0.0 - 5137.9	707.92 792.87 849.50		871.5	424.75
February	3141.4 - FULL 2666.8 - 3141.4 0.0 - 2666.8	622.97 736.24 792.87		259.8	424.75
March	2960.4 - FULL 244.7 - 2960.4 0.0 - 244.7	594.65 736.24 764.55		0.0	424.75
April 1-15	0.0 - FULL	-	382.2	0.0	283.17
April 16-30	2568.9 - FULL 0.0 - 2568.9	- -	259.8 0.0	0.0	283.17
May	464.9 - FULL 0.0 - 464.9	283.17 594.65		0.0	283.17
June	758.4 - FULL 587.2 - 758.4 0.0 - 587.2	283.17 - 736.24	0.0	0.0	283.17
July	4893.2 - FULL 2838.1 - 4893.2 0.0 - 2838.1	- 538.02 707.92	8455.9	0.0	283.17

Notes:

1/ A maximum outflow of 962.8 m<sup>3</sup>/s will apply if the target end-of-period storage content is less than 8634.5 hm<sup>3</sup> in every month except April, May, and June. For these periods, the maximum outflow is 877.8 m<sup>3</sup>/s in April 1-15, 792.9 m<sup>3</sup>/s in April 16-30, 849.5 m<sup>3</sup>/s in May, and 934.5 m<sup>3</sup>/s in June.

2/ Mica outflows will be reduced to minimum to maintain the reservoir above the minimum Treaty storage content.

This will override any target flow.

## D. Libby Project

1. Maximum Outflow - When the spillway capacity is insufficient to pass the required flow, the regulating outlets may be used.

<b>Forebay Elevation</b>	<b>One Sluice</b>	<b>Three Sluices</b>
749.50 m (2459 ft.)	574.83 m <sup>3</sup> /s (20,300 cfs)	1,727.33 m <sup>3</sup> /s (61,000 cfs)
739.14 m (2425 ft.)	538.02 m <sup>3</sup> /s (19,000 cfs)	1,614.06 m <sup>3</sup> /s (57,000 cfs)
733.05 m (2405 ft.)	515.37 m <sup>3</sup> /s (18,200 cfs)	1,546.10 m <sup>3</sup> /s (54,600 cfs)
716.28 m (2350 ft.)	438.91 m <sup>3</sup> /s (15,500 cfs)	1,316.73 m <sup>3</sup> /s (46,500 cfs)
697.08 m (2287 ft.)	331.31 m <sup>3</sup> /s (11,700 cfs)	991.09 m <sup>3</sup> /s (35,000 cfs)

2. Minimum instantaneous outflow is 56.63 m<sup>3</sup>/s (2,000 cfs) and the normal minimum daily outflow is 113.27 m<sup>3</sup>/s (4,000 cfs).
3. Maximum rate of tailwater change
  - a) May - September - 0.30 m (1 ft.) per hour  
1.22 m (4 ft.) per 24 hours
  - b) October - April - 0.30 m (1 ft.) per ½ hour  
1.83 m (6 ft.) per 24 hours
4. Normal full pool elevation - 749.50 m (2459.0 ft)
5. Minimum CRC elevation - 720.24 m (2363.0 ft) in December only  
697.08 m (2287.0 ft) in all other month

## VIII. EXPECTED LIBBY OPERATION

The U.S. Entity plans to regulate Libby to the following operating requirements, in order to meet requirements for species listed under the Endangered Species Act. The Canadian Entity and the U.S. Entity do not agree on the use of these operating requirements. The Canadian Entity has not, and does not agree these operating requirements are appropriate for the Libby project operation. The U.S. Entity has determined that these operating requirements are appropriate, and these requirements have been submitted by the U.S. Army Corps of Engineers into Pacific Northwest Coordination Agreement (PNCA) planning and will be reflected in the PNCA Actual Energy Regulation (AER) and regulated outflows.

### Rule Curves:

<u>Period</u>	<u>Critical Rule Curve</u>	<u>Assured Refill Curve *</u>
September:	4822.0 hm <sup>3</sup> (1970.9 ksfd)	3805.0 hm <sup>3</sup> (1555.2 ksfd)
October	4744.7 hm <sup>3</sup> (1939.3 ksfd)	3797.4 hm <sup>3</sup> (1552.1 ksfd)
November	4501.3 hm <sup>3</sup> (1839.8 ksfd)	3728.4 hm <sup>3</sup> (1523.9 ksfd)
Dec. to Aug.	Not used	Not used

\*The 1999-2000 ARCs will not be developed until the end of September 1999.

**Target Content:**

August 31	5043.2 hm <sup>3</sup> (2061.3 ksf), 743.41 m (2439.0 ft)
December 31	3675.8 hm <sup>3</sup> (1502.4 ksf), 734.87 m (2411.0 ft)
January 31	Flood Control Rule Curve
February 28	Flood Control Rule Curve
March 31	Flood Control Rule Curve
April 15	Flood Control Rule Curve
April 16-30	Flood Control Rule Curve

**Maximum Outflow:** Powerhouse Full Gate Flow in all months

**Minimum Outflows:** Draft Libby as needed to support the following flows at Bonners Ferry:

**WHITE STURGEON FLOW OBJECTIVES AT BONNERS FERRY - KCFS**

Month	0≤FC<4.8 Maf	4.8≤FC<6.0 Maf	6.0≤FC<6.7 Maf	6.7≤FC<8.1 Maf	8.1≤FC<8.9 Maf	8.9≤FC Maf
May	4.00	7.87	9.81	14.16	21.42	26.26
June	4.00	12.00	16.00	25.00	40.00	50.00
July	4.00	8.00	10.00	14.50	22.00	27.00

FC = May 1, April–August Volume Forecast at Libby in Maf

**WHITE STURGEON FLOW OBJECTIVES AT BONNERS FERRY - m<sup>3</sup>/s**

Month	0≤FC<5.92 km <sup>3</sup>	5.92≤FC<7.40 km <sup>3</sup>	7.40≤FC<8.26 km <sup>3</sup>	8.26≤FC<9.99 km <sup>3</sup>	9.99≤FC<10.98 km <sup>3</sup>	10.98≤FC km <sup>3</sup>
May	113.27	222.85	277.70	400.94	606.53	743.49
June	113.27	339.80	453.07	707.92	1132.67	1415.84
July	113.27	226.53	283.11	410.62	622.97	764.53

FC = May 1, April–August Volume Forecast at Libby in km<sup>3</sup>

## Exhibit 1 - Assured Refill Curves (English) 1/

Month	DUNCAN					MICA					ARROW						
	1931 Inflow CFS 3/	PDR CFS 4/	Water Available For Refill CFS		ARC KSFD	1931 Inflow CFS 4/	PDR CFS	Water Available For Refill CFS		CRC1 KSFD	ARC KSFD	1931 Inflow CFS 4/	PDR CFS	Water Available For Refill CFS		MICA Refill 2/	ARC KSFD
July	7320	1700	5620	174.2	705.8	56477	44000	12480	386.9	2814.9	3529.2	88586	65000	23590	731.3	386.9	3579.6
June	8030	1700	6330	189.9	531.6	60178	40000	20180	605.4	2071.7	3142.4	114636	55000	59640	1789.2	605.4	3235.2
May	5170	1700	3470	107.6	341.7	28058	35000	-6940	-215.1	427.5	2537.1	68098	48000	20100	623.1	-215.1	2051.5
Apr2	981	1700	-720	-10.8	234.1	7217	33000	-25780	-386.7	513.1	2752.2	20504	40000	-19500	-292.5	-386.7	1213.3
Apr1	981	1500	-520	-7.8	244.9	4679	33000	-28320	-424.8	1070.4	3139.0	10700	38000	-27300	-409.5	-390.4	1119.0
Mar	555	1500	-950	-29.5	252.7	3219	25000	-21780	-675.2	1578.8	3529.2	7653	35000	-27350	-847.9	0.0	1138.3
Feb	428	500	-70	-2.0	282.0	2593	25000	-22410	-627.5	1890.6	3529.2	5813	35000	-29190	-817.3	0.0	1986.0
Jan	428	100	330	10.2	284.0	2834	15000	-12170	-377.3	2127.3	3529.2	6430	5000	1430	44.3	0.0	2803.3
Dec	461	100	360	11.2	273.8	3533	3000	530	16.4	2641.1	3529.2	6694	5000	1690	52.4	16.4	2758.9
Nov	684	100	580	17.4	262.6	5176	3000	2180	65.4	3364.1	3512.7	9483	5000	4480	134.4	65.4	2722.9
Oct	1090	100	990	30.7	245.1	8751	3000	5750	178.3	3398.1	3447.4	14691	5000	9690	300.4	-49.0	2653.7
Sep	2310	100	2210	66.3	214.4	23110	3000	20110	603.3	3496.4	3269.1	39739	5000	34740	1042.2	-32.8	2304.3
Aug2	4530	100	4430	70.9	148.1	38261	3000	35260	564.2	3529.2	2665.8	62605	5000	57610	921.8	0.0	1229.4
Aug1	4530	100	4430	66.5	77.2	53542	3000	50540	758.1	3529.2	2101.6	82249	5000	77250	1158.8	3529.2	307.7

## Notes:

- 1/ The Assured Refill Curve indicates the end-of-month storage content required to assure refill of Canadian storage by 31 July based on 1931 historical monthly inflow. The monthly inflow at each reservoir is reduced by deducting the Power Discharge Requirements and water required for refill, if any, at upstream reservoirs. The Entities may agree to revise the data upon the completion of the Refill Study by the Operating Committee.
- 2/ Upstream refill requirement: these values are computed by subtracting current month from previous month's higher of Mica's ARC or CRC1 except July value is Mica full minus previous month's higher of Mica's ARC or CRC1. CRC1 is shown in Exhibit 2.
- 3/ Inflows are from the 1990 Level Modified streamflow (Hydrosim file).
- 4/ PDRs are from the 1999-00 AOP study.

**Exhibit 1M – Assured Refill Curves (SI) 1/**

Month	DUNCAN				MICA						ARROW								
	1931	Inflow	PDR	Water Available For Refill	ARC	1931	Inflow	PDR	Water Available for Refill		CRC1	ARC	1931	Inflow	PDR	Water Available for Refill		MICA	ARC
	m³/s	m³/s	M³/s	hm³	hm³	m³/s	m³/s	4/	m³/s	hm³	hm³	hm³	m³/s	m³/s	4/	m³/s	hm³	hm³	
	3/	4/															2/		
July	207.28	48.14	159.14	426.25	1726.81	1599.25	1245.94	353.39	946.54	6886.93	8634.54	2508.47	1840.59	667.99	1789.17	946.54	8757.85		
June	227.38	48.14	179.25	464.61	1300.61	1704.05	1132.67	571.43	1481.17	5068.62	7688.20	3246.13	1557.43	1688.82	4377.46	1481.17	7915.24		
May	146.40	48.14	98.26	263.18	836.00	794.51	991.09	-196.52	-526.36	1045.92	6207.27	1928.32	1359.21	569.17	1524.48	-526.36	5019.20		
Apr2	27.78	48.14	-20.39	-26.42	572.75	204.36	934.46	-730.01	-946.10	1255.35	6733.53	580.61	1132.67	-552.18	-715.63	-946.10	2968.46		
Apr1	27.78	42.48	-14.72	-19.08	599.17	132.49	934.46	-801.93	-1039.32	2618.84	7679.88	302.99	1076.04	-773.05	-1001.88	-955.25	2737.75		
Mar	15.72	42.48	-26.90	-72.05	618.26	91.15	707.92	-616.74	-1651.90	3862.69	8634.54	216.71	991.09	-774.47	-2074.35	0.00	2784.96		
Feb	12.12	14.16	-1.98	-4.80	689.94	73.43	707.92	-634.58	-1535.19	4625.54	8634.54	164.61	991.09	-826.57	-1999.66	0.00	4858.95		
Jan	12.12	2.83	9.34	25.03	694.83	80.25	424.75	-344.62	-923.03	5204.65	8634.54	182.08	141.58	40.49	108.46	0.00	6858.55		
Dec	13.05	2.83	10.19	27.30	669.88	100.04	84.95	15.01	40.20	6461.72	8634.54	189.55	141.58	47.86	128.18	40.20	6749.92		
Nov	19.37	2.83	16.42	42.57	642.48	146.57	84.95	61.73	160.01	8230.61	8594.17	268.53	141.58	126.86	328.82	160.01	6661.85		
Oct	30.87	2.83	28.03	75.09	599.66	247.80	84.95	162.82	436.11	8313.79	8434.41	416.00	141.58	274.39	734.93	-119.96	6492.54		
Sep	65.41	2.83	62.58	162.21	524.55	654.40	84.95	569.45	1476.03	8554.29	7998.18	1125.28	141.58	983.73	2549.85	-80.25	5637.70		
Aug2	128.28	2.83	125.44	173.42	362.34	1083.43	84.95	998.45	1380.27	8634.54	6522.15	1772.77	141.58	1631.33	2255.18	0.00	3007.85		
Aug1	128.28	2.83	125.44	162.58	188.88	1516.14	84.95	1431.13	1854.77	8634.54	5141.77	2329.03	141.58	2187.47	2835.00	8634.54	752.84		

**Notes:**

- 1/ The Assured Refill Curve indicates the end-of-month storage content required to assure refill of Canadian storage by 31 July based on 1931 historical monthly inflow. The monthly inflow at each reservoir is reduced by deducting the Power Discharge Requirements and water required for refill, if any, at upstream reservoirs. The Entities may agree to revise the data upon the completion of the Refill Study by the Operating Committee.
- 2/ Upstream refill requirement: these values are computed by subtracting current month from previous month's higher of Mica's ARC or CRC1 except July value is Mica full minus previous month's higher of Mica's ARC or CRC1. CRC1 is shown in Exhibit 2.
- 3/ Inflows are from the 1990 Level Modified streamflow (HydroSim file).
- 4/ PDRs are from the 1999-00 AOP study.

**Exhibit 2 - First Critical Rule Curves (English)**

(End-of-Month Usable Storage Content in KSFD)

<u>Month</u>	<u>Duncan</u>	<u>Arrow</u>	<u>Mica</u>	<u>Total</u>
August 15	705.8	3579.6	3529.2	7814.6
August 31	705.8	3579.6	3529.2	7814.6
September	680.8	3483.0	3496.4	7660.2
October	610.6	3351.9	3398.1	7360.6
November	387.5	3066.2	3364.1	6817.8
December	342.1	2635.2	2641.1	5618.4
January	244.1	1140.4	2127.3	3511.8
February	250.2	1203.5	1890.6	3344.3
March	222.8	1199.7	1578.8	3001.3
April 15	227.9	464.8	1070.4	1763.1
April 30	159.0	375.2	513.1	1047.3
May	272.1	465.3	427.5	1164.9
June	526.1	1872.9	2071.7	4470.7
July	705.8	3395.3	2814.9	6916.0

Source: First-year critical rule curves from the 1999-00 AOP study.

### **Exhibit 2M - First Critical Rule Curves (SI)**

(End-of-Month Usable Storage Content in hm<sup>3</sup>)

<b><u>Month</u></b>	<b><u>Duncan</u></b>	<b><u>Arrow</u></b>	<b><u>Mica</u></b>	<b><u>Total</u></b>
August 15	1726.81	8757.85	8634.54	19119.20
August 31	1726.81	8757.85	8634.54	19119.20
September	1665.65	8521.51	8554.29	18741.45
October	1493.89	8200.76	8313.79	18008.44
November	948.06	7501.76	8230.61	16680.43
December	836.98	6447.28	6461.72	13745.98
January	597.22	2790.10	5204.65	8591.97
February	612.14	2944.48	4625.54	8182.16
March	545.10	2935.19	3862.69	7342.98
April 15	557.58	1137.18	2618.84	4313.60
April 30	389.01	917.96	1255.35	2562.32
May	665.72	1138.40	1045.92	2850.04
June	1287.16	4582.24	5068.62	10938.01
July	1726.81	8306.94	6886.93	16920.69

Source: First-year critical rule curves from the 1999-00 AOP study.

**Exhibit 3 - Second Critical Rule Curves (English)**

(End-of-Month Usable Storage Content in KSFD)

<u>Month</u>	<u>Duncan</u>	<u>Arrow</u>	<u>Mica</u>	<u>Total</u>
August 15	635.7	3524.7	3276.4	7436.8
August 31	657.8	3417.1	3346.6	7421.5
September	676.1	3367.9	3104.2	7148.2
October	559.6	2851.6	2810.3	6221.5
November	342.6	2325.7	2256.8	4925.1
December	241.8	1820.1	1816.5	3878.4
January	122.4	695.2	868.4	1686.0
February	128.0	786.5	860.7	1775.2
March	50.0	890.4	851.7	1792.1
April 15	36.5	464.8	538.3	1039.6
April 30	59.8	375.2	405.1	840.1
May	13.0	465.3	172.1	650.4
June	170.0	1058.2	996.9	2225.1
July	387.6	2142.5	2800.7	5330.8

Adjusted for Cross-over

Source: The 1999-00 second-year critical rule curves from the 1998-99 DOP unless higher than the first year critical rule curve.

### **Exhibit 3M - Second Critical Rule Curves (SI)**

(End-of-Month Usable Storage Content in hm<sup>3</sup>)

<u>Month</u>	<u>Duncan</u>	<u>Arrow</u>	<u>Mica</u>	<u>Total</u>
August 15	1555.30	8623.53	8016.04	18194.87
August 31	1609.37	8360.28	8187.79	18157.44
September	1654.15	8239.90	7594.74	17488.79
October	1369.12	6976.72	6875.68	15221.52
November	838.21	5690.06	5521.49	12049.75
December	591.59	4453.06	4444.25	9488.89
January	299.46	1700.88	2124.63	4124.97
February	313.16	1924.25	2105.79	4343.20
March	122.33	2178.45	2083.77	4384.55
April 15	89.30	1137.18	1317.00	2543.49
April 30	146.31	917.96	991.12	2055.39
May	31.81	1138.40	421.06	1591.27
June	415.92	2588.99	2439.02	5443.93
July	948.30	5241.84	6852.19	13042.34

Adjusted for Cross-over

Source: The 1999-00 second-year critical rule curves from the 1998-99 DOP unless higher than the first year critical rule curve.

**Exhibit 4 - Third Critical Rule Curves (English)**

(End-of-Month Usable Storage Content in KSFD)

<u>Month</u>	<u>Duncan</u>	<u>Arrow</u>	<u>Mica</u>	<u>Total</u>
August 15	400.0	2466.7	3100.4	5967.1
August 31	470.9	2739.9	3100.5	6311.3
September	452.5	3073.2	2800.8	6326.5
October	278.7	2846.5	2541.7	5666.9
November	200.6	2315.5	2079.0	4595.1
December	173.8	1401.3	1787.6	3362.7
January	1.7	559.1	843.1	1403.9
February	4.0	592.0	631.7	1227.7
March	18.0	667.4	638.4	1323.8
April 15	19.4	385.8	247.3	652.5
April 30	0.0	151.1	0.0	151.1
May	5.3	465.3	0.0	470.6
June	31.2	1058.2	411.2	1500.6
July	230.0	1319.3	1639.6	3188.9

**Adjusted for Cross-over**

Source: The 1999-00 third-year critical rule curves from the 1997-98 DOP unless higher than the first or second year critical rule curves.

**Exhibit 4M - Third Critical Rule Curves (SI)**

(End-of-Month Usable Storage Content in hm<sup>3</sup>)

<u>Month</u>	<u>Duncan</u>	<u>Arrow</u>	<u>Mica</u>	<u>Total</u>
August 15	978.64	6035.03	7585.44	14599.11
August 31	1152.10	6703.44	7585.68	15441.23
September	1107.09	7518.89	6852.44	15478.41
October	681.87	6964.25	6218.52	13864.64
November	490.79	5665.10	5086.48	11242.37
December	425.22	3428.42	4373.54	8227.18
January	4.16	1367.89	2062.73	3434.78
February	9.79	1448.39	1545.52	3003.69
March	44.04	1632.86	1561.91	3238.81
April 15	47.46	943.90	605.04	1596.41
April 30	0.00	369.68	0.00	369.68
May	12.97	1138.40	0.00	1151.37
June	76.33	2588.99	1006.04	3671.37
July	562.72	3227.80	4011.45	7801.96

Adjusted for Cross-over

Source: The 1999-00 third-year critical rule curves from the 1997-98 DOP unless higher than the first or second year critical rule curves.

### Exhibit 5 - Fourth Critical Rule Curves (English)

(End-of-Month Usable Storage Content in KSFD)

<u>Month</u>	<u>Duncan</u>	<u>Arrow</u>	<u>Mica</u>	<u>Total</u>
August 15	183.0	1057.4	2122.2	3362.6
August 31	108.9	979.6	2110.0	3198.5
September	170.0	1124.0	1611.8	2905.8
October	60.0	1264.4	816.4	2140.8
November	53.0	783.9	348.3	1185.2
December	1.0	239.0	39.3	279.3
January	0.0	0.0	0.0	0.0
February	0.0	0.0	0.0	0.0

Source: The 1999-00 fourth-year critical rule curves from the 1996-97 DOP unless higher than the first, second, or third year critical rule curves.

### **Exhibit 5M - Fourth Critical Rule Curves (SI)**

(End-of-Month Usable Storage Content in hm<sup>3</sup>)

<b><u>Month</u></b>	<b><u>Duncan</u></b>	<b><u>Arrow</u></b>	<b><u>Mica</u></b>	<b><u>Total</u></b>
August 15	447.73	2587.03	5192.17	8226.94
August 31	266.43	2396.69	5162.33	7825.45
September	415.92	2749.98	3943.43	7109.33
October	146.80	3093.48	1997.40	5237.68
November	129.67	1917.89	852.15	2899.71
December	2.45	584.74	96.15	683.34
January	0.00	0.00	0.00	0.00
February	0.00	0.00	0.00	0.00

Source: The 1999-00 fourth-year critical rule curves from the 1996-97 DOP unless higher than the first, second, or third year critical rule curves.

## **Exhibit 6 - Lower Limit for Operating Rule Curve (English)**

(End-of-Month Usable Storage Contents in KSFD)

<b><u>Month</u></b>	<b><u>Duncan</u></b>	<b><u>Arrow</u></b>	<b><u>Mica</u></b>	<b><u>Libby</u></b>
January	1.0	312.4	497.0	815.3
February	0.4	280.8	313.0	405.1
March	3.4	147.8	147.3	129.7
April 15	0.9	20.8	14.6	25.1

Source: ECC Lower Limits for Duncan, Arrow, Mica and Libby are from the 1999-00 AOP study.

**Exhibit 6M - Lower Limit for Operating Rule Curve (SI)**

(End-of-Month Usable Storage Contents in hm<sup>3</sup>)

<u>Month</u>	<u>Duncan</u>	<u>Arrow</u>	<u>Mica</u>	<u>Libby</u>
January	2.45	764.32	1215.96	1994.71
February	0.98	687.01	765.79	991.12
March	8.32	361.61	360.38	317.32
April 15	2.20	50.89	35.72	61.41

Source: ECC Lower Limits for Duncan, Arrow, Mica and Libby are from 1999-00 AOP.

## Exhibit 7 - Variable Refill Curve Procedures (English)

The Variable Refill Curves (VRC) indicate the end-of-month storage content required to refill Canadian storage based on forecasts of natural inflow volume. The probable forecast volume at each reservoir is reduced by deducting the 95 percent confidence forecast error, Power Discharge Requirements (PDR), and water required for refill at upstream reservoirs. The 1999-00 AOP studies made for the U.S. Coordinated System operation indicate that the PDR's for all cyclic reservoirs must be greater than project minimum release to allow filling in accordance with the Principles and Procedures coincident with carrying system firm load when the Columbia River at The Dalles natural January-July runoff volume is lower than 95 million acre-feet. The following schedule for PDR's will apply when computing the VRC's during the period January 1 through June 1, unless the Operating Committee agrees to updated study results.

**POWER DISCHARGE REQUIREMENT, IN CFS  
FOR JANUARY-JULY VOLUME RUNOFF  
OF THE COLUMBIA RIVER AT THE DALLES, OREGON**

Project	Jan	Feb	Mar	Ap1	Ap2	May	Jun	Jul
<b>Mica PDRs</b>								
ARC	15000	25000	25000	33000	33000	35000	40000	44000
80 MAF	3000	22000	22000	30000	30000	35000	35000	43000
95 MAF	3000	22000	22000	26000	26000	26000	33000	43200
110 MAF	3000	18000	18000	22000	22000	25000	25000	35000
<b>Arrow PDRs</b>								
ARC	5000	35000	35000	38000	40000	48000	55000	65000
80 MAF	5000	35000	40000	45000	45000	48000	48000	48000
95 MAF	5000	7000	10000	10000	13000	13000	14000	42000
110 MAF	5000	7000	10000	10000	12000	12000	13000	41000
<b>Duncan PDRs</b>								
ARC	100	500	1500	1500	1700	1700	1700	1700
80 MAF	100	500	1500	1500	2500	2500	2500	2500
95 MAF	100	300	300	500	500	800	800	800
110 MAF	100	300	300	500	500	800	800	800
<b>Libby PDRs</b>								
ARC	4000	4000	4000	4000	4000	6000	8000	8000
80 MAF	4000	8000	8000	8000	10000	12000	12000	12000
95 MAF	4000	5000	5000	5000	5000	5500	5500	5500
110 MAF	4000	4000	5000	5000	5000	5500	5500	5500

**Notes:**

- (1) If the forecasted natural January through July volume runoff at The Dalles is less than 80 MAF, the Power Discharge Requirement in the 80 MAF schedule will be used. For intermediate forecasted volumes, the Power Discharge Requirement will be interpolated linearly between the values shown above.
- (2) Data is from the 1999-00 AOP for Libby and Canadian projects. Data may be revised upon completion of the operating committee refill studies. The Canadian entity reserves the right to request changes to the revised data.

## **Exhibit 7M - Variable Refill Curve Procedures (SI)**

The Variable Refill Curves (VRC) indicate the end-of-month storage content required to refill Canadian storage based on forecasts of natural inflow volume. The probable forecast volume at each reservoir is reduced by deducting the 95 percent confidence forecast error, Power Discharge Requirements (PDR), and water required for refill at upstream reservoirs. The 1999-00 AOP studies made for the U.S. Coordinated System operation indicate that the PDR's for all cyclic reservoirs must be greater than project minimum release to allow filling in accordance with the Principles and Procedures coincident with carrying system firm load when the Columbia River at The Dalles natural January-July runoff volume is lower than 117.2 km<sup>3</sup>. The following schedule for PDR's will apply when computing the VRC's during the period January 1 through June 1, unless the Operating Committee agrees to the updated study results.

### **POWER DISCHARGE REQUIREMENT, IN M<sup>3</sup>/S FOR JANUARY-JULY VOLUME RUNOFF OF THE COLUMBIA RIVER AT THE DALLES, OREGON**

Project	Jan	Feb	Mar	Ap1	Ap2	May	Jun	Jul
<b>Mica PDRs</b>								
ARC	424.75	707.92	707.92	934.46	934.46	991.09	1132.67	1245.94
98.7 km <sup>3</sup>	84.95	622.97	622.97	849.50	849.50	991.09	991.09	1217.62
117.2 km <sup>3</sup>	84.95	622.97	622.97	736.24	736.24	736.24	934.46	1223.29
135.7 km <sup>3</sup>	84.95	509.70	509.70	622.97	622.97	707.92	707.92	991.09
<b>Arrow PDRs</b>								
ARC	141.58	991.09	991.09	1076.04	1132.67	1359.21	1557.43	1840.59
98.7 km <sup>3</sup>	141.58	991.09	1132.67	1274.26	1274.26	1359.21	1359.21	1359.21
117.2 km <sup>3</sup>	141.58	198.22	283.17	283.17	368.12	368.12	396.44	1189.31
135.7 km <sup>3</sup>	141.58	198.22	283.17	283.17	339.80	339.80	368.12	1160.99
<b>Duncan PDRs</b>								
ARC	2.83	14.16	42.48	42.48	48.14	48.14	48.14	48.14
98.7 km <sup>3</sup>	2.83	14.16	42.48	42.48	70.79	70.79	70.79	70.79
117.2 km <sup>3</sup>	2.83	8.50	8.50	14.16	14.16	22.65	22.65	22.65
135.7 km <sup>3</sup>	2.83	8.50	8.50	14.16	14.16	22.65	22.65	22.65
<b>Libby PDRs</b>								
ARC	113.27	113.27	113.27	113.27	113.27	169.90	226.53	226.53
98.7 km <sup>3</sup>	113.27	226.53	226.53	226.53	283.17	339.80	339.80	339.80
117.2 km <sup>3</sup>	113.27	141.58	141.58	141.58	141.58	155.74	155.74	155.74
135.7 km <sup>3</sup>	113.27	113.27	141.58	141.58	141.58	155.74	155.74	155.74

**Notes:**

(1) If the forecasted natural January through July volume runoff at The Dalles is less than 98.7 km<sup>3</sup>, the Power Discharge Requirement in the 98.7 km<sup>3</sup> schedule will be used. For intermediate forecasted volumes, the Power Discharge Requirement will be interpolated linearly between the values shown above.

(2) Data is from the 1999-00 AOP for Libby and Canadian projects. Data may be revised upon completion of the operating committee refill studies. The Canadian entity reserves the right to request changes to the revised data.

**Exhibit 8 - Libby Critical and Assured Refill Curves (English) 1/**

(End-of-Month Usable Storage Content in KSFD)

**Rule Curves Used in AOP00 Hydroregulation Studies (2)**

<u>Month</u>	<b>Critical Rule Curves (CRCs)</b>				<b>Assured Refill Curve (3)</b>
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>	
August 15	2510.5	2507.1	2507.1	1209.2	1777.2
August 31	2510.5	2508.7	2409.3	1221.3	1825.8
September	2447.7	2396.7	2396.7	1233.0	1861.2
October	2510.1	2353.8	2353.8	1197.0	1858.1
November	2107.2	2061.9	2061.9	1055.0	1829.9
December	1502.4	1502.1	1501.0	480.0	1779.4
January	1446.8	1339.4	1339.4	104.6	1728.9
February	1402.5	1303.9	834.9	0	1677.1
March	1357.4	1099.1	575.0	0	1624.7
April 15	1186.8	1112.6	449.7	0	1610.4
April 30	1188.0	1188.0	446.9	0	1607.7
May	1526.5	1526.5	860.0	0	1999.9
June	2441.2	2359.1	968.0	0	2425.9
July	2510.5	2510.5	1176.6	0	2510.5
Source	1999-00 AOP (1 <sup>st</sup> yr)	1999-00 AOP (2nd yr)	1999-00 AOP (3rd yr)	1999-00 AOP (4th yr)	1999-00 AOP

Adjusted for Cross-over

1. These rule curves are from the hydroregulation studies used to develop AOP00 and will be used in the TSR00 study. The Canadian Entity considers the Libby rule curves developed in the AOP hydroregulation studies to be the appropriate rule curves to be used in the determination of the Libby project operation.
2. The U.S. Entity does not agree that the AOP rule curves are appropriate to determine the operation of Libby.
3. This Assured Refill Curve was determined using Power Discharge Requirements (PDRs) and 1990 Level Modified Streamflows from the 1999-00 AOP.

## Exhibit 8M - Libby Critical and Assured Refill Curves (SI) 1/

(End-of-Month Usable Storage Content in hm<sup>3</sup>)

### Rule Curves Used in AOP00 Hydroregulation Studies (2)

<u>Month</u>	<b>Critical Rule Curves (CRCs)</b>				<b>Assured Refill Curve (3)</b>
	<b>1st</b>	<b>2nd</b>	<b>3rd</b>	<b>4th</b>	
August 15	6142.19	6133.87	6133.87	2958.43	4348.05
August 31	6142.19	6137.79	5894.59	2988.03	4467.05
September	5988.54	5863.77	5863.77	3016.66	4553.66
October	6141.21	5758.81	5758.81	2928.58	4546.08
November	5155.48	5044.64	5044.64	2581.16	4477.08
December	3675.77	3675.04	3672.35	1174.37	4353.46
January	3539.74	3276.98	3276.98	255.91	4229.83
February	3431.36	3190.12	2042.67	0.00	4103.09
March	3321.01	2689.06	1406.80	0.00	3974.92
April 15	2903.62	2722.09	1100.24	0.00	3940.05
April 30	2906.56	2906.56	1093.39	0.00	3933.45
May	3734.73	3734.73	2104.08	0.00	4892.88
June	5972.64	5771.77	2368.31	0.00	5935.13
July	6142.19	6142.19	2878.67	0.00	6142.19
Source	1999-00 AOP (1st yr)	1999-00 AOP (2nd yr)	1999-00 AOP (3rd yr)	1999-00 AOP (4 <sup>th</sup> yr)	1999-00 AOP

Adjusted for Cross-over

Notes:

- These rule curves are from the hydroregulation studies used to develop AOP00 and will be used in the TSR00 study. The Canadian Entity considers the Libby rule curves developed in the AOP hydroregulation studies to be the appropriate rule curves to be used in the determination of the Libby project operation.
- The U.S. Entity does not agree that the AOP rule curves are appropriate to determine the operation of Libby.
- This Assured Refill Curve was determined using Power Discharge Requirements (PDRs) and 1990 Level Modified Streamflows from the 1999-00 AOP.

**Exhibit 9 - Coordinated System Loads and Resources used in the TSR**

(ENERGY IN AVERAGE MW)

LOADS		RESOURCES						Regulated Hydro Load
Period	Total	Hydro	Imports	Thermal	Combst.	Misc.	Total	
	Loads 1/	Indep. 2/	3/ (large & small)	Turbine	4/			
August 15	20854	1180	1281	4594	1877	2067	10999	9854.9
August 31	20771	1171	1209	4594	1793	2067	10834	9937.2
September	20189	1099	1137	4594	1763	2022	10615	9574.0
October	20655	1156	1183	4594	1999	2005	10937	9717.5
November	22706	1318	1726	4600	1942	1998	11584	11121.9
December	24341	1308	1928	4600	1995	2008	11839	12501.7
January	25301	1282	1880	4600	1999	2017	11778	13523.4
February	23871	1143	1818	4600	1999	1981	11541	12329.6
March	22648	1181	1320	4407	1827	2041	10776	11871.8
April 15	21367	1446	1089	4060	1796	2069	10460	10906.7
April 30	21466	1473	1027	3343	1137	1978	8958	12507.7
May	24851	1730	749	2153	1404	1508	7544	17307.0
June	25096	1629	1222	3948	1653	1996	10448	14647.8
July	21069	1316	1332	4594	1901	2092	11235	9834.2

## Notes:

- 1/ The total loads as the sum of PNW Area load, firm exports, maintenance, and firm surplus.  
 2/ Based on the 50-year average.  
 3/ Imports include 118.2 average annual MW of seasonal exchanges.  
 4/ Miscellaneous resources include purpa, cogeneration, renewable, and energy management system.

Source: Loads and resources are from the 1999-00 AOP DDPB Document, Table 1A, Regulated Hydro Load plus Other Coordination Hydro.

**Exhibit 10 - Second Critical Rule Curves for OY 00-01 (English)**

(End-of-Month Usable Storage Content in KSFD)

<u>Month</u>	<u>Duncan</u>	<u>Arrow</u>	<u>Mica</u>	<u>Total</u>
August 15	635.7	3524.7	3276.4	7436.8
August 31	657.8	3417.1	3346.6	7421.5
September	676.1	3367.9	3104.2	7148.2
October	559.6	2851.6	2810.3	6221.5
November	342.6	2325.7	2256.8	4925.1
December	241.8	1820.1	1816.5	3878.4
January	122.4	695.2	868.4	1686.0
February	128.0	786.5	860.7	1775.2
March	50.0	890.4	851.7	1792.1
April 15	36.5	471.1	538.3	1045.9
April 30	59.8	381.2	405.1	846.1
May	13.0	468.1	172.1	653.2
June	170.0	1058.2	996.9	2225.1
July	387.6	2142.5	2800.7	5330.8

Source: These rule curves are from the 1999-00 2nd year AOP study.

**Exhibit 10M - Second Critical Rule Curves for OY 00-01 (SI)**(End-of-Month Usable Storage Content in hm<sup>3</sup>)

<u>Month</u>	<u>Duncan</u>	<u>Arrow</u>	<u>Mica</u>	<u>Total</u>
August 15	1555.30	8623.53	8016.04	18194.87
August 31	1609.37	8360.28	8187.79	18157.44
September	1654.15	8239.90	7594.74	17488.79
October	1369.12	6976.72	6875.68	15221.52
November	838.21	5690.06	5521.49	12049.75
December	591.59	4453.06	4444.25	9488.89
January	299.46	1700.88	2124.63	4124.97
February	313.16	1924.25	2105.79	4343.20
March	122.33	2178.45	2083.77	4384.55
April 15	89.30	1152.59	1317.00	2558.90
April 30	146.31	932.64	991.12	2070.07
May	31.81	1145.25	421.06	1598.12
June	415.92	2588.99	2439.02	5443.93
July	948.30	5241.84	6852.19	13042.34

Source: These rule curves are from 1999-00 2nd year AOP study.

**Exhibit 11 - Third Critical Rule Curves for OY 01-02 (English)**

(End-of-Month Usable Storage Content in KSFD)

<b><u>Month</u></b>	<b><u>Duncan</u></b>	<b><u>Arrow</u></b>	<b><u>Mica</u></b>	<b><u>Total</u></b>
August 15	400.0	2466.7	3100.4	5967.1
August 31	470.9	2739.9	3100.5	6311.3
September	452.5	3073.2	2800.8	6326.5
October	278.7	2846.5	2541.7	5666.9
November	200.6	2315.5	2079.0	4595.1
December	173.8	1401.3	1787.6	3362.7
January	1.7	559.1	843.1	1403.9
February	4.0	592.0	631.7	1227.7
March	18.0	667.4	638.4	1323.8
April 15	19.4	385.8	247.3	652.5
April 30	0.0	151.1	0.0	151.1
May	5.3	486.6	0.0	491.9
June	31.2	1342.1	411.2	1784.5
July	230.0	1319.3	1639.6	3188.9

Source: These rule curves are from the 1999-00 3rd year AOP study.

**Exhibit 11M - Third Critical Rule Curves for OY 01-02 (SI)**(End-of-Month Usable Storage Content in hm<sup>3</sup>)

<u>Month</u>	<u>Duncan</u>	<u>Arrow</u>	<u>Mica</u>	<u>Total</u>
August 15	978.64	6035.03	7585.44	14599.11
August 31	1152.10	6703.44	7585.68	15441.23
September	1107.09	7518.89	6852.44	15478.41
October	681.87	6964.25	6218.52	13864.64
November	490.79	5665.10	5086.48	11242.37
December	425.22	3428.42	4373.54	8227.18
January	4.16	1367.89	2062.73	3434.78
February	9.79	1448.39	1545.52	3003.69
March	44.04	1632.86	1561.91	3238.81
April 15	47.46	943.90	605.04	1596.41
April 30	0.00	369.68	0.00	369.68
May	12.97	1190.52	0.00	1203.48
June	76.33	3283.58	1006.04	4365.96
July	562.72	3227.80	4011.45	7801.96

Source: These rule curves are from 1999-00 3rd year AOP study.

**Exhibit 12 - Fourth Critical Rule Curves for OY 02-03 (English)**

(End-of-Month Usable Storage Content in KSFD)

<u>Month</u>	<u>Duncan</u>	<u>Arrow</u>	<u>Mica</u>	<u>Total</u>
August 15	183.0	1057.4	2122.2	3362.6
August 31	108.9	979.6	2110.0	3198.5
September	170.0	1124.0	1611.8	2905.8
October	60.0	1264.4	816.4	2140.8
November	53.0	783.9	348.3	1185.2
December	1.0	239.0	39.3	279.3
January	0.0	0.0	0.0	0.0
February	0.0	0.0	0.0	0.0
March	0.0	0.0	0.0	0.0
April 15	0.0	0.0	0.0	0.0
April 30	0.0	0.0	0.0	0.0
May	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0

Source: These rule curves are from the 1999-00 4th year AOP study.

**Exhibit 12M - Fourth Critical Rule Curves for OY 02-03 (SI)**(End-of-Month Usable Storage Content in hm<sup>3</sup>)

<u>Month</u>	<u>Duncan</u>	<u>Arrow</u>	<u>Mica</u>	<u>Total</u>
August 15	447.73	2587.03	5192.17	8226.94
August 31	266.43	2396.69	5162.33	7825.45
September	415.92	2749.98	3943.43	7109.33
October	146.80	3093.48	1997.40	5237.68
November	129.67	1917.89	852.15	2899.71
December	2.45	584.74	96.15	683.34
January	0.00	0.00	0.00	0.00
February	0.00	0.00	0.00	0.00
March	0.00	0.00	0.00	0.00
April 15	0.00	0.00	0.00	0.00
April 30	0.00	0.00	0.00	0.00
May	0.00	0.00	0.00	0.00
June	0.00	0.00	0.00	0.00
July	0.00	0.00	0.00	0.00

Source: These rule curves are from 1999-00 4th year AOP study.

**Detailed Operating Plan for 1999-00**

**Exhibit 13 - DUNCAN RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
1892.	705.8										
1891.	696.9	697.8	698.7	699.6	700.5	701.3	702.2	703.1	704.0	704.9	0.89
1890.	688.0	688.9	689.8	690.7	691.6	692.4	693.3	694.2	695.1	696.0	0.89
1889.	679.2	680.1	681.0	681.8	682.7	683.6	684.5	685.4	686.2	687.1	0.88
1888.	670.4	671.3	672.2	673.0	673.9	674.8	675.7	676.6	677.4	678.3	0.88
1887.	661.5	662.4	663.3	664.2	665.1	665.9	666.8	667.7	668.6	669.5	0.89
1886.	652.8	653.7	654.5	655.4	656.3	657.1	658.0	658.9	659.8	660.6	0.87
1885.	644.0	644.9	645.8	646.6	647.5	648.4	649.3	650.2	651.0	651.9	0.88
1884.	635.3	636.2	637.0	637.9	638.8	639.6	640.5	641.4	642.3	643.1	0.87
1883.	626.6	627.5	628.3	629.2	630.1	630.9	631.8	632.7	633.6	634.4	0.87
1882.	617.9	618.8	619.6	620.5	621.4	622.2	623.1	624.0	624.9	625.7	0.87
1881.	609.2	610.1	610.9	611.8	612.7	613.5	614.4	615.3	616.2	617.0	0.87
1880.	600.6	601.5	602.3	603.2	604.0	604.9	605.8	606.6	607.5	608.3	0.86
1879.	592.0	592.9	593.7	594.6	595.4	596.3	597.2	598.0	598.9	599.7	0.86
1878.	583.4	584.3	585.1	586.0	586.8	587.7	588.6	589.4	590.3	591.1	0.86
1877.	574.8	575.7	576.5	577.4	578.2	579.1	580.0	580.8	581.7	582.5	0.86
1876.	566.3	567.1	568.0	568.8	569.7	570.5	571.4	572.2	573.1	573.9	0.85
1875.	557.8	558.6	559.5	560.3	561.2	562.0	562.9	563.7	564.6	565.4	0.85
1874.	549.3	550.1	551.0	551.8	552.7	553.5	554.4	555.2	556.1	556.9	0.85
1873.	540.9	541.7	542.6	543.4	544.3	545.1	545.9	546.8	547.6	548.5	0.84
1872.	532.4	533.2	534.1	534.9	535.8	536.6	537.5	538.3	539.2	540.0	0.85
1871.	524.0	524.8	525.7	526.5	527.4	528.2	529.0	529.9	530.7	531.6	0.84
1870.	515.7	516.5	517.4	518.2	519.0	519.8	520.7	521.5	522.3	523.2	0.83

**Detailed Operating Plan for 1999-00**

**Exhibit 13 - DUNCAN RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
1869.	507.3	508.1	509.0	509.8	510.7	511.5	512.3	513.2	514.0	514.9	0.84
1868.	499.0	499.8	500.7	501.5	502.3	503.1	504.0	504.8	505.6	506.5	0.83
1867.	490.7	491.5	492.4	493.2	494.0	494.8	495.7	496.5	497.3	498.2	0.83
1866.	482.4	483.2	484.1	484.9	485.7	486.5	487.4	488.2	489.0	489.9	0.83
1865.	474.2	475.0	475.8	476.7	477.5	478.3	479.1	479.9	480.8	481.6	0.82
1864.	466.0	466.8	467.6	468.5	469.3	470.1	470.9	471.7	472.6	473.4	0.82
1863.	457.8	458.6	459.4	460.3	461.1	461.9	462.7	463.5	464.4	465.2	0.82
1862.	449.7	450.5	451.3	452.1	452.9	453.7	454.6	455.4	456.2	457.0	0.81
1861.	441.6	442.4	443.2	444.0	444.8	445.6	446.5	447.3	448.1	448.9	0.81
1860.	433.5	434.3	435.1	435.9	436.7	437.5	438.4	439.2	440.0	440.8	0.81
1859.	425.4	426.2	427.0	427.8	428.6	429.4	430.3	431.1	431.9	432.7	0.81
1858.	417.4	418.2	419.0	419.8	420.6	421.4	422.2	423.0	423.8	424.6	0.80
1857.	409.4	410.2	411.0	411.8	412.6	413.4	414.2	415.0	415.8	416.6	0.80
1856.	401.4	402.2	403.0	403.8	404.6	405.4	406.2	407.0	407.8	408.6	0.80
1855.	393.5	394.3	395.1	395.9	396.7	397.4	398.2	399.0	399.8	400.6	0.79
1854.	385.6	386.4	387.2	388.0	388.8	389.5	390.3	391.1	391.9	392.7	0.79
1853.	377.7	378.5	379.3	380.1	380.9	381.6	382.4	383.2	384.0	384.8	0.79
1852.	369.9	370.7	371.5	372.2	373.0	373.8	374.6	375.4	376.1	376.9	0.78
1851.	362.1	362.9	363.7	364.4	365.2	366.0	366.8	367.6	368.3	369.1	0.78
1850.	354.3	355.1	355.9	356.6	357.4	358.2	359.0	359.8	360.5	361.3	0.78
1849.	346.6	347.4	348.1	348.9	349.7	350.4	351.2	352.0	352.8	353.5	0.77
1848.	338.9	339.7	340.4	341.2	342.0	342.7	343.5	344.3	345.1	345.8	0.77
1847.	331.2	332.0	332.7	333.5	334.3	335.0	335.8	336.6	337.4	338.1	0.77
1846.	323.6	324.4	325.1	325.9	326.6	327.4	328.2	328.9	329.7	330.4	0.76
1845.	316.0	316.8	317.5	318.3	319.0	319.8	320.6	321.3	322.1	322.8	0.76

**Detailed Operating Plan for 1999-00**

**Exhibit 13 - DUNCAN RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
1844.	308.5	309.2	310.0	310.7	311.5	312.2	313.0	313.7	314.5	315.2	0.75
1843.	300.9	301.7	302.4	303.2	303.9	304.7	305.5	306.2	307.0	307.7	0.76
1842.	293.5	294.2	295.0	295.7	296.5	297.2	297.9	298.7	299.4	300.2	0.74
1841.	286.0	286.7	287.5	288.2	289.0	289.7	290.5	291.2	292.0	292.7	0.75
1840.	278.6	279.3	280.1	280.8	281.6	282.3	283.0	283.8	284.5	285.3	0.74
1839.	271.2	271.9	272.7	273.4	274.2	274.9	275.6	276.4	277.1	277.9	0.74
1838.	263.9	264.6	265.4	266.1	266.8	267.5	268.3	269.0	269.7	270.5	0.73
1837.	256.6	257.3	258.1	258.8	259.5	260.2	261.0	261.7	262.4	263.2	0.73
1836.	249.4	250.1	250.8	251.6	252.3	253.0	253.7	254.4	255.2	255.9	0.72
1835.	242.2	242.9	243.6	244.4	245.1	245.8	246.5	247.2	248.0	248.7	0.72
1834.	235.0	235.7	236.4	237.2	237.9	238.6	239.3	240.0	240.8	241.5	0.72
1833.	227.9	228.6	229.3	230.0	230.7	231.4	232.2	232.9	233.6	234.3	0.71
1832.	220.8	221.5	222.2	222.9	223.6	224.3	225.1	225.8	226.5	227.2	0.71
1831.	213.8	214.5	215.2	215.9	216.6	217.3	218.0	218.7	219.4	220.1	0.70
1830.	206.8	207.5	208.2	208.9	209.6	210.3	211.0	211.7	212.4	213.1	0.70
1829.	199.9	200.6	201.3	202.0	202.7	203.3	204.0	204.7	205.4	206.1	0.69
1828.	193.0	193.7	194.4	195.1	195.8	196.4	197.1	197.8	198.5	199.2	0.69
1827.	186.1	186.8	187.5	188.2	188.9	189.5	190.2	190.9	191.6	192.3	0.69
1826.	179.3	180.0	180.7	181.3	182.0	182.7	183.4	184.1	184.7	185.4	0.68
1825.	172.6	173.3	173.9	174.6	175.3	175.9	176.6	177.3	178.0	178.6	0.67
1824.	165.9	166.6	167.2	167.9	168.6	169.2	169.9	170.6	171.3	171.9	0.67
1823.	159.2	159.9	160.5	161.2	161.9	162.5	163.2	163.9	164.6	165.2	0.67
1822.	152.6	153.3	153.9	154.6	155.2	155.9	156.6	157.2	157.9	158.5	0.66
1821.	146.1	146.7	147.4	148.0	148.7	149.3	150.0	150.6	151.3	151.9	0.65
1820.	139.6	140.2	140.9	141.5	142.2	142.8	143.5	144.1	144.8	145.4	0.65

**Detailed Operating Plan for 1999-00**

**Exhibit 13 - DUNCAN RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
1819.	133.2	133.8	134.5	135.1	135.8	136.4	137.0	137.7	138.3	139.0	0.64
1818.	126.8	127.4	128.1	128.7	129.4	130.0	130.6	131.3	131.9	132.6	0.64
1817.	120.5	121.1	121.8	122.4	123.0	123.6	124.3	124.9	125.5	126.2	0.63
1816.	114.3	114.9	115.5	116.2	116.8	117.4	118.0	118.6	119.3	119.9	0.62
1815.	108.1	108.7	109.3	110.0	110.6	111.2	111.8	112.4	113.1	113.7	0.62
1814.	102.0	102.6	103.2	103.8	104.4	105.0	105.7	106.3	106.9	107.5	0.61
1813.	96.0	96.6	97.2	97.8	98.4	99.0	99.6	100.2	100.8	101.4	0.60
1812.	90.0	90.6	91.2	91.8	92.4	93.0	93.6	94.2	94.8	95.4	0.60
1811.	84.1	84.7	85.3	85.9	86.5	87.0	87.6	88.2	88.8	89.4	0.59
1810.	78.3	78.9	79.5	80.0	80.6	81.2	81.8	82.4	82.9	83.5	0.58
1809.	72.5	73.1	73.7	74.2	74.8	75.4	76.0	76.6	77.1	77.7	0.58
1808.	66.9	67.5	68.0	68.6	69.1	69.7	70.3	70.8	71.4	71.9	0.56
1807.	61.3	61.9	62.4	63.0	63.5	64.1	64.7	65.2	65.8	66.3	0.56
1806.	55.8	56.3	56.9	57.4	58.0	58.5	59.1	59.6	60.2	60.7	0.55
1805.	50.4	50.9	51.5	52.0	52.6	53.1	53.6	54.2	54.7	55.3	0.54
1804.	45.1	45.6	46.2	46.7	47.2	47.7	48.3	48.8	49.3	49.9	0.53
1803.	39.9	40.4	40.9	41.5	42.0	42.5	43.0	43.5	44.1	44.6	0.52
1802.	34.8	35.3	35.8	36.3	36.8	37.3	37.9	38.4	38.9	39.4	0.51
1801.	29.8	30.3	30.8	31.3	31.8	32.3	32.8	33.3	33.8	34.3	0.50
1800.	25.0	25.5	26.0	26.4	26.9	27.4	27.9	28.4	28.8	29.3	0.48
1799.	20.3	20.8	21.2	21.7	22.2	22.6	23.1	23.6	24.1	24.5	0.47
1798.	15.7	16.2	16.6	17.1	17.5	18.0	18.5	18.9	19.4	19.8	0.46
1797.	11.3	11.7	12.2	12.6	13.1	13.5	13.9	14.4	14.8	15.3	0.44
1796.	7.1	7.5	7.9	8.4	8.8	9.2	9.6	10.0	10.5	10.9	0.42
1795.	3.0	3.4	3.8	4.2	4.6	5.0	5.5	5.9	6.3	6.7	0.41
1794.			0.0	0.4	0.8	1.1	1.5	1.9	2.3	2.6	0.37

**Detailed Operating Plan for 1999-00**

**Exhibit 13M - DUNCAN RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	
576.68	1726.8										
576.38	1705.0	1707.2	1709.4	1711.6	1713.8	1715.8	1718.0	1720.2	1722.4	1724.6	2.18
576.07	1683.3	1685.5	1687.7	1689.9	1692.1	1694.0	1696.2	1698.4	1700.6	1702.8	2.18
575.77	1661.7	1663.9	1666.1	1668.1	1670.3	1672.5	1674.7	1676.9	1678.9	1681.1	2.15
575.46	1640.2	1642.4	1644.6	1646.6	1648.8	1651.0	1653.2	1655.4	1657.3	1659.5	2.15
575.16	1618.4	1620.6	1622.8	1625.0	1627.2	1629.2	1631.4	1633.6	1635.8	1638.0	2.18
574.85	1597.1	1599.3	1601.3	1603.5	1605.7	1607.7	1609.9	1612.1	1614.3	1616.2	2.13
574.55	1575.6	1577.8	1580.0	1582.0	1584.2	1586.4	1588.6	1590.8	1592.7	1594.9	2.15
574.24	1554.3	1556.5	1558.5	1560.7	1562.9	1564.8	1567.0	1569.2	1571.5	1573.4	2.13
573.94	1533.0	1535.2	1537.2	1539.4	1541.6	1543.6	1545.8	1548.0	1550.2	1552.1	2.13
573.63	1511.8	1514.0	1515.9	1518.1	1520.3	1522.3	1524.5	1526.7	1528.9	1530.8	2.13
573.33	1490.5	1492.7	1494.6	1496.8	1499.0	1501.0	1503.2	1505.4	1507.6	1509.6	2.13
573.03	1469.4	1471.6	1473.6	1475.8	1477.7	1479.9	1482.2	1484.1	1486.3	1488.3	2.10
572.72	1448.4	1450.6	1452.5	1454.7	1456.7	1458.9	1461.1	1463.1	1465.3	1467.2	2.10
572.42	1427.3	1429.5	1431.5	1433.7	1435.7	1437.9	1440.1	1442.0	1444.2	1446.2	2.10
572.11	1406.3	1408.5	1410.5	1412.7	1414.6	1416.8	1419.0	1421.0	1423.2	1425.1	2.10
571.81	1385.5	1387.5	1389.7	1391.6	1393.8	1395.8	1398.0	1399.9	1402.1	1404.1	2.08
571.50	1364.7	1366.7	1368.9	1370.8	1373.0	1375.0	1377.2	1379.1	1381.4	1383.3	2.08
571.20	1343.9	1345.9	1348.1	1350.0	1352.2	1354.2	1356.4	1358.4	1360.6	1362.5	2.08
570.89	1323.4	1325.3	1327.5	1329.5	1331.7	1333.6	1335.6	1337.8	1339.8	1342.0	2.06
570.59	1302.6	1304.5	1306.7	1308.7	1310.9	1312.8	1315.0	1317.0	1319.2	1321.2	2.08
570.28	1282.0	1284.0	1286.2	1288.1	1290.3	1292.3	1294.3	1296.5	1298.4	1300.6	2.06
569.98	1261.7	1263.7	1265.9	1267.8	1269.8	1271.7	1273.9	1275.9	1277.9	1280.1	2.03

**Detailed Operating Plan for 1999-00**

**Exhibit 13M - DUNCAN RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	
569.67	1241.2	1243.1	1245.3	1247.3	1249.5	1251.4	1253.4	1255.6	1257.6	1259.8	2.06
569.37	1220.9	1222.8	1225.0	1227.0	1228.9	1230.9	1233.1	1235.0	1237.0	1239.2	2.03
569.06	1200.5	1202.5	1204.7	1206.7	1208.6	1210.6	1212.8	1214.7	1216.7	1218.9	2.03
568.76	1180.2	1182.2	1184.4	1186.4	1188.3	1190.3	1192.5	1194.4	1196.4	1198.6	2.03
568.45	1160.2	1162.1	1164.1	1166.3	1168.3	1170.2	1172.2	1174.1	1176.3	1178.3	2.01
568.15	1140.1	1142.1	1144.0	1146.2	1148.2	1150.1	1152.1	1154.1	1156.3	1158.2	2.01
567.84	1120.1	1122.0	1124.0	1126.2	1128.1	1130.1	1132.0	1134.0	1136.2	1138.2	2.01
567.54	1100.2	1102.2	1104.2	1106.1	1108.1	1110.0	1112.2	1114.2	1116.1	1118.1	1.98
567.23	1080.4	1082.4	1084.3	1086.3	1088.2	1090.2	1092.4	1094.4	1096.3	1098.3	1.98
566.93	1060.6	1062.6	1064.5	1066.5	1068.4	1070.4	1072.6	1074.5	1076.5	1078.5	1.98
566.62	1040.8	1042.7	1044.7	1046.7	1048.6	1050.6	1052.8	1054.7	1056.7	1058.6	1.98
566.32	1021.2	1023.2	1025.1	1027.1	1029.0	1031.0	1033.0	1034.9	1036.9	1038.8	1.96
566.01	1001.6	1003.6	1005.6	1007.5	1009.5	1011.4	1013.4	1015.3	1017.3	1019.3	1.96
565.71	982.1	984.0	986.0	987.9	989.9	991.9	993.8	995.8	997.7	999.7	1.96
565.41	962.7	964.7	966.7	968.6	970.6	972.3	974.2	976.2	978.2	980.1	1.93
565.10	943.4	945.4	947.3	949.3	951.2	953.0	954.9	956.9	958.8	960.8	1.93
564.80	924.1	926.0	928.0	930.0	931.9	933.6	935.6	937.5	939.5	941.5	1.93
564.49	905.0	907.0	908.9	910.6	912.6	914.5	916.5	918.5	920.2	922.1	1.91
564.19	885.9	887.9	889.8	891.5	893.5	895.5	897.4	899.4	901.1	903.0	1.91
563.88	866.8	868.8	870.7	872.5	874.4	876.4	878.3	880.3	882.0	884.0	1.91
563.58	848.0	849.9	851.7	853.6	855.6	857.3	859.2	861.2	863.2	864.9	1.88
563.27	829.2	831.1	832.8	834.8	836.7	838.4	840.4	842.4	844.3	846.0	1.88
562.97	810.3	812.3	814.0	815.9	817.9	819.6	821.6	823.5	825.5	827.2	1.88
562.66	791.7	793.7	795.4	797.3	799.1	801.0	803.0	804.7	806.6	808.4	1.86
562.36	773.1	775.1	776.8	778.8	780.5	782.4	784.4	786.1	788.0	789.8	1.86

**Detailed Operating Plan for 1999-00**

**Exhibit 13M - DUNCAN RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	
562.05	754.8	756.5	758.4	760.2	762.1	763.8	765.8	767.5	769.5	771.2	1.83
561.75	736.2	738.1	739.9	741.8	743.5	745.5	747.4	749.1	751.1	752.8	1.86
561.44	718.1	719.8	721.7	723.5	725.4	727.1	728.8	730.8	732.5	734.5	1.81
561.14	699.7	701.4	703.4	705.1	707.1	708.8	710.7	712.4	714.4	716.1	1.83
560.83	681.6	683.3	685.3	687.0	689.0	690.7	692.4	694.3	696.1	698.0	1.81
560.53	663.5	665.2	667.2	668.9	670.9	672.6	674.3	676.2	678.0	679.9	1.81
560.22	645.7	647.4	649.3	651.0	652.8	654.5	656.4	658.1	659.8	661.8	1.79
559.92	627.8	629.5	631.5	633.2	634.9	636.6	638.6	640.3	642.0	643.9	1.79
559.61	610.2	611.9	613.6	615.6	617.3	619.0	620.7	622.4	624.4	626.1	1.76
559.31	592.6	594.3	596.0	597.9	599.7	601.4	603.1	604.8	606.8	608.5	1.76
559.00	575.0	576.7	578.4	580.3	582.0	583.8	585.5	587.2	589.1	590.9	1.76
558.70	557.6	559.3	561.0	562.7	564.4	566.1	568.1	569.8	571.5	573.2	1.74
558.39	540.2	541.9	543.6	545.3	547.1	548.8	550.7	552.4	554.2	555.9	1.74
558.09	523.1	524.8	526.5	528.2	529.9	531.6	533.4	535.1	536.8	538.5	1.71
557.79	506.0	507.7	509.4	511.1	512.8	514.5	516.2	517.9	519.7	521.4	1.71
557.48	489.1	490.8	492.5	494.2	495.9	497.4	499.1	500.8	502.5	504.2	1.69
557.18	472.2	473.9	475.6	477.3	479.0	480.5	482.2	483.9	485.7	487.4	1.69
556.87	455.3	457.0	458.7	460.5	462.2	463.6	465.3	467.1	468.8	470.5	1.69
556.57	438.7	440.4	442.1	443.6	445.3	447.0	448.7	450.4	451.9	453.6	1.66
556.26	422.3	424.0	425.5	427.2	428.9	430.4	432.1	433.8	435.5	437.0	1.64
555.96	405.9	407.6	409.1	410.8	412.5	414.0	415.7	417.4	419.1	420.6	1.64
555.65	389.5	391.2	392.7	394.4	396.1	397.6	399.3	401.0	402.7	404.2	1.64
555.35	373.4	375.1	376.5	378.2	379.7	381.4	383.1	384.6	386.3	387.8	1.61
555.04	357.4	358.9	360.6	362.1	363.8	365.3	367.0	368.5	370.2	371.6	1.59
554.74	341.5	343.0	344.7	346.2	347.9	349.4	351.1	352.6	354.3	355.7	1.59

**Detailed Operating Plan for 1999-00**

**Exhibit 13M - DUNCAN RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	
554.43	325.9	327.4	329.1	330.5	332.2	333.7	335.2	336.9	338.4	340.1	1.57
554.13	310.2	311.7	313.4	314.9	316.6	318.1	319.5	321.2	322.7	324.4	1.57
553.82	294.8	296.3	298.0	299.5	300.9	302.4	304.1	305.6	307.0	308.8	1.54
553.52	279.6	281.1	282.6	284.3	285.8	287.2	288.7	290.2	291.9	293.3	1.52
553.21	264.5	265.9	267.4	269.1	270.6	272.1	273.5	275.0	276.7	278.2	1.52
552.91	249.6	251.0	252.5	254.0	255.4	256.9	258.6	260.1	261.5	263.0	1.49
552.60	234.9	236.3	237.8	239.3	240.7	242.2	243.7	245.1	246.6	248.1	1.47
552.30	220.2	221.7	223.1	224.6	226.1	227.5	229.0	230.5	231.9	233.4	1.47
551.99	205.8	207.2	208.7	210.2	211.6	212.9	214.3	215.8	217.3	218.7	1.44
551.69	191.6	193.0	194.5	195.7	197.2	198.7	200.1	201.6	202.8	204.3	1.42
551.38	177.4	178.8	180.3	181.5	183.0	184.5	185.9	187.4	188.6	190.1	1.42
551.08	163.7	165.1	166.4	167.8	169.1	170.5	172.0	173.2	174.7	175.9	1.37
550.77	150.0	151.4	152.7	154.1	155.4	156.8	158.3	159.5	161.0	162.2	1.37
550.47	136.5	137.7	139.2	140.4	141.9	143.1	144.6	145.8	147.3	148.5	1.35
550.17	123.3	124.5	126.0	127.2	128.7	129.9	131.1	132.6	133.8	135.3	1.32
549.86	110.3	111.6	113.0	114.3	115.5	116.7	118.2	119.4	120.6	122.1	1.30
549.56	97.6	98.8	100.1	101.5	102.8	104.0	105.2	106.4	107.9	109.1	1.27
549.25	85.1	86.4	87.6	88.8	90.0	91.3	92.7	93.9	95.2	96.4	1.25
548.95	72.9	74.1	75.4	76.6	77.8	79.0	80.2	81.5	82.7	83.9	1.22
548.64	61.2	62.4	63.6	64.6	65.8	67.0	68.3	69.5	70.5	71.7	1.17
548.34	49.7	50.9	51.9	53.1	54.3	55.3	56.5	57.7	59.0	59.9	1.15
548.03	38.4	39.6	40.6	41.8	42.8	44.0	45.3	46.2	47.5	48.4	1.13
547.73	27.6	28.6	29.8	30.8	32.1	33.0	34.0	35.2	36.2	37.4	1.08
547.42	17.4	18.3	19.3	20.6	21.5	22.5	23.5	24.5	25.7	26.7	1.03
547.42	17.4	18.3	19.3	20.6	21.5	22.5	23.5	24.5	25.7	26.7	1.03
546.81			0.0	1.0	2.0	2.7	3.7	4.6	5.6	6.4	0.91

Detailed Operating Plan for 1999-00

**Exhibit 14 - ARROW RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
1444.	3579.6										
1443.	3514.1	3520.6	3527.2	3533.7	3540.3	3546.8	3553.4	3559.9	3566.5	3573.0	6.55
1442.	3448.9	3455.4	3461.9	3468.5	3475.0	3481.5	3488.0	3494.5	3501.1	3507.6	6.52
1441.	3384.0	3390.5	3397.0	3403.5	3410.0	3416.4	3422.9	3429.4	3435.9	3442.4	6.49
1440.	3319.5	3325.9	3332.4	3338.8	3345.3	3351.7	3358.2	3364.6	3371.1	3377.5	6.45
1439.	3255.2	3261.6	3268.1	3274.5	3280.9	3287.3	3293.8	3300.2	3306.6	3313.1	6.43
1438.	3191.4	3197.8	3204.2	3210.5	3216.9	3223.3	3229.7	3236.1	3242.4	3248.8	6.38
1437.	3127.8	3134.2	3140.5	3146.9	3153.2	3159.6	3166.0	3172.3	3178.7	3185.0	6.36
1436.	3064.6	3070.9	3077.2	3083.6	3089.9	3096.2	3102.5	3108.8	3115.2	3121.5	6.32
1435.	3001.7	3008.0	3014.3	3020.6	3026.9	3033.1	3039.4	3045.7	3052.0	3058.3	6.29
1434.	2939.2	2945.4	2951.7	2957.9	2964.2	2970.4	2976.7	2982.9	2989.2	2995.4	6.25
1433.	2877.0	2883.2	2889.4	2895.7	2901.9	2908.1	2914.3	2920.5	2926.8	2933.0	6.22
1432.	2815.1	2821.3	2827.5	2833.7	2839.9	2846.0	2852.2	2858.4	2864.6	2870.8	6.19
1431.	2753.5	2759.7	2765.8	2772.0	2778.1	2784.3	2790.5	2796.6	2802.8	2808.9	6.16
1430.	2692.3	2698.4	2704.5	2710.7	2716.8	2722.9	2729.0	2735.1	2741.3	2747.4	6.12
1429.	2631.5	2637.6	2643.7	2649.7	2655.8	2661.9	2668.0	2674.1	2680.1	2686.2	6.08
1428.	2570.9	2577.0	2583.0	2589.1	2595.1	2601.2	2607.3	2613.3	2619.4	2625.4	6.06
1427.	2510.7	2516.7	2522.7	2528.8	2534.8	2540.8	2546.8	2552.8	2558.9	2564.9	6.02
1426.	2450.8	2456.8	2462.8	2468.8	2474.8	2480.7	2486.7	2492.7	2498.7	2504.7	5.99
1425.	2391.2	2397.2	2403.1	2409.1	2415.0	2421.0	2427.0	2432.9	2438.9	2444.8	5.96
1424.	2331.9	2337.8	2343.8	2349.7	2355.6	2361.5	2367.5	2373.4	2379.3	2385.3	5.93
1423.	2272.8	2278.7	2284.6	2290.5	2296.4	2302.3	2308.3	2314.2	2320.1	2326.0	5.91
1422.	2214.1	2220.0	2225.8	2231.7	2237.6	2243.4	2249.3	2255.2	2261.1	2266.9	5.87
1421.	2155.7	2161.5	2167.4	2173.2	2179.1	2184.9	2190.7	2196.6	2202.4	2208.3	5.84
1420.	2097.7	2103.5	2109.3	2115.1	2120.9	2126.7	2132.5	2138.3	2144.1	2149.9	5.80

**Detailed Operating Plan for 1999-00**

**Exhibit 14 - ARROW RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
1419.	2040.1	2045.9	2051.6	2057.4	2063.1	2068.9	2074.7	2080.4	2086.2	2091.9	5.76
1418.	1982.9	1988.6	1994.3	2000.1	2005.8	2011.5	2017.2	2022.9	2028.7	2034.4	5.72
1417.	1926.1	1931.8	1937.5	1943.1	1948.8	1954.5	1960.2	1965.9	1971.5	1977.2	5.68
1416.	1869.6	1875.2	1880.9	1886.5	1892.2	1897.8	1903.5	1909.1	1914.8	1920.4	5.65
1415.	1813.5	1819.1	1824.7	1830.3	1835.9	1841.5	1847.2	1852.8	1858.4	1864.0	5.61
1414.	1757.8	1763.4	1768.9	1774.5	1780.1	1785.6	1791.2	1796.8	1802.4	1807.9	5.57
1413.	1702.4	1707.9	1713.5	1719.0	1724.6	1730.1	1735.6	1741.2	1746.7	1752.3	5.54
1412.	1647.4	1652.9	1658.4	1663.9	1669.4	1674.9	1680.4	1685.9	1691.4	1696.9	5.50
1411.	1592.7	1598.2	1603.6	1609.1	1614.6	1620.0	1625.5	1631.0	1636.5	1641.9	5.47
1410.	1538.4	1543.8	1549.3	1554.7	1560.1	1565.5	1571.0	1576.4	1581.8	1587.3	5.43
1409.	1484.5	1489.9	1495.3	1500.7	1506.1	1511.4	1516.8	1522.2	1527.6	1533.0	5.39
1408.	1430.9	1436.3	1441.6	1447.0	1452.3	1457.7	1463.1	1468.4	1473.8	1479.1	5.36
1407.	1377.7	1383.0	1388.3	1393.7	1399.0	1404.3	1409.6	1414.9	1420.3	1425.6	5.32
1406.	1324.7	1330.0	1335.3	1340.6	1345.9	1351.2	1356.5	1361.8	1367.1	1372.4	5.30
1405.	1272.1	1277.4	1282.6	1287.9	1293.1	1298.4	1303.7	1308.9	1314.2	1319.4	5.26
1404.	1219.5	1224.8	1230.0	1235.3	1240.5	1245.8	1251.1	1256.3	1261.6	1266.8	5.26
1403.	1167.3	1172.5	1177.7	1183.0	1188.2	1193.4	1198.6	1203.8	1209.1	1214.3	5.22
1402.	1115.4	1120.6	1125.8	1131.0	1136.2	1141.3	1146.5	1151.7	1156.9	1162.1	5.19
1401.	1063.9	1069.0	1074.2	1079.3	1084.5	1089.6	1094.8	1099.9	1105.1	1110.2	5.15
1400.	1012.8	1017.9	1023.0	1028.1	1033.2	1038.3	1043.5	1048.6	1053.7	1058.8	5.11
1399.	962.5	967.5	972.6	977.6	982.6	987.6	992.7	997.7	1002.7	1007.8	5.03
1398.	912.7	917.7	922.7	927.6	932.6	937.6	942.6	947.6	952.5	957.5	4.98
1397.	863.2	868.1	873.1	878.0	883.0	887.9	892.9	897.8	902.8	907.7	4.95
1396.	814.1	819.0	823.9	828.8	833.7	838.6	843.6	848.5	853.4	858.3	4.91
1395.	765.2	770.1	775.0	779.9	784.8	789.6	794.5	799.4	804.3	809.2	4.89

Detailed Operating Plan for 1999-00

**Exhibit 14 - ARROW RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
1394.	716.2	721.1	726.0	730.9	735.8	740.7	745.6	750.5	755.4	760.3	4.90
1393.	667.5	672.4	677.2	682.1	687.0	691.8	696.7	701.6	706.5	711.3	4.87
1392.	619.3	624.1	628.9	633.8	638.6	643.4	648.2	653.0	657.9	662.7	4.82
1391.	571.5	576.3	581.1	585.8	590.6	595.4	600.2	605.0	609.7	614.5	4.78
1390.	524.2	528.9	533.7	538.4	543.1	547.8	552.6	557.3	562.0	566.8	4.73
1389.	477.9	482.5	487.2	491.8	496.4	501.0	505.7	510.3	514.9	519.6	4.63
1388.	432.3	436.9	441.4	446.0	450.5	455.1	459.7	464.2	468.8	473.3	4.56
1387.	387.2	391.7	396.2	400.7	405.2	409.7	414.3	418.8	423.3	427.8	4.51
1386.	342.6	347.1	351.5	356.0	360.4	364.9	369.4	373.8	378.3	382.7	4.46
1385.	298.5	302.9	307.3	311.7	316.1	320.5	325.0	329.4	333.8	338.2	4.41
1384.	254.6	259.0	263.4	267.8	272.2	276.5	280.9	285.3	289.7	294.1	4.39
1383.	211.2	215.5	219.9	224.2	228.6	232.9	237.2	241.6	245.9	250.3	4.34
1382.	168.4	172.7	177.0	181.2	185.5	189.8	194.1	198.4	202.6	206.9	4.28
1381.	126.1	130.3	134.6	138.8	143.0	147.2	151.5	155.7	159.9	164.2	4.23
1380.	84.3	88.5	92.7	96.8	101.0	105.2	109.4	113.6	117.7	121.9	4.18
1379.	43.2	47.3	51.4	55.5	59.6	63.7	67.9	72.0	76.1	80.2	4.11
1378.	2.7	6.7	10.8	14.8	18.9	22.9	27.0	31.0	35.1	39.1	4.05
1377.										0.0	2.70

**Detailed Operating Plan for 1999-00**

**Exhibit 14M - ARROW RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	0	0.03	0.06	0.09	0.12	0.15	0.18	0.21	0.24	0.27	
440.13	8757.8										
439.83	8597.6	8613.5	8629.6	8645.6	8661.7	8677.6	8693.7	8709.7	8725.8	8741.7	16.03
439.52	8438.1	8454.0	8469.9	8486.0	8501.9	8517.8	8533.7	8549.6	8565.8	8581.7	15.95
439.22	8279.3	8295.2	8311.1	8327.0	8342.9	8358.6	8374.5	8390.4	8406.3	8422.2	15.88
438.91	8121.5	8137.1	8153.0	8168.7	8184.6	8200.3	8216.2	8231.8	8247.7	8263.4	15.78
438.61	7964.2	7979.8	7995.7	8011.4	8027.0	8042.7	8058.6	8074.3	8089.9	8105.8	15.73
438.30	7808.1	7823.7	7839.4	7854.8	7870.5	7886.1	7901.8	7917.4	7932.9	7948.5	15.61
438.00	7652.5	7668.1	7683.5	7699.2	7714.6	7730.3	7745.9	7761.3	7777.0	7792.4	15.56
437.69	7497.9	7513.3	7528.7	7544.3	7559.7	7575.2	7590.6	7606.0	7621.6	7637.1	15.46
437.39	7344.0	7359.4	7374.8	7390.2	7405.6	7420.8	7436.2	7451.6	7467.0	7482.4	15.39
437.08	7191.0	7206.2	7221.6	7236.8	7252.2	7267.4	7282.8	7298.0	7313.4	7328.5	15.29
436.78	7038.9	7054.0	7069.2	7084.6	7099.8	7115.0	7130.1	7145.3	7160.7	7175.9	15.22
436.47	6887.4	6902.6	6917.8	6932.9	6948.1	6963.0	6978.2	6993.4	7008.5	7023.7	15.14
436.17	6736.7	6751.9	6766.8	6782.0	6796.9	6812.1	6827.2	6842.2	6857.3	6872.3	15.07
435.86	6587.0	6601.9	6616.8	6632.0	6646.9	6661.8	6676.8	6691.7	6706.9	6721.8	14.97
435.56	6438.2	6453.2	6468.1	6482.8	6497.7	6512.6	6527.5	6542.5	6557.1	6572.1	14.88
435.26	6290.0	6304.9	6319.6	6334.5	6349.2	6364.1	6379.0	6393.7	6408.6	6423.3	14.83
434.95	6142.7	6157.4	6172.0	6187.0	6201.6	6216.3	6231.0	6245.7	6260.6	6275.3	14.73
434.65	5996.1	6010.8	6025.5	6040.2	6054.8	6069.3	6084.0	6098.6	6113.3	6128.0	14.66
434.34	5850.3	5865.0	5879.4	5894.1	5908.5	5923.2	5937.9	5952.3	5967.0	5981.4	14.58
434.04	5705.2	5719.7	5734.3	5748.8	5763.2	5777.6	5792.3	5806.8	5821.2	5835.9	14.51
433.73	5560.6	5575.1	5589.5	5603.9	5618.4	5632.8	5647.5	5661.9	5676.4	5690.8	14.46
433.43	5417.0	5431.5	5445.6	5460.1	5474.5	5488.7	5503.1	5517.6	5532.0	5546.2	14.36
433.12	5274.1	5288.3	5302.8	5317.0	5331.4	5345.6	5359.8	5374.2	5388.4	5402.8	14.29
432.82	5132.2	5146.4	5160.6	5174.8	5189.0	5203.2	5217.4	5231.6	5245.8	5259.9	14.19

**Detailed Operating Plan for 1999-00**

**Exhibit 14M - ARROW RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	0	0.03	0.06	0.09	0.12	0.15	0.18	0.21	0.24	0.27	
432.51	4991.3	5005.5	5019.4	5033.6	5047.6	5061.8	5076.0	5089.9	5104.1	5118.0	14.09
432.21	4851.4	4865.3	4879.3	4893.4	4907.4	4921.3	4935.3	4949.2	4963.4	4977.4	13.99
431.90	4712.4	4726.3	4740.3	4754.0	4767.9	4781.9	4795.8	4809.8	4823.5	4837.4	13.90
431.60	4574.2	4587.9	4601.8	4615.5	4629.5	4643.2	4657.1	4670.8	4684.7	4698.5	13.82
431.29	4436.9	4450.6	4464.3	4478.0	4491.7	4505.4	4519.4	4533.1	4546.8	4560.5	13.73
430.99	4300.6	4314.3	4327.8	4341.5	4355.2	4368.6	4382.3	4396.1	4409.8	4423.2	13.63
430.68	4165.1	4178.5	4192.2	4205.7	4219.4	4232.9	4246.3	4260.0	4273.5	4287.2	13.55
430.38	4030.5	4044.0	4057.4	4070.9	4084.4	4097.8	4111.3	4124.7	4138.2	4151.6	13.46
430.07	3896.7	3910.2	3923.4	3936.8	3950.3	3963.5	3976.9	3990.4	4003.9	4017.1	13.38
429.77	3763.8	3777.1	3790.5	3803.7	3816.9	3830.2	3843.6	3856.8	3870.0	3883.5	13.29
429.46	3632.0	3645.2	3658.4	3671.6	3684.8	3697.8	3711.0	3724.2	3737.4	3750.6	13.19
429.16	3500.8	3514.1	3527.0	3540.2	3553.2	3566.4	3579.6	3592.6	3605.8	3618.8	13.11
428.85	3370.7	3383.6	3396.6	3409.8	3422.8	3435.8	3448.7	3461.7	3474.9	3487.9	13.02
428.55	3241.0	3254.0	3266.9	3279.9	3292.9	3305.8	3318.8	3331.8	3344.7	3357.7	12.97
428.24	3112.3	3125.3	3138.0	3151.0	3163.7	3176.7	3189.6	3202.4	3215.3	3228.0	12.87
427.94	2983.6	2996.6	3009.3	3022.3	3035.0	3048.0	3060.9	3073.7	3086.6	3099.4	12.87
427.64	2855.9	2868.6	2881.4	2894.3	2907.1	2919.8	2932.5	2945.2	2958.2	2970.9	12.77
427.33	2728.9	2741.7	2754.4	2767.1	2779.8	2792.3	2805.0	2817.7	2830.5	2843.2	12.70
427.03	2602.9	2615.4	2628.1	2640.6	2653.3	2665.8	2678.5	2691.0	2703.7	2716.2	12.60
426.72	2477.9	2490.4	2502.9	2515.3	2527.8	2540.3	2553.0	2565.5	2578.0	2590.5	12.50
426.42	2354.9	2367.1	2379.6	2391.8	2404.0	2416.3	2428.7	2441.0	2453.2	2465.7	12.31
426.11	2233.0	2245.2	2257.5	2269.5	2281.7	2293.9	2306.2	2318.4	2330.4	2342.6	12.18
425.81	2111.9	2123.9	2136.1	2148.1	2160.3	2172.3	2184.6	2196.6	2208.8	2220.8	12.11
425.50	1991.8	2003.8	2015.8	2027.7	2039.7	2051.7	2064.0	2075.9	2087.9	2099.9	12.01
425.20	1872.1	1884.1	1896.1	1908.1	1920.1	1931.8	1943.8	1955.8	1967.8	1979.8	11.96

**Detailed Operating Plan for 1999-00**

**Exhibit 14M - ARROW RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	0	0.03	0.06	0.09	0.12	0.15	0.18	0.21	0.24	0.27	
424.89	1752.3	1764.2	1776.2	1788.2	1800.2	1812.2	1824.2	1836.2	1848.2	1860.1	11.99
424.59	1633.1	1645.1	1656.8	1668.8	1680.8	1692.6	1704.5	1716.5	1728.5	1740.3	11.91
424.28	1515.2	1526.9	1538.7	1550.7	1562.4	1574.1	1585.9	1597.6	1609.6	1621.4	11.79
423.98	1398.2	1410.0	1421.7	1433.2	1445.0	1456.7	1468.4	1480.2	1491.7	1503.4	11.69
423.67	1282.5	1294.0	1305.8	1317.2	1328.7	1340.2	1352.0	1363.5	1375.0	1386.7	11.57
423.37	1169.2	1180.5	1192.0	1203.2	1214.5	1225.7	1237.2	1248.5	1259.8	1271.3	11.33
423.06	1057.7	1068.9	1079.9	1091.2	1102.2	1113.4	1124.7	1135.7	1147.0	1158.0	11.16
422.76	947.3	958.3	969.3	980.4	991.4	1002.4	1013.6	1024.6	1035.6	1046.7	11.03
422.45	838.2	849.2	860.0	871.0	881.8	892.8	903.8	914.5	925.5	936.3	10.91
422.15	730.3	741.1	751.8	762.6	773.4	784.1	795.1	805.9	816.7	827.4	10.79
421.84	622.9	633.7	644.4	655.2	666.0	676.5	687.2	698.0	708.8	719.5	10.74
421.54	516.7	527.2	538.0	548.5	559.3	569.8	580.3	591.1	601.6	612.4	10.62
421.23	412.0	422.5	433.0	443.3	453.8	464.4	474.9	485.4	495.7	506.2	10.47
420.93	308.5	318.8	329.3	339.6	349.9	360.1	370.7	380.9	391.2	401.7	10.35
420.62	206.2	216.5	226.8	236.8	247.1	257.4	267.7	277.9	288.0	298.2	10.23
420.32	105.7	115.7	125.8	135.8	145.8	155.8	166.1	176.2	186.2	196.2	10.06
420.02	6.6	16.4	26.4	36.2	46.2	56.0	66.1	75.8	85.9	95.7	9.91
419.71										0.0	6.61

**Detailed Operating Plan for 1999-00**

**Exhibit 15 - MICA RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
2475.	10121.1										5.38
2474.	10067.5	10072.9	10078.2	10083.6	10088.9	10094.3	10099.7	10105.0	10110.4	10115.7	5.36
2473.	10014.1	10019.4	10024.8	10030.1	10035.5	10040.8	10046.1	10051.5	10056.8	10062.2	5.34
2472.	9960.8	9966.1	9971.5	9976.8	9982.1	9987.4	9992.8	9998.1	10003.4	10008.8	5.33
2471.	9907.8	9913.1	9918.4	9923.7	9929.0	9934.3	9939.6	9944.9	9950.2	9955.5	5.30
2470.	9854.8	9860.1	9865.4	9870.7	9876.0	9881.3	9886.6	9891.9	9897.2	9902.5	5.30
2469.	9802.1	9807.4	9812.6	9817.9	9823.2	9828.5	9833.7	9839.0	9844.3	9849.5	5.27
2468.	9749.5	9754.8	9760.0	9765.3	9770.5	9775.8	9781.1	9786.3	9791.6	9796.8	5.26
2467.	9697.1	9702.3	9707.6	9712.8	9718.1	9723.3	9728.5	9733.8	9739.0	9744.3	5.24
2466.	9644.8	9650.0	9655.3	9660.5	9665.7	9671.0	9676.2	9681.4	9686.6	9691.9	5.23
2465.	9592.7	9597.9	9603.1	9608.3	9613.5	9618.8	9624.0	9629.2	9634.4	9639.6	5.21
2464.	9540.8	9546.0	9551.2	9556.4	9561.6	9566.8	9571.9	9577.1	9582.3	9587.5	5.19
2463.	9489.0	9494.2	9499.4	9504.5	9509.7	9514.9	9520.1	9525.3	9530.4	9535.6	5.18
2462.	9437.4	9442.6	9447.7	9452.9	9458.0	9463.2	9468.4	9473.5	9478.7	9483.8	5.16
2461.	9386.0	9391.1	9396.3	9401.4	9406.6	9411.7	9416.8	9422.0	9427.1	9432.3	5.14
2460.	9334.8	9339.9	9345.0	9350.2	9355.3	9360.4	9365.5	9370.6	9375.8	9380.9	5.12
2459.	9283.7	9288.8	9293.9	9299.0	9304.1	9309.3	9314.4	9319.5	9324.6	9329.7	5.11
2458.	9232.8	9237.9	9243.0	9248.1	9253.2	9258.3	9263.3	9268.4	9273.5	9278.6	5.09
2457.	9182.0	9187.1	9192.2	9197.2	9202.3	9207.4	9212.5	9217.6	9222.6	9227.7	5.08
2456.	9131.4	9136.5	9141.5	9146.6	9151.6	9156.7	9161.8	9166.8	9171.9	9176.9	5.06
2455.	9081.0	9086.0	9091.1	9096.1	9101.2	9106.2	9111.2	9116.3	9121.3	9126.4	5.04

**Detailed Operating Plan for 1999-00**

**Exhibit 15 - MICA RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
2454.	9030.8	9035.8	9040.8	9045.9	9050.9	9055.9	9060.9	9065.9	9071.0	9076.0	5.02
2453.	8980.7	8985.7	8990.7	8995.7	9000.7	9005.8	9010.8	9015.8	9020.8	9025.8	5.01
2452.	8930.8	8935.8	8940.8	8945.8	8950.8	8955.8	8960.7	8965.7	8970.7	8975.7	4.99
2451.	8881.0	8886.0	8891.0	8895.9	8900.9	8905.9	8910.9	8915.9	8920.8	8925.8	4.98
2450.	8831.4	8836.4	8841.3	8846.3	8851.2	8856.2	8861.2	8866.1	8871.1	8876.0	4.96
2449.	8782.0	8786.9	8791.9	8796.8	8801.8	8806.7	8811.6	8816.6	8821.5	8826.5	4.94
2448.	8732.8	8737.7	8742.6	8747.6	8752.5	8757.4	8762.3	8767.2	8772.2	8777.1	4.92
2447.	8683.7	8688.6	8693.5	8698.4	8703.3	8708.3	8713.2	8718.1	8723.0	8727.9	4.91
2446.	8634.8	8639.7	8644.6	8649.5	8654.4	8659.3	8664.1	8669.0	8673.9	8678.8	4.89
2445.	8586.0	8590.9	8595.8	8600.6	8605.5	8610.4	8615.3	8620.2	8625.0	8629.9	4.88
2444.	8537.5	8542.4	8547.2	8552.1	8556.9	8561.8	8566.6	8571.5	8576.3	8581.2	4.85
2443.	8489.1	8493.9	8498.8	8503.6	8508.5	8513.3	8518.1	8523.0	8527.8	8532.7	4.84
2442.	8440.8	8445.6	8450.5	8455.3	8460.1	8465.0	8469.8	8474.6	8479.4	8484.3	4.83
2441.	8392.7	8397.5	8402.3	8407.1	8411.9	8416.8	8421.6	8426.4	8431.2	8436.0	4.81
2440.	8344.8	8349.6	8354.4	8359.2	8364.0	8368.8	8373.5	8378.3	8383.1	8387.9	4.79
2439.	8297.1	8301.9	8306.6	8311.4	8316.2	8321.0	8325.7	8330.5	8335.3	8340.0	4.77
2438.	8249.5	8254.3	8259.0	8263.8	8268.5	8273.3	8278.1	8282.8	8287.6	8292.3	4.76
2437.	8202.1	8206.8	8211.6	8216.3	8221.1	8225.8	8230.5	8235.3	8240.0	8244.8	4.74
2436.	8154.8	8159.5	8164.3	8169.0	8173.7	8178.5	8183.2	8187.9	8192.6	8197.4	4.73
2435.	8107.8	8112.5	8117.2	8121.9	8126.6	8131.3	8136.0	8140.7	8145.4	8150.1	4.70
2434.	8060.9	8065.6	8070.3	8075.0	8079.7	8084.4	8089.0	8093.7	8098.4	8103.1	4.69
2433.	8014.1	8018.8	8023.5	8028.1	8032.8	8037.5	8042.2	8046.9	8051.5	8056.2	4.68
2432.	7967.5	7972.2	7976.8	7981.5	7986.1	7990.8	7995.5	8000.1	8004.8	8009.4	4.66
2431.	7921.1	7925.7	7930.4	7935.0	7939.7	7944.3	7948.9	7953.6	7958.2	7962.9	4.64
2430.	7874.9	7879.5	7884.1	7888.8	7893.4	7898.0	7902.6	7907.2	7911.9	7916.5	4.62

**Detailed Operating Plan for 1999-00**

**Exhibit 15 - MICA RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
2429.	7828.8	7833.4	7838.0	7842.6	7847.2	7851.9	7856.5	7861.1	7865.7	7870.3	4.61
2428.	7782.9	7787.5	7792.1	7796.7	7801.3	7805.9	7810.4	7815.0	7819.6	7824.2	4.59
2427.	7737.2	7741.8	7746.3	7750.9	7755.5	7760.1	7764.6	7769.2	7773.8	7778.3	4.57
2426.	7691.6	7696.2	7700.7	7705.3	7709.8	7714.4	7719.0	7723.5	7728.1	7732.6	4.56
2425.	7646.2	7650.7	7655.3	7659.8	7664.4	7668.9	7673.4	7678.0	7682.5	7687.1	4.54
2424.	7600.9	7605.4	7610.0	7614.5	7619.0	7623.6	7628.1	7632.6	7637.1	7641.7	4.53
2423.	7555.9	7560.4	7564.9	7569.4	7573.9	7578.4	7582.9	7587.4	7591.9	7596.4	4.50
2422.	7511.0	7515.5	7520.0	7524.5	7529.0	7533.5	7537.9	7542.4	7546.9	7551.4	4.49
2421.	7466.2	7470.7	7475.2	7479.6	7484.1	7488.6	7493.1	7497.6	7502.0	7506.5	4.48
2420.	7421.6	7426.1	7430.5	7435.0	7439.4	7443.9	7448.4	7452.8	7457.3	7461.7	4.46
2419.	7377.2	7381.6	7386.1	7390.5	7395.0	7399.4	7403.8	7408.3	7412.7	7417.2	4.44
2418.	7333.0	7337.4	7341.8	7346.3	7350.7	7355.1	7359.5	7363.9	7368.4	7372.8	4.42
2417.	7288.9	7293.3	7297.7	7302.1	7306.5	7311.0	7315.4	7319.8	7324.2	7328.6	4.41
2416.	7245.0	7249.4	7253.8	7258.2	7262.6	7267.0	7271.3	7275.7	7280.1	7284.5	4.39
2415.	7201.3	7205.7	7210.0	7214.4	7218.8	7223.2	7227.5	7231.9	7236.3	7240.6	4.37
2414.	7157.7	7162.1	7166.4	7170.8	7175.1	7179.5	7183.9	7188.2	7192.6	7196.9	4.36
2413.	7114.3	7118.6	7123.0	7127.3	7131.7	7136.0	7140.3	7144.7	7149.0	7153.4	4.34
2412.	7071.0	7075.3	7079.7	7084.0	7088.3	7092.7	7097.0	7101.3	7105.6	7110.0	4.33
2411.	7028.0	7032.3	7036.6	7040.9	7045.2	7049.5	7053.8	7058.1	7062.4	7066.7	4.30
2410.	6985.1	6989.4	6993.7	6998.0	7002.3	7006.6	7010.8	7015.1	7019.4	7023.7	4.29
2409.	6942.3	6946.6	6950.9	6955.1	6959.4	6963.7	6968.0	6972.3	6976.5	6980.8	4.28
2408.	6899.7	6904.0	6908.2	6912.5	6916.7	6921.0	6925.3	6929.5	6933.8	6938.0	4.26
2407.	6857.3	6861.5	6865.8	6870.0	6874.3	6878.5	6882.7	6887.0	6891.2	6895.5	4.24
2406.	6815.1	6819.3	6823.5	6827.8	6832.0	6836.2	6840.4	6844.6	6848.9	6853.1	4.22
2405.	6773.0	6777.2	6781.4	6785.6	6789.8	6794.1	6798.3	6802.5	6806.7	6810.9	4.21

Detailed Operating Plan for 1999-00

**Exhibit 15 - MICA RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
2404.	6731.2	6735.3	6739.5	6743.7	6747.9	6752.1	6756.3	6760.5	6764.7	6768.9	4.20
2403.	6689.5	6693.7	6697.9	6702.0	6706.2	6710.4	6714.5	6718.7	6722.9	6727.1	4.17
2402.	6648.0	6652.2	6656.3	6660.5	6664.7	6668.8	6673.0	6677.1	6681.3	6685.5	4.16
2401.	6606.7	6610.9	6615.0	6619.2	6623.3	6627.4	6631.6	6635.7	6639.9	6644.0	4.14
2400.	6565.5	6569.7	6573.8	6577.9	6582.1	6586.2	6590.3	6594.5	6598.6	6602.7	4.13
2399.	6524.6	6528.7	6532.8	6536.9	6541.0	6545.1	6549.2	6553.3	6557.4	6561.5	4.11
2398.	6483.9	6487.9	6492.0	6496.1	6500.1	6504.2	6508.3	6512.4	6516.4	6520.5	4.07
2397.	6443.5	6447.6	6451.6	6455.6	6459.6	6463.7	6467.7	6471.8	6475.8	6479.8	4.03
2396.	6403.5	6407.5	6411.5	6415.5	6419.5	6423.5	6427.5	6431.5	6435.5	6439.5	4.00
2395.	6363.9	6367.8	6371.8	6375.7	6379.7	6383.7	6387.6	6391.6	6395.6	6399.5	3.96
2394.	6324.5	6328.5	6332.4	6336.3	6340.2	6344.2	6348.1	6352.0	6356.0	6359.9	3.93
2393.	6285.6	6289.5	6293.4	6297.2	6301.1	6305.0	6308.9	6312.8	6316.7	6320.6	3.90
2392.	6246.9	6250.8	6254.6	6258.5	6262.4	6266.2	6270.1	6274.0	6277.8	6281.7	3.87
2391.	6208.6	6212.4	6216.2	6220.0	6223.9	6227.7	6231.5	6235.4	6239.2	6243.1	3.83
2390.	6170.6	6174.4	6178.2	6181.9	6185.7	6189.5	6193.3	6197.2	6201.0	6204.8	3.80
2389.	6132.9	6136.7	6140.4	6144.2	6147.9	6151.7	6155.5	6159.2	6163.0	6166.8	3.77
2388.	6095.5	6099.2	6103.0	6106.7	6110.4	6114.2	6117.9	6121.7	6125.4	6129.2	3.74
2387.	6058.4	6062.1	6065.8	6069.5	6073.2	6076.9	6080.6	6084.3	6088.1	6091.8	3.71
2386.	6021.7	6025.3	6029.0	6032.7	6036.3	6040.0	6043.7	6047.4	6051.0	6054.7	3.68
2385.	5985.2	5988.8	5992.5	5996.1	5999.7	6003.4	6007.0	6010.7	6014.3	6018.0	3.65
2384.	5949.0	5952.6	5956.2	5959.8	5963.4	5967.0	5970.7	5974.3	5977.9	5981.6	3.62
2383.	5913.0	5916.6	5920.2	5923.8	5927.4	5931.0	5934.6	5938.2	5941.8	5945.4	3.59
2382.	5877.4	5881.0	5884.5	5888.1	5891.7	5895.2	5898.8	5902.3	5905.9	5909.5	3.56
2381.	5842.1	5845.6	5849.2	5852.7	5856.2	5859.7	5863.3	5866.8	5870.3	5873.9	3.53
2380.	5807.0	5810.5	5814.0	5817.5	5821.0	5824.5	5828.0	5831.6	5835.1	5838.6	3.51

Detailed Operating Plan for 1999-00

**Exhibit 15 - MICA RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
2379.	5772.2	5775.7	5779.1	5782.6	5786.1	5789.6	5793.0	5796.5	5800.0	5803.5	3.48
2378.	5737.6	5741.1	5744.5	5748.0	5751.4	5754.9	5758.3	5761.8	5765.3	5768.7	3.45
2377.	5703.4	5706.8	5710.2	5713.6	5717.1	5720.5	5723.9	5727.3	5730.8	5734.2	3.43
2376.	5669.3	5672.7	5676.1	5679.5	5682.9	5686.3	5689.7	5693.1	5696.5	5700.0	3.41
2375.	5635.5	5638.9	5642.3	5645.6	5649.0	5652.4	5655.8	5659.2	5662.5	5665.9	3.38
2374.	5602.0	5605.3	5608.7	5612.0	5615.4	5618.7	5622.1	5625.5	5628.8	5632.2	3.35
2373.	5568.7	5572.0	5575.4	5578.7	5582.0	5585.3	5588.7	5592.0	5595.3	5598.7	3.33
2372.	5535.6	5538.9	5542.2	5545.5	5548.8	5552.1	5555.4	5558.7	5562.1	5565.4	3.31
2371.	5502.8	5506.1	5509.3	5512.6	5515.9	5519.2	5522.5	5525.7	5529.0	5532.3	3.28
2370.	5470.2	5473.4	5476.7	5479.9	5483.2	5486.5	5489.7	5493.0	5496.3	5499.5	3.26
2369.	5437.8	5441.0	5444.3	5447.5	5450.7	5453.9	5457.2	5460.4	5463.7	5466.9	3.24
2368.	5405.6	5408.9	5412.1	5415.3	5418.5	5421.7	5424.9	5428.1	5431.4	5434.6	3.22
2367.	5373.7	5376.9	5380.1	5383.3	5386.5	5389.7	5392.9	5396.1	5399.3	5402.4	3.19
2366.	5342.0	5345.2	5348.3	5351.5	5354.7	5357.8	5361.0	5364.2	5367.4	5370.5	3.17
2365.	5310.5	5313.6	5316.8	5319.9	5323.0	5326.2	5329.3	5332.5	5335.7	5338.8	3.15
2364.	5279.1	5282.3	5285.4	5288.5	5291.6	5294.8	5297.9	5301.0	5304.2	5307.3	3.13
2363.	5248.0	5251.1	5254.2	5257.4	5260.5	5263.6	5266.7	5269.8	5272.9	5276.0	3.11
2362.	5217.1	5220.2	5223.3	5226.4	5229.5	5232.6	5235.7	5238.7	5241.8	5244.9	3.09
2361.	5186.4	5189.4	5192.5	5195.6	5198.7	5201.7	5204.8	5207.9	5211.0	5214.0	3.07
2360.	5155.9	5158.9	5162.0	5165.0	5168.0	5171.1	5174.2	5177.2	5180.3	5183.3	3.05
2359.	5125.5	5128.5	5131.6	5134.6	5137.6	5140.7	5143.7	5146.7	5149.8	5152.8	3.03
2358.	5095.4	5098.4	5101.4	5104.4	5107.4	5110.4	5113.4	5116.5	5119.5	5122.5	3.02
2357.	5065.4	5068.4	5071.4	5074.4	5077.4	5080.4	5083.4	5086.4	5089.4	5092.4	3.00
2356.	5035.6	5038.5	5041.5	5044.5	5047.5	5050.4	5053.4	5056.4	5059.4	5062.4	2.98
2355.	5005.9	5008.9	5011.9	5014.8	5017.8	5020.7	5023.7	5026.7	5029.6	5032.6	2.96

Detailed Operating Plan for 1999-00

**Exhibit 15 - MICA RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
2354.	4976.5	4979.4	4982.4	4985.3	4988.3	4991.2	4994.1	4997.1	5000.0	5003.0	2.94
2353.	4947.2	4950.1	4953.0	4956.0	4958.9	4961.8	4964.8	4967.7	4970.6	4973.6	2.93
2352.	4918.0	4920.9	4923.9	4926.8	4929.7	4932.6	4935.5	4938.4	4941.3	4944.3	2.91
2351.	4889.1	4892.0	4894.9	4897.8	4900.6	4903.5	4906.4	4909.3	4912.2	4915.1	2.90
2350.	4860.3	4863.1	4866.0	4868.9	4871.8	4874.6	4877.5	4880.4	4883.3	4886.2	2.88
2349.	4831.6	4834.4	4837.3	4840.2	4843.1	4845.9	4848.8	4851.7	4854.5	4857.4	2.87
2348.	4803.1	4805.9	4808.8	4811.6	4814.5	4817.3	4820.2	4823.0	4825.9	4828.7	2.85
2347.	4774.7	4777.5	4780.4	4783.2	4786.0	4788.9	4791.7	4794.6	4797.4	4800.2	2.84
2346.	4746.5	4749.3	4752.1	4755.0	4757.8	4760.6	4763.4	4766.2	4769.1	4771.9	2.82
2345.	4718.4	4721.2	4724.0	4726.8	4729.6	4732.4	4735.3	4738.1	4740.9	4743.7	2.81
2344.	4690.5	4693.3	4696.1	4698.8	4701.6	4704.4	4707.2	4710.0	4712.8	4715.6	2.79
2343.	4662.7	4665.4	4668.2	4671.0	4673.8	4676.5	4679.3	4682.1	4684.9	4687.7	2.78
2342.	4635.0	4637.8	4640.5	4643.3	4646.1	4648.8	4651.6	4654.4	4657.1	4659.9	2.77
2341.	4607.4	4610.2	4613.0	4615.7	4618.5	4621.2	4624.0	4626.7	4629.5	4632.2	2.76
2340.	4580.0	4582.8	4585.5	4588.2	4591.0	4593.7	4596.5	4599.2	4602.0	4604.7	2.74
2339.	4552.7	4555.4	4558.2	4560.9	4563.6	4566.4	4569.1	4571.8	4574.6	4577.3	2.73
2338.	4525.5	4528.2	4530.9	4533.6	4536.4	4539.1	4541.8	4544.5	4547.3	4550.0	2.72
2337.	4498.3	4501.0	4503.7	4506.5	4509.2	4511.9	4514.6	4517.3	4520.0	4522.8	2.72
2336.	4471.2	4473.9	4476.6	4479.3	4482.0	4484.7	4487.5	4490.2	4492.9	4495.6	2.71
2335.	4444.2	4446.9	4449.6	4452.3	4455.0	4457.7	4460.4	4463.1	4465.8	4468.5	2.70
2334.	4417.3	4420.0	4422.6	4425.3	4428.0	4430.7	4433.4	4436.1	4438.8	4441.5	2.69
2333.	4390.4	4393.1	4395.8	4398.4	4401.1	4403.8	4406.5	4409.2	4411.9	4414.6	2.69
2332.	4363.6	4366.3	4368.9	4371.6	4374.3	4377.0	4379.7	4382.3	4385.0	4387.7	2.68
2331.	4336.9	4339.6	4342.2	4344.9	4347.6	4350.2	4352.9	4355.6	4358.2	4360.9	2.67
2330.	4310.2	4312.9	4315.6	4318.2	4320.9	4323.6	4326.2	4328.9	4331.6	4334.2	2.66

**Detailed Operating Plan for 1999-00**

**Exhibit 15 - MICA RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
2329.	4283.7	4286.3	4289.0	4291.6	4294.3	4296.9	4299.6	4302.3	4304.9	4307.6	2.66
2328.	4257.2	4259.8	4262.5	4265.1	4267.8	4270.4	4273.1	4275.7	4278.4	4281.0	2.65
2327.	4230.8	4233.4	4236.1	4238.7	4241.3	4244.0	4246.6	4249.3	4251.9	4254.5	2.64
2326.	4204.5	4207.1	4209.7	4212.3	4215.0	4217.6	4220.2	4222.9	4225.5	4228.1	2.63
2325.	4178.2	4180.8	4183.4	4186.1	4188.7	4191.3	4193.9	4196.6	4199.2	4201.8	2.63
2324.	4152.0	4154.6	4157.2	4159.9	4162.5	4165.1	4167.7	4170.3	4173.0	4175.6	2.62
2323.	4125.9	4128.5	4131.2	4133.8	4136.4	4139.0	4141.6	4144.2	4146.8	4149.4	2.61
2322.	4099.9	4102.5	4105.1	4107.7	4110.3	4112.9	4115.5	4118.1	4120.7	4123.3	2.61
2321.	4074.0	4076.6	4079.1	4081.7	4084.3	4086.9	4089.5	4092.1	4094.7	4097.3	2.59
2320.	4048.1	4050.7	4053.3	4055.9	4058.4	4061.0	4063.6	4066.2	4068.8	4071.4	2.59
2319.	4022.3	4024.9	4027.5	4030.0	4032.6	4035.2	4037.8	4040.4	4042.9	4045.5	2.58

**Detailed Operating Plan for 1999-00**

**Exhibit 15M - MICA RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	
754.38	24762.3										13.16
754.08	24631.1	24644.4	24657.3	24670.5	24683.5	24696.7	24709.9	24722.9	24736.1	24749.1	13.11
753.77	24500.5	24513.5	24526.7	24539.6	24552.9	24565.8	24578.8	24592.0	24605.0	24618.2	13.06
753.47	24370.1	24383.1	24396.3	24409.2	24422.2	24435.2	24448.4	24461.4	24474.3	24487.5	13.04
753.16	24240.4	24253.4	24266.4	24279.3	24292.3	24305.3	24318.2	24331.2	24344.2	24357.1	12.97
752.86	24110.8	24123.7	24136.7	24149.7	24162.6	24175.6	24188.6	24201.5	24214.5	24227.5	12.97
752.55	23981.8	23994.8	24007.5	24020.5	24033.4	24046.4	24059.1	24072.1	24085.1	24097.8	12.89
752.25	23853.1	23866.1	23878.8	23891.8	23904.5	23917.5	23930.4	23943.2	23956.1	23968.9	12.87
751.94	23724.9	23737.6	23750.6	23763.3	23776.3	23789.0	23801.7	23814.7	23827.4	23840.4	12.82
751.64	23597.0	23609.7	23622.7	23635.4	23648.1	23661.1	23673.8	23686.5	23699.2	23712.2	12.80
751.33	23469.5	23482.2	23494.9	23507.7	23520.4	23533.4	23546.1	23558.8	23571.5	23584.2	12.75
751.03	23342.5	23355.2	23368.0	23380.7	23393.4	23406.1	23418.6	23431.3	23444.1	23456.8	12.70
750.72	23215.8	23228.5	23241.2	23253.7	23266.4	23279.2	23291.9	23304.6	23317.1	23329.8	12.67
750.42	23089.5	23102.3	23114.7	23127.5	23139.9	23152.7	23165.4	23177.9	23190.6	23203.1	12.62
750.11	22963.8	22976.3	22989.0	23001.5	23014.2	23026.7	23039.1	23051.9	23064.3	23077.1	12.58
749.81	22838.5	22851.0	22863.5	22876.2	22888.7	22901.2	22913.6	22926.1	22938.8	22951.3	12.53
749.50	22713.5	22726.0	22738.5	22750.9	22763.4	22776.1	22788.6	22801.1	22813.6	22826.0	12.50
749.20	22589.0	22601.4	22613.9	22626.4	22638.9	22651.4	22663.6	22676.1	22688.5	22701.0	12.45
748.90	22464.7	22477.2	22489.6	22501.9	22514.3	22526.8	22539.3	22551.8	22564.0	22576.5	12.43
748.59	22340.9	22353.4	22365.6	22378.1	22390.3	22402.8	22415.3	22427.5	22440.0	22452.2	12.38
748.29	22217.6	22229.8	22242.3	22254.5	22267.0	22279.2	22291.5	22303.9	22316.2	22328.7	12.33

**Detailed Operating Plan for 1999-00**

**Exhibit 15M - MICA RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	
747.98	22094.8	22107.0	22119.2	22131.7	22143.9	22156.2	22168.4	22180.6	22193.1	22205.3	12.28
747.68	21972.2	21984.4	21996.6	22008.9	22021.1	22033.6	22045.8	22058.1	22070.3	22082.5	12.26
747.37	21850.1	21862.3	21874.6	21886.8	21899.0	21911.3	21923.2	21935.5	21947.7	21959.9	12.21
747.07	21728.3	21740.5	21752.7	21764.7	21776.9	21789.2	21801.4	21813.6	21825.6	21837.9	12.18
746.76	21606.9	21619.1	21631.1	21643.4	21655.3	21667.6	21679.8	21691.8	21704.0	21716.0	12.14
746.46	21486.0	21498.0	21510.3	21522.3	21534.5	21546.5	21558.5	21570.7	21582.7	21594.9	12.09
746.15	21365.7	21377.7	21389.6	21401.9	21413.9	21425.9	21437.8	21449.8	21462.1	21474.1	12.04
745.85	21245.5	21257.5	21269.5	21281.5	21293.5	21305.7	21317.7	21329.7	21341.7	21353.7	12.01
745.54	21125.9	21137.9	21149.9	21161.9	21173.9	21185.8	21197.6	21209.6	21221.6	21233.6	11.96
745.24	21006.5	21018.5	21030.5	21042.2	21054.2	21066.2	21078.2	21090.2	21101.9	21113.9	11.94
744.93	20887.8	20899.8	20911.6	20923.6	20935.3	20947.3	20959.0	20971.0	20982.8	20994.8	11.87
744.63	20769.4	20781.2	20793.2	20804.9	20816.9	20828.6	20840.4	20852.4	20864.1	20876.1	11.84
744.32	20651.3	20663.0	20675.0	20686.7	20698.5	20710.5	20722.2	20734.0	20745.7	20757.7	11.82
744.02	20533.6	20545.3	20557.1	20568.8	20580.6	20592.5	20604.3	20616.0	20627.8	20639.5	11.77
743.71	20416.4	20428.1	20439.9	20451.6	20463.4	20475.1	20486.6	20498.3	20510.1	20521.8	11.72
743.41	20299.7	20311.4	20322.9	20334.7	20346.4	20358.2	20369.7	20381.4	20393.1	20404.6	11.67
743.10	20183.2	20195.0	20206.5	20218.2	20229.7	20241.5	20253.2	20264.7	20276.4	20287.9	11.65
742.80	20067.3	20078.8	20090.5	20102.0	20113.7	20125.2	20136.7	20148.5	20160.0	20171.7	11.60
742.49	19951.5	19963.0	19974.8	19986.3	19997.8	20009.5	20021.0	20032.5	20044.0	20055.8	11.57
742.19	19836.5	19848.0	19859.5	19871.0	19882.5	19894.0	19905.5	19917.0	19928.5	19940.0	11.50
741.88	19721.8	19733.3	19744.8	19756.3	19767.8	19779.3	19790.5	19802.0	19813.5	19825.0	11.47
741.58	19607.3	19618.8	19630.3	19641.5	19653.0	19664.5	19676.0	19687.5	19698.8	19710.3	11.45
741.28	19493.3	19504.8	19516.0	19527.5	19538.8	19550.3	19561.8	19573.0	19584.5	19595.8	11.40
740.97	19379.8	19391.0	19402.5	19413.8	19425.3	19436.5	19447.8	19459.3	19470.5	19482.0	11.35
740.67	19266.7	19278.0	19289.2	19300.7	19312.0	19323.2	19334.5	19345.8	19357.3	19368.5	11.30

**Detailed Operating Plan for 1999-00**

**Exhibit 15M - MICA RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	
740.36	19153.9	19165.2	19176.5	19187.7	19199.0	19210.5	19221.7	19233.0	19244.2	19255.5	11.28
740.06	19041.6	19052.9	19064.2	19075.4	19086.7	19097.9	19108.9	19120.2	19131.4	19142.7	11.23
739.75	18929.8	18941.1	18952.1	18963.4	18974.6	18985.9	18996.9	19008.1	19019.4	19030.4	11.18
739.45	18818.3	18829.5	18840.5	18851.8	18862.8	18874.1	18885.3	18896.3	18907.6	18918.6	11.16
739.14	18707.2	18718.2	18729.5	18740.5	18751.7	18762.7	18773.7	18785.0	18796.0	18807.3	11.11
738.84	18596.4	18607.4	18618.6	18629.6	18640.6	18651.9	18662.9	18673.9	18684.9	18696.2	11.08
738.53	18486.3	18497.3	18508.3	18519.3	18530.3	18541.3	18552.3	18563.3	18574.3	18585.4	11.01
738.23	18376.4	18387.4	18398.4	18409.4	18420.5	18431.5	18442.2	18453.2	18464.2	18475.3	10.99
737.92	18266.8	18277.8	18288.8	18299.6	18310.6	18321.6	18332.6	18343.6	18354.4	18365.4	10.96
737.62	18157.7	18168.7	18179.5	18190.5	18201.2	18212.2	18223.3	18234.0	18245.0	18255.8	10.91
737.31	18049.1	18059.8	18070.8	18081.6	18092.6	18103.4	18114.1	18125.1	18135.9	18146.9	10.86
737.01	17940.9	17951.7	17962.4	17973.5	17984.2	17995.0	18005.8	18016.5	18027.5	18038.3	10.81
736.70	17833.0	17843.8	17854.6	17865.3	17876.1	17887.1	17897.9	17908.6	17919.4	17930.2	10.79
736.40	17725.6	17736.4	17747.1	17757.9	17768.7	17779.4	17790.0	17800.7	17811.5	17822.3	10.74
736.09	17618.7	17629.5	17640.0	17650.8	17661.5	17672.3	17682.8	17693.6	17704.3	17714.9	10.69
735.79	17512.0	17522.8	17533.3	17544.1	17554.6	17565.4	17576.1	17586.7	17597.4	17607.9	10.67
735.48	17405.8	17416.4	17427.1	17437.7	17448.4	17458.9	17469.5	17480.2	17490.7	17501.5	10.62
735.18	17299.9	17310.4	17321.2	17331.7	17342.2	17353.0	17363.5	17374.0	17384.6	17395.3	10.59
734.87	17194.7	17205.2	17215.7	17226.3	17236.8	17247.3	17257.8	17268.3	17278.9	17289.4	10.52
734.57	17089.7	17100.3	17110.8	17121.3	17131.8	17142.3	17152.6	17163.1	17173.7	17184.2	10.50
734.26	16985.0	16995.6	17006.1	17016.3	17026.9	17037.4	17047.9	17058.4	17068.7	17079.2	10.47
733.96	16880.8	16891.3	16901.6	16912.1	16922.4	16932.9	16943.4	16953.7	16964.2	16974.5	10.42
733.66	16777.1	16787.3	16797.9	16808.1	16818.7	16828.9	16839.2	16849.7	16860.0	16870.5	10.37
733.35	16673.8	16684.1	16694.4	16704.9	16715.2	16725.4	16735.7	16746.0	16756.5	16766.8	10.32
733.05	16570.8	16581.1	16591.4	16601.6	16611.9	16622.4	16632.7	16643.0	16653.3	16663.5	10.30

Detailed Operating Plan for 1999-00

**Exhibit 15M - MICA RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	
732.74	16468.4	16478.7	16489.0	16499.2	16509.5	16519.8	16530.0	16540.3	16550.6	16560.8	10.27
732.44	16366.6	16376.8	16387.0	16397.2	16407.4	16417.6	16427.8	16438.0	16448.2	16458.5	10.21
732.13	16265.1	16275.3	16285.4	16295.6	16305.7	16315.9	16326.1	16336.3	16346.4	16356.6	10.17
731.83	16164.1	16174.2	16184.3	16194.4	16204.5	16214.6	16224.8	16234.9	16245.1	16255.2	10.13
731.52	16063.3	16073.4	16083.5	16093.6	16103.7	16113.8	16123.9	16134.0	16144.1	16154.2	10.10
731.22	15963.0	15973.1	15983.1	15993.1	16003.2	16013.2	16023.3	16033.3	16043.4	16053.4	10.05
730.91	15863.5	15873.4	15883.3	15893.3	15903.2	15913.2	15923.1	15933.1	15943.1	15953.1	9.96
730.61	15764.8	15774.6	15784.5	15794.3	15804.2	15814.0	15823.9	15833.8	15843.7	15853.6	9.87
730.30	15666.8	15676.6	15686.4	15696.2	15706.0	15715.7	15725.5	15735.3	15745.1	15755.0	9.79
730.00	15569.8	15579.5	15589.2	15598.9	15608.6	15618.2	15628.0	15637.7	15647.4	15657.1	9.70
729.69	15473.6	15483.2	15492.8	15502.4	15512.0	15521.6	15531.3	15540.9	15550.6	15560.2	9.62
729.39	15378.3	15387.8	15397.3	15406.8	15416.4	15425.9	15435.4	15445.0	15454.5	15464.1	9.53
729.08	15283.7	15293.1	15302.6	15312.0	15321.5	15330.9	15340.4	15349.9	15359.3	15368.8	9.46
728.78	15189.9	15199.3	15208.6	15218.0	15227.3	15236.6	15246.0	15255.4	15264.8	15274.3	9.37
728.47	15096.9	15106.2	15115.5	15124.8	15134.0	15143.3	15152.6	15162.0	15171.3	15180.6	9.30
728.17	15004.7	15013.9	15023.1	15032.3	15041.5	15050.7	15060.0	15069.2	15078.5	15087.7	9.22
727.86	14913.2	14922.4	14931.5	14940.6	14949.8	14958.9	14968.1	14977.3	14986.4	14995.6	9.15
727.56	14822.5	14831.6	14840.6	14849.7	14858.7	14867.8	14876.8	14885.9	14895.0	14904.1	9.07
727.25	14732.6	14741.5	14750.5	14759.5	14768.5	14777.4	14786.5	14795.5	14804.5	14813.5	8.99
726.95	14643.4	14652.3	14661.2	14670.0	14678.9	14687.8	14696.8	14705.7	14714.7	14723.6	8.92
726.64	14554.7	14563.6	14572.4	14581.3	14590.1	14599.0	14607.8	14616.7	14625.6	14634.5	8.86
726.34	14466.8	14475.6	14484.4	14493.2	14502.0	14510.7	14519.5	14528.3	14537.1	14545.9	8.79
726.04	14379.7	14388.4	14397.1	14405.8	14414.5	14423.2	14431.9	14440.7	14449.4	14458.1	8.71
725.73	14293.3	14301.9	14310.6	14319.2	14327.8	14336.4	14345.1	14353.7	14362.4	14371.0	8.64
725.43	14207.4	14215.9	14224.5	14233.1	14241.7	14250.3	14258.9	14267.5	14276.1	14284.7	8.59

**Detailed Operating Plan for 1999-00**

**Exhibit 15M - MICA RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	
725.12	14122.2	14130.7	14139.2	14147.7	14156.2	14164.7	14173.3	14181.8	14190.3	14198.8	8.51
724.82	14037.7	14046.2	14054.6	14063.0	14071.5	14079.9	14088.4	14096.8	14105.3	14113.8	8.45
724.51	13953.8	13962.2	13970.6	13979.0	13987.4	13995.7	14004.1	14012.5	14020.9	14029.3	8.39
724.21	13870.5	13878.8	13887.2	13895.5	13903.8	13912.2	13920.5	13928.8	13937.2	13945.5	8.33
723.90	13787.9	13796.1	13804.4	13812.6	13820.9	13829.1	13837.4	13845.7	13854.0	13862.2	8.26
723.60	13705.8	13714.0	13722.2	13730.4	13738.6	13746.8	13755.0	13763.2	13771.4	13779.7	8.20
723.29	13624.4	13632.5	13640.7	13648.8	13656.9	13665.1	13673.2	13681.4	13689.5	13697.7	8.14
722.99	13543.4	13551.5	13559.6	13567.6	13575.7	13583.8	13591.9	13600.0	13608.1	13616.3	8.09
722.68	13463.1	13471.1	13479.2	13487.2	13495.2	13503.2	13511.3	13519.3	13527.3	13535.4	8.03
722.38	13383.4	13391.3	13399.3	13407.2	13415.2	13423.2	13431.2	13439.1	13447.1	13455.1	7.97
722.07	13304.2	13312.1	13319.9	13327.8	13335.7	13343.6	13351.5	13359.5	13367.5	13375.4	7.92
721.77	13225.5	13233.3	13241.2	13249.0	13256.8	13264.7	13272.6	13280.5	13288.4	13296.3	7.87
721.46	13147.3	13155.1	13162.9	13170.7	13178.5	13186.3	13194.2	13202.0	13209.8	13217.6	7.81
721.16	13069.7	13077.5	13085.2	13092.9	13100.7	13108.4	13116.2	13124.0	13131.8	13139.5	7.76
720.85	12992.6	13000.3	13008.0	13015.7	13023.3	13031.0	13038.8	13046.5	13054.2	13062.0	7.71
720.55	12915.9	12923.6	12931.2	12938.9	12946.5	12954.2	12961.9	12969.5	12977.2	12984.9	7.66
720.24	12839.9	12847.4	12855.0	12862.6	12870.2	12877.8	12885.4	12893.1	12900.7	12908.3	7.61
719.94	12764.2	12771.7	12779.3	12786.9	12794.4	12802.0	12809.5	12817.1	12824.7	12832.3	7.56
719.63	12689.0	12696.5	12704.0	12711.5	12719.1	12726.6	12734.1	12741.6	12749.1	12756.7	7.52
719.33	12614.3	12621.8	12629.2	12636.7	12644.2	12651.6	12659.1	12666.6	12674.0	12681.5	7.46
719.02	12540.1	12547.5	12554.9	12562.3	12569.7	12577.2	12584.6	12592.0	12599.5	12606.9	7.42
718.72	12466.3	12473.7	12481.0	12488.4	12495.8	12503.2	12510.5	12517.9	12525.3	12532.7	7.38
718.42	12392.9	12400.2	12407.6	12414.9	12422.3	12429.6	12436.9	12444.3	12451.6	12459.0	7.34
718.11	12320.0	12327.3	12334.6	12341.9	12349.1	12356.4	12363.7	12371.0	12378.3	12385.6	7.29
717.81	12247.5	12254.8	12262.0	12269.2	12276.5	12283.7	12291.0	12298.2	12305.5	12312.7	7.25

**Detailed Operating Plan for 1999-00**

**Exhibit 15M - MICA RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	
717.50	12175.5	12182.7	12189.9	12197.1	12204.3	12211.5	12218.7	12225.9	12233.1	12240.3	7.20
717.20	12103.7	12110.9	12118.1	12125.2	12132.4	12139.6	12146.8	12153.9	12161.1	12168.3	7.17
716.89	12032.5	12039.6	12046.7	12053.8	12061.0	12068.1	12075.2	12082.3	12089.5	12096.6	7.13
716.59	11961.6	11968.7	11975.8	11982.8	11989.9	11997.0	12004.1	12011.2	12018.3	12025.4	7.09
716.28	11891.1	11898.2	11905.2	11912.2	11919.3	11926.3	11933.4	11940.4	11947.5	11954.5	7.04
715.98	11820.9	11828.0	11835.0	11842.0	11849.0	11856.0	11863.1	11870.1	11877.1	11884.1	7.02
715.67	11751.2	11758.2	11765.1	11772.1	11779.1	11786.0	11793.0	11800.0	11807.0	11814.0	6.97
715.37	11681.8	11688.8	11695.7	11702.6	11709.5	11716.5	11723.4	11730.4	11737.3	11744.3	6.94
715.06	11612.8	11619.7	11626.6	11633.5	11640.4	11647.3	11654.2	11661.1	11668.0	11674.9	6.90
714.76	11544.0	11550.9	11557.8	11564.7	11571.5	11578.4	11585.3	11592.2	11599.0	11605.9	6.87
714.45	11475.7	11482.5	11489.4	11496.2	11503.0	11509.8	11516.7	11523.5	11530.4	11537.2	6.83
714.15	11407.7	11414.5	11421.3	11428.1	11434.9	11441.6	11448.5	11455.3	11462.1	11468.9	6.80
713.84	11340.0	11346.8	11353.5	11360.3	11367.1	11373.8	11380.6	11387.4	11394.1	11400.9	6.77
713.54	11272.6	11279.3	11286.0	11292.8	11299.5	11306.3	11313.0	11319.8	11326.5	11333.3	6.74
712.93	11138.7	11145.4	11152.0	11158.7	11165.4	11172.1	11178.8	11185.4	11192.1	11198.8	6.68
712.62	11072.0	11078.7	11085.4	11092.0	11098.7	11105.3	11112.0	11118.7	11125.3	11132.0	6.66
712.32	11005.5	11012.2	11018.8	11025.5	11032.1	11038.8	11045.4	11052.1	11058.7	11065.4	6.65
712.01	10939.3	10945.9	10952.5	10959.1	10965.8	10972.4	10979.0	10985.6	10992.3	10998.9	6.63
711.71	10873.2	10879.8	10886.4	10893.0	10899.6	10906.2	10912.8	10919.4	10926.0	10932.7	6.61
711.40	10807.3	10813.9	10820.5	10827.0	10833.6	10840.2	10846.8	10853.4	10860.0	10866.6	6.59
711.10	10741.5	10748.1	10754.7	10761.2	10767.8	10774.4	10781.0	10787.5	10794.1	10800.7	6.58
710.80	10676.0	10682.5	10689.1	10695.6	10702.2	10708.7	10715.3	10721.8	10728.4	10734.9	6.55
710.49	10610.6	10617.1	10623.7	10630.2	10636.7	10643.3	10649.8	10656.3	10662.9	10669.4	6.53
710.19	10545.4	10552.0	10558.5	10565.0	10571.5	10578.0	10584.5	10591.1	10597.6	10604.1	6.52

Detailed Operating Plan for 1999-00

**Exhibit 15M - MICA RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	
709.88	10480.4	10486.9	10493.4	10499.9	10506.4	10512.9	10519.4	10525.9	10532.4	10538.9	6.50
709.58	10415.6	10422.1	10428.6	10435.1	10441.5	10448.0	10454.5	10461.0	10467.5	10473.9	6.48
709.27	10351.0	10357.5	10363.9	10370.4	10376.8	10383.3	10389.8	10396.2	10402.7	10409.2	6.46
708.97	10286.6	10293.0	10299.5	10305.9	10312.3	10318.8	10325.2	10331.7	10338.1	10344.6	6.44
708.66	10222.4	10228.8	10235.2	10241.6	10248.0	10254.4	10260.9	10267.3	10273.7	10280.2	6.43
708.36	10158.3	10164.7	10171.1	10177.5	10183.9	10190.3	10196.7	10203.1	10209.5	10215.9	6.40
708.05	10094.5	10100.9	10107.3	10113.6	10120.0	10126.4	10132.8	10139.2	10145.5	10151.9	6.38
707.75	10030.8	10037.1	10043.5	10049.9	10056.2	10062.6	10069.0	10075.4	10081.8	10088.1	6.37
707.44	9967.4	9973.7	9980.0	9986.4	9992.7	9999.0	10005.4	10011.7	10018.1	10024.4	6.34
707.14	9904.1	9910.4	9916.7	9923.1	9929.4	9935.7	9942.0	9948.4	9954.7	9961.0	6.33
706.83	9841.0	9847.3	9853.7	9859.8	9866.2	9872.5	9878.8	9885.1	9891.5	9897.8	6.31

Detailed Operating Plan for 1999-00

**Exhibit 16 - LIBBY RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
2459.	2510.5										
2458.	2487.1	2489.4	2491.8	2494.1	2496.5	2498.8	2501.1	2503.5	2505.8	2508.2	2.34
2457.	2463.8	2466.1	2468.5	2470.8	2473.1	2475.4	2477.8	2480.1	2482.4	2484.8	2.33
2456.	2440.6	2442.9	2445.2	2447.6	2449.9	2452.2	2454.5	2456.8	2459.2	2461.5	2.32
2455.	2417.5	2419.8	2422.1	2424.4	2426.7	2429.0	2431.4	2433.7	2436.0	2438.3	2.31
2454.	2394.5	2396.8	2399.1	2401.4	2403.7	2406.0	2408.3	2410.6	2412.9	2415.2	2.30
2453.	2371.6	2373.9	2376.2	2378.5	2380.8	2383.0	2385.3	2387.6	2389.9	2392.2	2.29
2452.	2348.8	2351.1	2353.4	2355.6	2357.9	2360.2	2362.5	2364.8	2367.0	2369.3	2.28
2451.	2326.1	2328.4	2330.6	2332.9	2335.2	2337.4	2339.7	2342.0	2344.3	2346.5	2.27
2450.	2303.4	2305.7	2307.9	2310.2	2312.5	2314.7	2317.0	2319.3	2321.6	2323.8	2.27
2449.	2280.9	2283.1	2285.4	2287.6	2289.9	2292.1	2294.4	2296.6	2298.9	2301.1	2.25
2448.	2258.4	2260.6	2262.9	2265.1	2267.4	2269.6	2271.9	2274.1	2276.4	2278.6	2.25
2447.	2236.1	2238.3	2240.6	2242.8	2245.0	2247.2	2249.5	2251.7	2253.9	2256.2	2.23
2446.	2213.8	2216.0	2218.3	2220.5	2222.7	2224.9	2227.2	2229.4	2231.6	2233.9	2.23
2445.	2191.7	2193.9	2196.1	2198.3	2200.5	2202.7	2205.0	2207.2	2209.4	2211.6	2.21
2444.	2170.0	2172.2	2174.3	2176.5	2178.7	2180.8	2183.0	2185.2	2187.4	2189.5	2.17
2443.	2147.7	2149.9	2152.2	2154.4	2156.6	2158.8	2161.1	2163.3	2165.5	2167.8	2.23
2442.	2125.9	2128.1	2130.3	2132.4	2134.6	2136.8	2139.0	2141.2	2143.3	2145.5	2.18
2441.	2104.1	2106.3	2108.5	2110.6	2112.8	2115.0	2117.2	2119.4	2121.5	2123.7	2.18
2440.	2082.5	2084.7	2086.8	2089.0	2091.1	2093.3	2095.5	2097.6	2099.8	2101.9	2.16
2439.	2061.0	2063.1	2065.3	2067.4	2069.6	2071.7	2073.9	2076.0	2078.2	2080.3	2.15
2438.	2039.5	2041.6	2043.8	2045.9	2048.1	2050.2	2052.4	2054.5	2056.7	2058.8	2.15
2437.	2018.2	2020.3	2022.5	2024.6	2026.7	2028.8	2031.0	2033.1	2035.2	2037.4	2.13
2436.	1997.0	1999.1	2001.2	2003.4	2005.5	2007.6	2009.7	2011.8	2014.0	2016.1	2.12
2435.	1975.9	1978.0	1980.1	1982.2	1984.3	1986.4	1988.6	1990.7	1992.8	1994.9	2.11

Detailed Operating Plan for 1999-00

**Exhibit 16 - LIBBY RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
2434.	1954.9	1957.0	1959.1	1961.2	1963.3	1965.4	1967.5	1969.6	1971.7	1973.8	2.10
2433.	1934.0	1936.1	1938.2	1940.3	1942.4	1944.4	1946.5	1948.6	1950.7	1952.8	2.09
2432.	1913.2	1915.3	1917.4	1919.4	1921.5	1923.6	1925.7	1927.8	1929.8	1931.9	2.08
2431.	1892.5	1894.6	1896.6	1898.7	1900.8	1902.8	1904.9	1907.0	1909.1	1911.1	2.07
2430.	1871.9	1874.0	1876.0	1878.1	1880.1	1882.2	1884.3	1886.3	1888.4	1890.4	2.06
2429.	1851.4	1853.4	1855.5	1857.5	1859.6	1861.6	1863.7	1865.7	1867.8	1869.8	2.05
2428.	1831.0	1833.0	1835.1	1837.1	1839.2	1841.2	1843.2	1845.3	1847.3	1849.4	2.04
2427.	1810.7	1812.7	1814.8	1816.8	1818.8	1820.8	1822.9	1824.9	1826.9	1829.0	2.03
2426.	1790.6	1792.6	1794.6	1796.6	1798.6	1800.6	1802.7	1804.7	1806.7	1808.7	2.01
2425.	1770.5	1772.5	1774.5	1776.5	1778.5	1780.5	1782.6	1784.6	1786.6	1788.6	2.01
2424.	1750.6	1752.6	1754.6	1756.6	1758.6	1760.5	1762.5	1764.5	1766.5	1768.5	1.99
2423.	1730.8	1732.8	1734.8	1736.7	1738.7	1740.7	1742.7	1744.7	1746.6	1748.6	1.98
2422.	1711.1	1713.1	1715.0	1717.0	1719.0	1720.9	1722.9	1724.9	1726.9	1728.8	1.97
2421.	1691.5	1693.5	1695.4	1697.4	1699.3	1701.3	1703.3	1705.2	1707.2	1709.1	1.96
2420.	1672.0	1673.9	1675.9	1677.8	1679.8	1681.7	1683.7	1685.6	1687.6	1689.5	1.95
2419.	1652.6	1654.5	1656.5	1658.4	1660.4	1662.3	1664.2	1666.2	1668.1	1670.1	1.94
2418.	1633.3	1635.2	1637.2	1639.1	1641.0	1642.9	1644.9	1646.8	1648.7	1650.7	1.93
2417.	1614.2	1616.1	1618.0	1619.9	1621.8	1623.7	1625.7	1627.6	1629.5	1631.4	1.91
2416.	1595.2	1597.1	1599.0	1600.9	1602.8	1604.7	1606.6	1608.5	1610.4	1612.3	1.90
2415.	1576.3	1578.2	1580.1	1582.0	1583.9	1585.7	1587.6	1589.5	1591.4	1593.3	1.89
2414.	1557.5	1559.4	1561.3	1563.1	1565.0	1566.9	1568.8	1570.7	1572.5	1574.4	1.88
2413.	1538.9	1540.8	1542.6	1544.5	1546.3	1548.2	1550.1	1551.9	1553.8	1555.6	1.86
2412.	1520.3	1522.2	1524.0	1525.9	1527.7	1529.6	1531.5	1533.3	1535.2	1537.0	1.86
2411.	1501.9	1503.7	1505.6	1507.4	1509.3	1511.1	1512.9	1514.8	1516.6	1518.5	1.84
2410.	1483.6	1485.4	1487.3	1489.1	1490.9	1492.7	1494.6	1496.4	1498.2	1500.1	1.83

Detailed Operating Plan for 1999-00

**Exhibit 16 - LIBBY RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
2409.	1465.5	1467.3	1469.1	1470.9	1472.7	1474.5	1476.4	1478.2	1480.0	1481.8	1.81
2408.	1447.6	1449.4	1451.2	1453.0	1454.8	1456.5	1458.3	1460.1	1461.9	1463.7	1.79
2407.	1429.7	1431.5	1433.3	1435.1	1436.9	1438.6	1440.4	1442.2	1444.0	1445.8	1.79
2406.	1412.1	1413.9	1415.6	1417.4	1419.1	1420.9	1422.7	1424.4	1426.2	1427.9	1.76
2405.	1394.6	1396.3	1398.1	1399.8	1401.6	1403.3	1405.1	1406.8	1408.6	1410.3	1.75
2404.	1377.4	1379.1	1380.8	1382.6	1384.3	1386.0	1387.7	1389.4	1391.2	1392.9	1.72
2403.	1360.3	1362.0	1363.7	1365.4	1367.1	1368.8	1370.6	1372.3	1374.0	1375.7	1.71
2402.	1343.3	1345.0	1346.7	1348.4	1350.1	1351.8	1353.5	1355.2	1356.9	1358.6	1.70
2401.	1326.6	1328.3	1329.9	1331.6	1333.3	1334.9	1336.6	1338.3	1340.0	1341.6	1.67
2400.	1310.0	1311.7	1313.3	1315.0	1316.6	1318.3	1320.0	1321.6	1323.3	1324.9	1.66
2399.	1293.6	1295.2	1296.9	1298.5	1300.2	1301.8	1303.4	1305.1	1306.7	1308.4	1.64
2398.	1277.3	1278.9	1280.6	1282.2	1283.8	1285.4	1287.1	1288.7	1290.3	1292.0	1.63
2397.	1261.2	1262.8	1264.4	1266.0	1267.6	1269.2	1270.9	1272.5	1274.1	1275.7	1.61
2396.	1245.2	1246.8	1248.4	1250.0	1251.6	1253.2	1254.8	1256.4	1258.0	1259.6	1.60
2395.	1229.4	1231.0	1232.6	1234.1	1235.7	1237.3	1238.9	1240.5	1242.0	1243.6	1.58
2394.	1213.7	1215.3	1216.8	1218.4	1220.0	1221.5	1223.1	1224.7	1226.3	1227.8	1.57
2393.	1198.1	1199.7	1201.2	1202.8	1204.3	1205.9	1207.5	1209.0	1210.6	1212.1	1.56
2392.	1182.8	1184.3	1185.9	1187.4	1188.9	1190.4	1192.0	1193.5	1195.0	1196.6	1.53
2391.	1167.5	1169.0	1170.6	1172.1	1173.6	1175.1	1176.7	1178.2	1179.7	1181.3	1.53
2390.	1152.4	1153.9	1155.4	1156.9	1158.4	1159.9	1161.5	1163.0	1164.5	1166.0	1.51
2389.	1137.4	1138.9	1140.4	1141.9	1143.4	1144.9	1146.4	1147.9	1149.4	1150.9	1.50
2388.	1122.5	1124.0	1125.5	1127.0	1128.5	1129.9	1131.4	1132.9	1134.4	1135.9	1.49
2387.	1107.7	1109.2	1110.7	1112.1	1113.6	1115.1	1116.6	1118.1	1119.5	1121.0	1.48
2386.	1093.0	1094.5	1095.9	1097.4	1098.9	1100.3	1101.8	1103.3	1104.8	1106.2	1.47
2385.	1078.4	1079.9	1081.3	1082.8	1084.2	1085.7	1087.2	1088.6	1090.1	1091.5	1.46

Detailed Operating Plan for 1999-00

**Exhibit 16 - LIBBY RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
2384.	1063.8	1065.3	1066.7	1068.2	1069.6	1071.1	1072.6	1074.0	1075.5	1076.9	1.46
2383.	1049.3	1050.7	1052.2	1053.6	1055.1	1056.5	1058.0	1059.4	1060.9	1062.3	1.45
2382.	1034.9	1036.3	1037.8	1039.2	1040.7	1042.1	1043.5	1045.0	1046.4	1047.9	1.44
2381.	1020.6	1022.0	1023.5	1024.9	1026.3	1027.7	1029.2	1030.6	1032.0	1033.5	1.43
2380.	1006.3	1007.7	1009.2	1010.6	1012.0	1013.4	1014.9	1016.3	1017.7	1019.2	1.43
2379.	992.2	993.6	995.0	996.4	997.8	999.2	1000.7	1002.1	1003.5	1004.9	1.41
2378.	978.1	979.5	980.9	982.3	983.7	985.1	986.6	988.0	989.4	990.8	1.41
2377.	964.1	965.5	966.9	968.3	969.7	971.1	972.5	973.9	975.3	976.7	1.40
2376.	950.2	951.6	953.0	954.4	955.8	957.1	958.5	959.9	961.3	962.7	1.39
2375.	936.3	937.7	939.1	940.5	941.9	943.2	944.6	946.0	947.4	948.8	1.39
2374.	922.5	923.9	925.3	926.6	928.0	929.4	930.8	932.2	933.5	934.9	1.38
2373.	908.8	910.2	911.5	912.9	914.3	915.6	917.0	918.4	919.8	921.1	1.37
2372.	895.2	896.6	897.9	899.3	900.6	902.0	903.4	904.7	906.1	907.4	1.36
2371.	881.6	883.0	884.3	885.7	887.0	888.4	889.8	891.1	892.5	893.8	1.36
2370.	868.1	869.4	870.8	872.1	873.5	874.8	876.2	877.5	878.9	880.2	1.35
2369.	854.7	856.0	857.4	858.7	860.1	861.4	862.7	864.1	865.4	866.8	1.34
2368.	841.3	842.6	844.0	845.3	846.7	848.0	849.3	850.7	852.0	853.4	1.34
2367.	828.1	829.4	830.7	832.1	833.4	834.7	836.0	837.3	838.7	840.0	1.32
2366.	815.0	816.3	817.6	818.9	820.2	821.5	822.9	824.2	825.5	826.8	1.31
2365.	801.9	803.2	804.5	805.8	807.1	808.4	809.8	811.1	812.4	813.7	1.31
2364.	788.9	790.2	791.5	792.8	794.1	795.4	796.7	798.0	799.3	800.6	1.30
2363.	776.0	777.3	778.6	779.9	781.2	782.4	783.7	785.0	786.3	787.6	1.29
2362.	763.2	764.5	765.8	767.0	768.3	769.6	770.9	772.2	773.4	774.7	1.28
2361.	750.5	751.8	753.0	754.3	755.6	756.8	758.1	759.4	760.7	761.9	1.27
2360.	737.9	739.2	740.4	741.7	742.9	744.2	745.5	746.7	748.0	749.2	1.26

Detailed Operating Plan for 1999-00

**Exhibit 16 - LIBBY RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
2359.	725.3	726.6	727.8	729.1	730.3	731.6	732.9	734.1	735.4	736.6	1.26
2358.	712.8	714.0	715.3	716.5	717.8	719.0	720.3	721.5	722.8	724.0	1.25
2357.	700.4	701.6	702.9	704.1	705.4	706.6	707.8	709.1	710.3	711.6	1.24
2356.	688.0	689.2	690.5	691.7	693.0	694.2	695.4	696.7	697.9	699.2	1.24
2355.	675.7	676.9	678.2	679.4	680.6	681.8	683.1	684.3	685.5	686.8	1.23
2354.	663.5	664.7	665.9	667.2	668.4	669.6	670.8	672.0	673.3	674.5	1.22
2353.	651.4	652.6	653.8	655.0	656.2	657.4	658.7	659.9	661.1	662.3	1.21
2352.	639.3	640.5	641.7	642.9	644.1	645.3	646.6	647.8	649.0	650.2	1.21
2351.	627.3	628.5	629.7	630.9	632.1	633.3	634.5	635.7	636.9	638.1	1.20
2350.	615.3	616.5	617.7	618.9	620.1	621.3	622.5	623.7	624.9	626.1	1.20
2349.	603.4	604.6	605.8	607.0	608.2	609.3	610.5	611.7	612.9	614.1	1.19
2348.	591.6	592.8	594.0	595.1	596.3	597.5	598.7	599.9	601.0	602.2	1.18
2347.	579.8	581.0	582.2	583.3	584.5	585.7	586.9	588.1	589.2	590.4	1.18
2346.	568.1	569.3	570.4	571.6	572.8	573.9	575.1	576.3	577.5	578.6	1.17
2345.	556.5	557.7	558.8	560.0	561.1	562.3	563.5	564.6	565.8	566.9	1.16
2344.	544.9	546.1	547.2	548.4	549.5	550.7	551.9	553.0	554.2	555.3	1.16
2343.	533.4	534.5	535.7	536.8	538.0	539.1	540.3	541.4	542.6	543.7	1.15
2342.	521.9	523.0	524.2	525.3	526.5	527.6	528.8	529.9	531.1	532.2	1.15
2341.	510.5	511.6	512.8	513.9	515.1	516.2	517.3	518.5	519.6	520.8	1.14
2340.	499.2	500.3	501.5	502.6	503.7	504.8	506.0	507.1	508.2	509.4	1.13
2339.	488.0	489.1	490.2	491.4	492.5	493.6	494.7	495.8	497.0	498.1	1.12
2338.	476.7	477.8	479.0	480.1	481.2	482.3	483.5	484.6	485.7	486.9	1.13
2337.	465.6	466.7	467.8	468.9	470.0	471.1	472.3	473.4	474.5	475.6	1.11
2336.	454.5	455.6	456.7	457.8	458.9	460.0	461.2	462.3	463.4	464.5	1.11
2335.	443.5	444.6	445.7	446.8	447.9	449.0	450.1	451.2	452.3	453.4	1.10

Detailed Operating Plan for 1999-00

**Exhibit 16 - LIBBY RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
2334.	432.6	433.7	434.8	435.9	437.0	438.0	439.1	440.2	441.3	442.4	1.09
2333.	421.7	422.8	423.9	425.0	426.1	427.1	428.2	429.3	430.4	431.5	1.09
2332.	410.8	411.9	413.0	414.1	415.2	416.2	417.3	418.4	419.5	420.6	1.09
2331.	400.1	401.2	402.2	403.3	404.4	405.4	406.5	407.6	408.7	409.7	1.07
2330.	389.3	390.4	391.5	392.5	393.6	394.7	395.8	396.9	397.9	399.0	1.08
2329.	378.7	379.8	380.8	381.9	382.9	384.0	385.1	386.1	387.2	388.2	1.06
2328.	368.2	369.2	370.3	371.3	372.4	373.4	374.5	375.5	376.6	377.6	1.05
2327.	357.8	358.8	359.9	360.9	362.0	363.0	364.0	365.1	366.1	367.2	1.04
2326.	347.4	348.4	349.5	350.5	351.6	352.6	353.6	354.7	355.7	356.8	1.04
2325.	337.1	338.1	339.2	340.2	341.2	342.2	343.3	344.3	345.3	346.4	1.03
2324.	327.0	328.0	329.0	330.0	331.0	332.0	333.1	334.1	335.1	336.1	1.01
2323.	316.9	317.9	318.9	319.9	320.9	321.9	323.0	324.0	325.0	326.0	1.01
2322.	306.9	307.9	308.9	309.9	310.9	311.9	312.9	313.9	314.9	315.9	1.00
2321.	297.0	298.0	299.0	300.0	301.0	301.9	302.9	303.9	304.9	305.9	0.99
2320.	287.2	288.2	289.2	290.1	291.1	292.1	293.1	294.1	295.0	296.0	0.98
2319.	277.5	278.5	279.4	280.4	281.4	282.3	283.3	284.3	285.3	286.2	0.97
2318.	267.8	268.8	269.7	270.7	271.7	272.6	273.6	274.6	275.6	276.5	0.97
2317.	258.2	259.2	260.1	261.1	262.0	263.0	264.0	264.9	265.9	266.8	0.96
2316.	248.7	249.6	250.6	251.5	252.5	253.4	254.4	255.3	256.3	257.2	0.95
2315.	239.1	240.1	241.0	242.0	242.9	243.9	244.9	245.8	246.8	247.7	0.96
2314.	229.7	230.6	231.6	232.5	233.5	234.4	235.3	236.3	237.2	238.2	0.94
2313.	220.3	221.2	222.2	223.1	224.1	225.0	225.9	226.9	227.8	228.8	0.94
2312.	210.9	211.8	212.8	213.7	214.7	215.6	216.5	217.5	218.4	219.4	0.94
2311.	201.6	202.5	203.5	204.4	205.3	206.2	207.2	208.1	209.0	210.0	0.93
2310.	192.3	193.2	194.2	195.1	196.0	196.9	197.9	198.8	199.7	200.7	0.93

**Detailed Operating Plan for 1999-00**

**Exhibit 16 - LIBBY RESERVOIR CAPACITY TABLE**

ELEVATION IN FEET	1000 SFD										AVERAGE DIFFERENCE PER TENTH FT
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
2309.	183.1	184.0	184.9	185.9	186.8	187.7	188.6	189.5	190.5	191.4	0.92
2308.	174.0	174.9	175.8	176.7	177.6	178.5	179.5	180.4	181.3	182.2	0.91
2307.	164.9	165.8	166.7	167.6	168.5	169.4	170.4	171.3	172.2	173.1	0.91
2306.	155.9	156.8	157.7	158.6	159.5	160.4	161.3	162.2	163.1	164.0	0.90
2305.	146.9	147.8	148.7	149.6	150.5	151.4	152.3	153.2	154.1	155.0	0.90
2304.	138.1	139.0	139.9	140.7	141.6	142.5	143.4	144.3	145.1	146.0	0.88
2303.	129.3	130.2	131.1	131.9	132.8	133.7	134.6	135.5	136.3	137.2	0.88
2302.	120.5	121.4	122.3	123.1	124.0	124.9	125.8	126.7	127.5	128.4	0.88
2301.	111.8	112.7	113.5	114.4	115.3	116.1	117.0	117.9	118.8	119.6	0.87
2300.	103.2	104.1	104.9	105.8	106.6	107.5	108.4	109.2	110.1	110.9	0.86
2299.	99.2	99.6	100.0	100.4	100.8	101.2	101.6	102.0	102.4	102.8	0.40
2298.	86.2	87.5	88.8	90.1	91.4	92.7	94.0	95.3	96.6	97.9	1.30
2297.	81.6	82.1	82.5	83.0	83.4	83.9	84.4	84.8	85.3	85.7	0.46
2296.	69.7	70.9	72.1	73.3	74.5	75.6	76.8	78.0	79.2	80.4	1.19
2295.	61.5	62.3	63.1	64.0	64.8	65.6	66.4	67.2	68.1	68.9	0.82
2294.	53.5	54.3	55.1	55.9	56.7	57.5	58.3	59.1	59.9	60.7	0.80
2293.	45.6	46.4	47.2	48.0	48.8	49.5	50.3	51.1	51.9	52.7	0.79
2292.	39.2	39.8	40.5	41.1	41.8	42.4	43.0	43.7	44.3	45.0	0.64
2291.	30.0	30.9	31.8	32.8	33.7	34.6	35.5	36.4	37.4	38.3	0.92
2290.	22.4	23.2	23.9	24.7	25.4	26.2	27.0	27.7	28.5	29.2	0.76
2289.	14.8	15.6	16.3	17.1	17.8	18.6	19.4	20.1	20.9	21.6	0.76
2288.	7.4	8.1	8.9	9.6	10.4	11.1	11.8	12.6	13.3	14.1	0.74
2287.	0.0	0.7	1.5	2.2	3.0	3.7	4.4	5.2	5.9	6.7	0.74

**Detailed Operating Plan for 1999-00**

**Exhibit 16M - LIBBY RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	
749.50	6142.2										
749.20	6084.9	6090.6	6096.4	6102.1	6107.9	6113.6	6119.2	6125.1	6130.7	6136.6	5.73
748.90	6027.9	6033.6	6039.4	6045.1	6050.7	6056.3	6062.2	6067.8	6073.4	6079.3	5.70
748.59	5971.2	5976.8	5982.4	5988.3	5993.9	5999.6	6005.2	6010.8	6016.7	6022.3	5.68
748.29	5914.7	5920.3	5925.9	5931.5	5937.2	5942.8	5948.7	5954.3	5959.9	5965.5	5.65
747.98	5858.4	5864.0	5869.6	5875.3	5880.9	5886.5	5892.1	5897.8	5903.4	5909.0	5.63
747.68	5802.4	5808.0	5813.6	5819.2	5824.9	5830.2	5835.9	5841.5	5847.1	5852.8	5.60
747.37	5746.6	5752.2	5757.8	5763.2	5768.8	5774.5	5780.1	5785.7	5791.1	5796.7	5.58
747.07	5691.0	5696.7	5702.0	5707.7	5713.3	5718.7	5724.3	5729.9	5735.6	5740.9	5.55
746.76	5635.5	5641.1	5646.5	5652.1	5657.8	5663.1	5668.8	5674.4	5680.0	5685.4	5.55
746.46	5580.4	5585.8	5591.5	5596.8	5602.5	5607.9	5613.5	5618.9	5624.5	5629.9	5.50
746.15	5525.4	5530.8	5536.4	5541.8	5547.4	5552.8	5558.4	5563.8	5569.4	5574.8	5.50
745.85	5470.8	5476.2	5481.9	5487.2	5492.6	5498.0	5503.6	5509.0	5514.4	5520.0	5.46
745.54	5416.3	5421.7	5427.3	5432.7	5438.1	5443.4	5449.1	5454.5	5459.8	5465.5	5.46
745.24	5362.2	5367.6	5373.0	5378.4	5383.7	5389.1	5394.8	5400.1	5405.5	5410.9	5.41
744.93	5309.1	5314.5	5319.6	5325.0	5330.4	5335.5	5340.9	5346.3	5351.7	5356.8	5.31
744.63	5254.6	5259.9	5265.6	5271.0	5276.3	5281.7	5287.3	5292.7	5298.1	5303.7	5.46
744.32	5201.2	5206.6	5212.0	5217.1	5222.5	5227.9	5233.3	5238.7	5243.8	5249.2	5.33
744.02	5147.9	5153.3	5158.7	5163.8	5169.2	5174.6	5179.9	5185.3	5190.5	5195.8	5.33
743.71	5095.0	5100.4	5105.6	5110.9	5116.1	5121.5	5126.9	5132.0	5137.4	5142.5	5.28
743.41	5042.4	5047.6	5053.0	5058.1	5063.5	5068.6	5074.0	5079.1	5084.5	5089.7	5.26
743.10	4989.8	4995.0	5000.4	5005.5	5010.9	5016.0	5021.4	5026.5	5031.9	5037.1	5.26
742.80	4937.7	4942.9	4948.2	4953.4	4958.5	4963.7	4969.0	4974.2	4979.3	4984.7	5.21
742.49	4885.9	4891.0	4896.1	4901.5	4906.7	4911.8	4916.9	4922.1	4927.5	4932.6	5.19
742.19	4834.2	4839.4	4844.5	4849.7	4854.8	4859.9	4865.3	4870.4	4875.6	4880.7	5.16

Detailed Operating Plan for 1999-00

**Exhibit 16M - LIBBY RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	
741.88	4782.9	4788.0	4793.1	4798.3	4803.4	4808.5	4813.7	4818.8	4824.0	4829.1	5.14
741.58	4731.7	4736.9	4742.0	4747.1	4752.3	4757.2	4762.3	4767.4	4772.6	4777.7	5.11
741.28	4680.8	4686.0	4691.1	4696.0	4701.1	4706.3	4711.4	4716.6	4721.4	4726.6	5.09
740.97	4630.2	4635.3	4640.2	4645.4	4650.5	4655.4	4660.5	4665.7	4670.8	4675.7	5.06
740.67	4579.8	4584.9	4589.8	4595.0	4599.9	4605.0	4610.1	4615.0	4620.2	4625.1	5.04
740.36	4529.6	4534.5	4539.7	4544.6	4549.7	4554.6	4559.7	4564.6	4569.8	4574.7	5.02
740.06	4479.7	4484.6	4489.8	4494.6	4499.8	4504.7	4509.6	4514.7	4519.6	4524.7	4.99
739.75	4430.1	4435.0	4440.1	4445.0	4449.9	4454.8	4459.9	4464.8	4469.7	4474.8	4.97
739.45	4380.9	4385.8	4390.7	4395.6	4400.5	4405.3	4410.5	4415.4	4420.3	4425.2	4.92
739.14	4331.7	4336.6	4341.5	4346.4	4351.3	4356.2	4361.3	4366.2	4371.1	4376.0	4.92
738.84	4283.0	4287.9	4292.8	4297.7	4302.6	4307.2	4312.1	4317.0	4321.9	4326.8	4.87
738.53	4234.6	4239.5	4244.4	4249.0	4253.9	4258.8	4263.7	4268.6	4273.2	4278.1	4.84
738.23	4186.4	4191.3	4195.9	4200.8	4205.7	4210.4	4215.2	4220.1	4225.0	4229.7	4.82
737.92	4138.4	4143.3	4148.0	4152.9	4157.5	4162.4	4167.3	4171.9	4176.8	4181.5	4.80
737.62	4090.7	4095.4	4100.3	4104.9	4109.8	4114.4	4119.3	4124.0	4128.9	4133.5	4.77
737.31	4043.3	4047.9	4052.8	4057.4	4062.3	4067.0	4071.6	4076.5	4081.2	4086.1	4.75
737.01	3996.0	4000.7	4005.6	4010.2	4014.9	4019.5	4024.4	4029.1	4033.7	4038.6	4.72
736.70	3949.3	3954.0	3958.6	3963.2	3967.9	3972.5	3977.4	3982.1	3986.7	3991.4	4.67
736.40	3902.8	3907.5	3912.1	3916.8	3921.4	3926.1	3930.7	3935.4	3940.0	3944.7	4.65
736.09	3856.6	3861.2	3865.9	3870.5	3875.2	3879.6	3884.2	3888.9	3893.5	3898.2	4.62
735.79	3810.6	3815.2	3819.9	3824.3	3828.9	3833.6	3838.2	3842.9	3847.3	3851.9	4.60
735.48	3765.1	3769.7	3774.1	3778.8	3783.2	3787.8	3792.5	3796.9	3801.5	3805.9	4.55
735.18	3719.6	3724.2	3728.6	3733.3	3737.7	3742.3	3747.0	3751.4	3756.0	3760.4	4.55
734.87	3674.5	3679.0	3683.6	3688.0	3692.7	3697.1	3701.5	3706.1	3710.5	3715.2	4.50
734.57	3629.8	3634.2	3638.8	3643.2	3647.6	3652.0	3656.7	3661.1	3665.5	3670.1	4.48

**Detailed Operating Plan for 1999-00**

**Exhibit 16M - LIBBY RESERVOIR CAPACITY TABLE**

SI

ELEVATION IN METERS	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	AVERAGE DIFFERENCE PER 3/100 M
734.26	3585.5	3589.9	3594.3	3598.7	3603.1	3607.5	3612.2	3616.6	3621.0	3625.4	4.43
733.96	3541.7	3546.1	3550.5	3554.9	3559.3	3563.5	3567.9	3572.3	3576.7	3581.1	4.38
733.66	3497.9	3502.3	3506.7	3511.1	3515.5	3519.7	3524.1	3528.5	3532.9	3537.3	4.38
733.35	3454.8	3459.2	3463.4	3467.8	3472.0	3476.4	3480.8	3484.9	3489.3	3493.5	4.31
733.05	3412.0	3416.2	3420.6	3424.8	3429.2	3433.3	3437.7	3441.9	3446.3	3450.4	4.28
732.74	3369.9	3374.1	3378.3	3382.7	3386.8	3391.0	3395.1	3399.3	3403.7	3407.9	4.21
732.44	3328.1	3332.3	3336.4	3340.6	3344.7	3348.9	3353.3	3357.5	3361.6	3365.8	4.18
732.13	3286.5	3290.7	3294.8	3299.0	3303.2	3307.3	3311.5	3315.6	3319.8	3324.0	4.16
731.83	3245.7	3249.8	3253.7	3257.9	3262.1	3266.0	3270.1	3274.3	3278.4	3282.4	4.09
731.52	3205.0	3209.2	3213.1	3217.3	3221.2	3225.4	3229.5	3233.4	3237.6	3241.5	4.06
731.22	3164.9	3168.8	3173.0	3176.9	3181.1	3185.0	3188.9	3193.1	3197.0	3201.1	4.01
730.91	3125.0	3129.0	3133.1	3137.0	3140.9	3144.9	3149.0	3152.9	3156.8	3161.0	3.99
730.61	3085.7	3089.6	3093.5	3097.4	3101.3	3105.2	3109.4	3113.3	3117.2	3121.1	3.94
730.30	3046.5	3050.4	3054.3	3058.3	3062.2	3066.1	3070.0	3073.9	3077.8	3081.7	3.91
730.00	3007.9	3011.8	3015.7	3019.3	3023.3	3027.2	3031.1	3035.0	3038.7	3042.6	3.87
729.69	2969.4	2973.4	2977.0	2980.9	2984.9	2988.5	2992.4	2996.4	3000.3	3003.9	3.84
729.39	2931.3	2935.2	2938.9	2942.8	2946.4	2950.4	2954.3	2957.9	2961.9	2965.5	3.82
729.08	2893.8	2897.5	2901.4	2905.1	2908.8	2912.4	2916.3	2920.0	2923.7	2927.6	3.74
728.78	2856.4	2860.1	2864.0	2867.7	2871.3	2875.0	2878.9	2882.6	2886.3	2890.2	3.74
728.47	2819.5	2823.1	2826.8	2830.5	2834.1	2837.8	2841.7	2845.4	2849.1	2852.7	3.69
728.17	2782.8	2786.4	2790.1	2793.8	2797.4	2801.1	2804.8	2808.5	2812.1	2815.8	3.67
727.86	2746.3	2750.0	2753.6	2757.3	2761.0	2764.4	2768.1	2771.8	2775.4	2779.1	3.65
727.56	2710.1	2713.8	2717.4	2720.9	2724.5	2728.2	2731.9	2735.5	2739.0	2742.6	3.62
727.25	2674.1	2677.8	2681.2	2684.9	2688.6	2692.0	2695.7	2699.3	2703.0	2706.4	3.60
726.95	2638.4	2642.1	2645.5	2649.2	2652.6	2656.3	2659.9	2663.4	2667.0	2670.5	3.57

Detailed Operating Plan for 1999-00

**Exhibit 16M - LIBBY RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	
726.64	2602.7	2606.4	2609.8	2613.5	2616.9	2620.6	2624.2	2627.6	2631.3	2634.7	3.57
726.34	2567.2	2570.6	2574.3	2577.7	2581.4	2584.8	2588.5	2591.9	2595.6	2599.0	3.55
726.04	2532.0	2535.4	2539.1	2542.5	2546.2	2549.6	2553.0	2556.7	2560.1	2563.8	3.52
725.73	2497.0	2500.4	2504.1	2507.5	2510.9	2514.4	2518.0	2521.5	2524.9	2528.6	3.50
725.43	2462.0	2465.4	2469.1	2472.5	2476.0	2479.4	2483.1	2486.5	2489.9	2493.6	3.50
725.12	2427.5	2430.9	2434.4	2437.8	2441.2	2444.6	2448.3	2451.7	2455.2	2458.6	3.45
724.82	2393.0	2396.4	2399.9	2403.3	2406.7	2410.1	2413.8	2417.2	2420.7	2424.1	3.45
724.51	2358.8	2362.2	2365.6	2369.0	2372.5	2375.9	2379.3	2382.7	2386.2	2389.6	3.43
724.21	2324.8	2328.2	2331.6	2335.0	2338.5	2341.6	2345.1	2348.5	2351.9	2355.3	3.40
723.90	2290.8	2294.2	2297.6	2301.0	2304.5	2307.6	2311.1	2314.5	2317.9	2321.3	3.40
723.60	2257.0	2260.4	2263.8	2267.0	2270.4	2273.9	2277.3	2280.7	2283.9	2287.3	3.38
723.29	2223.5	2226.9	2230.1	2233.5	2236.9	2240.1	2243.5	2247.0	2250.4	2253.6	3.35
722.99	2190.2	2193.6	2196.8	2200.2	2203.4	2206.8	2210.3	2213.4	2216.9	2220.0	3.33
722.68	2156.9	2160.3	2163.5	2167.0	2170.1	2173.6	2177.0	2180.2	2183.6	2186.8	3.33
722.38	2123.9	2127.1	2130.5	2133.7	2137.1	2140.3	2143.7	2146.9	2150.3	2153.5	3.30
722.07	2091.1	2094.3	2097.7	2100.9	2104.3	2107.5	2110.7	2114.1	2117.3	2120.7	3.28
721.77	2058.3	2061.5	2064.9	2068.1	2071.5	2074.7	2077.9	2081.3	2084.5	2087.9	3.28
721.46	2026.0	2029.2	2032.4	2035.8	2039.0	2042.2	2045.4	2048.5	2052.0	2055.1	3.23
721.16	1994.0	1997.2	2000.3	2003.5	2006.7	2009.9	2013.3	2016.5	2019.7	2022.8	3.21
720.85	1961.9	1965.1	1968.3	1971.5	1974.7	1977.8	1981.3	1984.4	1987.6	1990.8	3.21
720.55	1930.1	1933.3	1936.5	1939.7	1942.8	1946.0	1949.2	1952.4	1955.6	1958.7	3.18
720.24	1898.6	1901.7	1904.9	1908.1	1911.3	1914.2	1917.4	1920.6	1923.8	1926.9	3.16
719.94	1867.2	1870.4	1873.6	1876.5	1879.7	1882.9	1886.1	1889.3	1892.2	1895.4	3.13
719.63	1836.2	1839.4	1842.3	1845.5	1848.7	1851.6	1854.8	1857.9	1861.1	1864.1	3.11
719.33	1805.3	1808.5	1811.5	1814.6	1817.6	1820.8	1823.9	1826.9	1830.1	1833.0	3.08

Detailed Operating Plan for 1999-00

**Exhibit 16M - LIBBY RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	
719.02	1774.5	1777.7	1780.6	1783.8	1786.8	1789.9	1793.1	1796.0	1799.2	1802.2	3.08
718.72	1743.9	1746.9	1750.1	1753.0	1756.2	1759.1	1762.3	1765.2	1768.4	1771.3	3.06
718.42	1713.6	1716.5	1719.7	1722.7	1725.8	1728.8	1731.7	1734.9	1737.8	1741.0	3.03
718.11	1683.3	1686.2	1689.4	1692.3	1695.5	1698.4	1701.4	1704.5	1707.5	1710.7	3.03
717.81	1653.2	1656.1	1659.3	1662.2	1665.2	1668.1	1671.3	1674.2	1677.1	1680.3	3.01
717.50	1623.3	1626.3	1629.2	1632.4	1635.3	1638.2	1641.2	1644.1	1647.3	1650.2	2.98
717.20	1593.7	1596.7	1599.6	1602.5	1605.5	1608.4	1611.6	1614.5	1617.4	1620.4	2.96
716.89	1564.1	1567.0	1570.0	1572.9	1575.9	1578.8	1582.0	1584.9	1587.8	1590.8	2.96
716.59	1534.8	1537.7	1540.6	1543.6	1546.5	1549.4	1552.4	1555.3	1558.2	1561.2	2.94
716.28	1505.4	1508.3	1511.3	1514.2	1517.1	1520.1	1523.0	1525.9	1528.9	1531.8	2.94
715.98	1476.3	1479.2	1482.2	1485.1	1488.0	1490.7	1493.6	1496.6	1499.5	1502.5	2.91
715.67	1447.4	1450.3	1453.3	1456.0	1458.9	1461.8	1464.8	1467.7	1470.4	1473.3	2.89
715.37	1418.5	1421.5	1424.4	1427.1	1430.0	1433.0	1435.9	1438.8	1441.5	1444.5	2.89
715.06	1389.9	1392.8	1395.5	1398.5	1401.4	1404.1	1407.0	1410.0	1412.9	1415.6	2.86
714.76	1361.5	1364.5	1367.2	1370.1	1372.8	1375.7	1378.7	1381.4	1384.3	1387.0	2.84
714.45	1333.2	1336.1	1338.8	1341.7	1344.4	1347.3	1350.3	1353.0	1355.9	1358.6	2.84
714.15	1305.0	1307.7	1310.6	1313.3	1316.3	1319.0	1321.9	1324.6	1327.5	1330.2	2.81
713.84	1276.9	1279.6	1282.5	1285.2	1288.1	1290.8	1293.8	1296.5	1299.4	1302.1	2.81
713.54	1249.0	1251.7	1254.6	1257.3	1260.2	1262.9	1265.6	1268.6	1271.3	1274.2	2.79
713.23	1221.3	1224.0	1227.0	1229.7	1232.4	1235.0	1238.0	1240.7	1243.4	1246.3	2.76
712.93	1193.9	1196.6	1199.3	1202.3	1205.0	1207.6	1210.3	1213.0	1216.0	1218.7	2.74
712.62	1166.3	1169.0	1171.9	1174.6	1177.3	1180.0	1182.9	1185.6	1188.3	1191.2	2.76
712.32	1139.1	1141.8	1144.5	1147.2	1149.9	1152.6	1155.5	1158.2	1160.9	1163.6	2.72
712.01	1112.0	1114.7	1117.4	1120.1	1122.7	1125.4	1128.4	1131.1	1133.8	1136.4	2.72
711.71	1085.1	1087.8	1090.4	1093.1	1095.8	1098.5	1101.2	1103.9	1106.6	1109.3	2.69

**Detailed Operating Plan for 1999-00**

**Exhibit 16M - LIBBY RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	
711.40	1058.4	1061.1	1063.8	1066.5	1069.2	1071.6	1074.3	1077.0	1079.7	1082.4	2.67
711.10	1031.7	1034.4	1037.1	1039.8	1042.5	1044.9	1047.6	1050.3	1053.0	1055.7	2.67
710.80	1005.1	1007.8	1010.4	1013.1	1015.8	1018.3	1021.0	1023.7	1026.3	1029.0	2.67
710.49	978.9	981.6	984.0	986.7	989.4	991.9	994.5	997.2	999.9	1002.4	2.62
710.19	952.5	955.2	957.8	960.3	963.0	965.7	968.4	971.1	973.5	976.2	2.64
709.88	926.5	929.2	931.7	934.4	936.8	939.5	942.2	944.6	947.3	949.8	2.59
709.58	900.8	903.3	906.0	908.4	911.1	913.6	916.3	918.7	921.4	923.8	2.57
709.27	875.4	877.8	880.5	883.0	885.7	888.1	890.6	893.3	895.7	898.4	2.54
708.97	849.9	852.4	855.1	857.5	860.2	862.7	865.1	867.8	870.3	872.9	2.54
708.66	824.7	827.2	829.9	832.3	834.8	837.2	839.9	842.4	844.8	847.5	2.52
708.36	800.0	802.5	804.9	807.4	809.8	812.3	815.0	817.4	819.9	822.3	2.47
708.05	775.3	777.8	780.2	782.7	785.1	787.6	790.3	792.7	795.1	797.6	2.47
707.75	750.9	753.3	755.8	758.2	760.6	763.1	765.5	768.0	770.4	772.9	2.45
707.44	726.6	729.1	731.5	734.0	736.4	738.6	741.1	743.5	746.0	748.4	2.42
707.14	702.7	705.1	707.6	709.8	712.2	714.7	717.1	719.5	721.7	724.2	2.40
706.83	678.9	681.4	683.6	686.0	688.5	690.7	693.1	695.6	698.0	700.2	2.37
706.53	655.2	657.6	659.8	662.3	664.7	666.9	669.4	671.8	674.3	676.5	2.37
706.22	631.7	634.2	636.4	638.8	641.0	643.5	645.9	648.1	650.6	652.8	2.35
705.92	608.5	610.7	613.1	615.3	617.8	620.0	622.4	624.6	627.1	629.3	2.32
705.61	585.0	587.4	589.6	592.1	594.3	596.7	599.2	601.4	603.8	606.0	2.35
705.31	562.0	564.2	566.6	568.8	571.3	573.5	575.7	578.1	580.3	582.8	2.30
705.00	539.0	541.2	543.6	545.8	548.3	550.5	552.7	555.1	557.3	559.8	2.30
704.70	516.0	518.2	520.6	522.8	525.3	527.5	529.7	532.1	534.3	536.8	2.30
704.39	493.2	495.4	497.9	500.1	502.3	504.5	506.9	509.1	511.3	513.8	2.28
704.09	470.5	472.7	475.1	477.3	479.5	481.7	484.2	486.4	488.6	491.0	2.28

**Detailed Operating Plan for 1999-00**

**Exhibit 16M - LIBBY RESERVOIR CAPACITY TABLE**

ELEVATION IN METERS	SI										AVERAGE DIFFERENCE PER 3/100 M
	.00	.03	.06	.09	.12	.15	.18	.21	.24	.27	
703.78	448.0	450.2	452.4	454.8	457.0	459.2	461.4	463.6	466.1	468.3	2.25
703.48	425.7	427.9	430.1	432.3	434.5	436.7	439.2	441.4	443.6	445.8	2.23
703.18	403.4	405.6	407.8	410.1	412.3	414.5	416.9	419.1	421.3	423.5	2.23
702.87	381.4	383.6	385.8	388.0	390.2	392.4	394.6	396.8	399.0	401.2	2.20
702.57	359.4	361.6	363.8	366.0	368.2	370.4	372.6	374.8	377.0	379.2	2.20
702.26	337.9	340.1	342.3	344.2	346.4	348.6	350.8	353.0	355.0	357.2	2.15
701.96	316.3	318.5	320.7	322.7	324.9	327.1	329.3	331.5	333.5	335.7	2.15
701.65	294.8	297.0	299.2	301.2	303.4	305.6	307.8	310.0	311.9	314.1	2.15
701.35	273.5	275.7	277.7	279.9	282.1	284.1	286.3	288.5	290.7	292.6	2.13
701.04	252.5	254.7	256.6	258.9	260.8	263.0	265.2	267.2	269.4	271.3	2.10
700.74	242.7	243.7	244.7	245.6	246.6	247.6	248.6	249.6	250.5	251.5	0.98
700.43	210.9	214.1	217.3	220.4	223.6	226.8	230.0	233.2	236.3	239.5	3.18
700.13	199.6	200.9	201.8	203.1	204.0	205.3	206.5	207.5	208.7	209.7	1.13
699.82	170.5	173.5	176.4	179.3	182.3	185.0	187.9	190.8	193.8	196.7	2.91
699.52	150.5	152.4	154.4	156.6	158.5	160.5	162.5	164.4	166.6	168.6	2.01
699.21	130.9	132.9	134.8	136.8	138.7	140.7	142.6	144.6	146.6	148.5	1.96
698.91	111.6	113.5	115.5	117.4	119.4	121.1	123.1	125.0	127.0	128.9	1.93
698.60	95.9	97.4	99.1	100.6	102.3	103.7	105.2	106.9	108.4	110.1	1.57
698.30	73.4	75.6	77.8	80.2	82.5	84.7	86.9	89.1	91.5	93.7	2.25
697.99	54.8	56.8	58.5	60.4	62.1	64.1	66.1	67.8	69.7	71.4	1.86
697.69	36.2	38.2	39.9	41.8	43.5	45.5	47.5	49.2	51.1	52.8	1.86
697.38	18.1	19.8	21.8	23.5	25.4	27.2	28.9	30.8	32.5	34.5	1.81
697.08	0.0	1.7	3.7	5.4	7.3	9.1	10.8	12.7	14.4	16.4	1.81